Research Report

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Central Bank Digital Currencies and U.S. Strategic Competition with China

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About This Report

This report describes the potential role of central bank digital currencies (CBDCs) in strategic competition. Understanding the national security implications of both international CBDC developments and a potential U.S. CBDC is a central component of President Biden's March 2022 Executive Order 14067 on "Ensuring Responsible Development of Digital Assets." This executive order mandated an assessment of the potential for foreign CBDCs to undermine the United States' financial centrality and possible implications for national security and financial crime, concerns that are overshadowed by the relatively advanced stage of China's CBDC. This report contributes to the discourse that has emerged from that executive order by describing whether and how the more advanced stage of China's CBDC project might advantage China, how decisions regarding the international governance of CBDCs might affect U.S. national power, and how the design choices of a U.S. CBDC might affect its capabilities as an instrument of national power.

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CHAPTER 1

Introduction

Digital financial assets are an emergent U.S. national security concern. Cryptocurrencies (such as Bitcoin) have been linked to sanctions evasion,[1] terrorism financing,[2] and money laundering,[3] and some analysts have suggested that these digital assets could threaten global financial stability.[4] There are also growing concerns among U.S. policymakers that *central bank digital currencies* (CBDCs)—a form of digital asset issued by central banks—might have even more significant implications and have expressed particular concern regarding the advanced stage of China's CBDC project relative to that of the United States.[5]

Understanding the national security implications of both international CBDC developments and a potential U.S. CBDC is a central component of President Biden's March 2022 executive order on "Ensuring Responsible Development of Digital Assets."[6] This executive order directed the executive branch to evaluate "potential design and deployment options of a United States CBDC,"[7] including analyses of the implications of a U.S. CBDC on economic growth, financial stability, and financial inclusion. The broader implications of international CBDC developments for the traditional financial system, U.S. international financial centrality, and national security were also requisite components of the evaluation.

What Is a CBDC?

A CBDC is a "digital form of a country's sovereign currency" which would (1) "be legal tender," (2) "be convertible one-to-one into reserve balances or paper currency," and (3) "clear and settle with finality nearly instantly."

SOURCE: U.S. Department of the Treasury, *The Future of Money and Payments: Report Pursuant to Section 4(b) of Executive Order 14067*, September 2022b, p. 19.

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[1] Kristen E. Busch and Paul Tierno, *Russian Sanctions and Cryptocurrency*, Congressional Research Service, IN11920, May 4, 2022.

[2] Cynthia Dion-Schwarz, David Manheim, and Patrick B. Johnston, *Terrorist Use of Cryptocurrencies: Technical and Organizational Barriers and Future Threats*, RAND Corporation, RR-3026, 2019.

[3] Erik Silfversten, Marina Favaro, Linda Slapakova, Sascha Ishikawa, James Liu, and Adrian Salas, *Exploring the Use of Zcash Cryptocurrency for Illicit or Criminal Purposes*, RAND Corporation, RR-4418-ECC, 2020.

[4] Dimitris Drakopoulos, Fabio Natalucci, and Evan Papageorgiou, "Crypto Boom Poses New Challenges to Financial Stability," webpage, International Monetary Fund, October 1, 2021.

[5] For example, Senator Tom Cotton introduced the Defending Americans from Authoritarian Digital Currencies Act to the U.S. Senate on May 25, 2022.

[6] Joseph R. Biden, "Ensuring Responsible Development of Digital Assets," Executive Order 14067, Executive Office of the President, March 9, 2022a.

[7] Biden, 2022a, Section 4(a)(i).

In response to the executive order, the Secretary of the Treasury released a review of the "future of money and payments,"[8] an analysis of the implications of crypto assets for economic actors,[9] and an action plan for mitigating illicit financing risks.[10] In addition, the Office of Science and Technology Policy released an "analysis of design choices that could inform the technical design of a U.S. CBDC system."[11] However, while Senator Patrick J. Toomey has highlighted the importance of digital currencies as a "significant domain of strategic competition with other countries, including China,"[12] there is limited evidence-based analysis addressing the potential broader implications of CBDCs.

This report is intended to contribute to this discourse by describing three mechanisms through which CBDCs might affect strategic competition with China. Specifically, we explore: (1) whether and how the more advanced stage of China's CBDC project might advantage the People's Republic of China (PRC), (2) how decisions regarding the international governance of CBDCs might affect U.S. national power, (3) and how the design choices of a U.S. CBDC might affect its capabilities as an instrument of national power. This analysis is based on publicly available Chinese government discussions regarding CBDCs, a review of international CBDC experiments and pilots, and 16 interviews with central bankers, financial analysts, government officials, and national security analysts conducted during February and March 2023.

8 U.S. Department of the Treasury, September 2022b .

9 U.S. Department of the Treasury, *Crypto-Assets: Implications for Consumers, Investors, and Businesses*, September 2022a.

10 U.S. Department of the Treasury, *Action Plan to Address Illicit Financing Risks of Digital Assets*, undated.

11 Office of Science and Technology Policy, *Technical Design Choices for a U.S. Central Bank Digital Currency System*, September 2022, p. 2.

12 Patrick Toomey, "Global Digital Economy and Digital Currencies," letter to Janet Yellen and Antony Blinken, United States Senate Committee on Banking, Housing, and Urban Affairs, February 3, 2022.

CHAPTER 2

China's CBDC Does Not Pose an Urgent Threat to U.S. National Security

The electronic Chinese Yuan (e-CNY) is the world's largest CBDC project.[1] The e-CNY claims more than 260 million users and China has established itself as the first major global economy with a CBDC capable of supporting large-value financial transactions between banks and other entities (*wholesale*) and functioning as a substitute for cash, credit, or other digital assets in retail settings (*retail*).

Western discourse around the e-CNY has focused largely on its potential for malign domestic use or to weaken the U.S. dollar.[2] Academics and government-sponsored research organizations have highlighted the e-CNY's potential as a tool of surveillance,[3] suggesting that it might become the newest manifestation of the Chinese Communist Party's historical pattern of bending technological advancements to solidify one-party rule, squelch dissent, and identify, track, and arrest dissidents.[4] Others have suggested that the e-CNY—in combination with China's Belt and Road Initiative—creates a mechanism that the Chinese government could leverage to begin eroding the strength of the U.S. dollar as the world's reserve currency.[5]

While these previous analyses have described the coercive potential of the e-CNY, they have not assessed how and whether the Chinese government can achieve these objectives. This section aims to fill that gap by examining the e-CNY's three key characteristics: domestic market penetration, international efforts, and competing equities within the Chinese government. We then use this analysis, combined with insights from our interviews, to assess the implications of China's CBDC efforts for U.S. national security.

1 China's official currency is commonly referred to as *renminbi* ("people's currency") and abbreviated as RMB. However, the *yuan* is the unit of account for the currency of China and China's currency trades in foreign exchange settlements as CNY, with the designation e-CNY coming into common use in 2021.

2 For examples of reports that describe the introduction of the e-CNY as an opportunity for Beijing to expand its coercive economic measures against political and security opponents, see Darrell Duffie and Elizabeth Economy, eds., *Digital Currencies: The US, China, and the World at a Crossroads*, Hoover Institution Press, 2022; and Samantha Hoffman, John Garnaut, Kayla Izenman, Matthew Johnson, Alexandra Pascoe, Fergus Ryan, and Elise Thomas, *The Flipside of China's Central Bank Digital Currency*, Australian Strategic Policy Institute, International Cyber Policy Centre, Policy Brief Report No. 40/2020, October 14, 2020.

3 Maximilian Kärnfelt and Kai von Carnap, "China's New Surveillance Currency," *The Diplomat*, December 4, 2020; Jim Harper and J. Christopher Giancarlo, "The Values of Money: Will Tyranny or Freedom Be in Your Digital Wallet?" American Enterprise Institute, February 28, 2023.

4 Congressional-Executive Commission on China, "Techno-Authoritarianism: Platform for Repression in China and Abroad," webpage, November 17, 2021.

5 "China to Expand CBDC Use Case for Belt and Road Initiative," *Block News*, May 2, 2023; Thai-Binh Elston, "China Is Doubling Down on Its Digital Currency," webpage, Foreign Policy Research Institute, June 2, 2023; Sumeet Gaikwad, "E-CNY: The China Digital Currency Looking to Supplant the USD," Asia Fund Managers, April 18, 2022.

Domestic Market Penetration

The e-CNY, which started modestly in 2020 with a four-city pilot,[6] emerged onto the international scene at the 2022 Beijing Winter Olympics during which it was the only alternative to Visa as a form of payment.[7] Then in spring 2023, the municipality of Xuzhou in Jiangsu province (with a population of some 9 million residents) became the first city to pay all government personnel and state-owned enterprise employee salaries in e-CNY.[8] Both the Olympics and the Jiangsu e-CNY pilot give a glimpse into where the Chinese Communist Party (CCP) may take the e-CNY by leveraging its international engagement and prominent role in the economy (as much as 15 percent of China's workforce is in state-led sectors) to drive the e-CNY's adoption.[9]

Despite these prominent efforts, the e-CNY's domestic market penetration remains limited. The number of e-CNY users is far less than the number of users of other mobile payment platforms; the number of active *Alipay* and *WeChat Pay* users has been estimated at 1.2 billion and 1.0 billion,[10] which far exceeds the upper bound estimates of 260 million reported for e-CNY.[11] Furthermore, many of the reported 260 million e-CNY users have electronic "wallets" that are either empty or unused, and available data suggest that the average e-CNY user has the equivalent of only $7.50 in their account.[12]

Despite its relatively modest domestic market penetration in its current format, there is no doubt that the e-CNY has significant potential for coercive action against Chinese citizens. The e-CNY manages privacy through a concept that they have defined as *managed anonymity*, which provides anonymity for small-value transactions but also stores data such that "operators . . . [can] obtain relevant data for further analysis" in case of suspicious transactions, in accordance with the authorized "laws and regulations."[13] Interviewees highlighted this potential to link and track digital wallets across vendors and e-payment apps, influence behavior, and collect financial intelligence as a source of significant risk.[14] However, these interviewees did not believe that this necessarily reflected a deliberate effort to enable surveillance because the emergence of e-CNY was instead an effort by Chinese policymakers "to take control back from" commercial mobile payment providers, such as Alibaba and Tencent,[15] and that the primary domestic objective of the central bank of China was "monetary sovereignty" and managing systemic risk.[16]

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[6] Jonathan Cheng, "China Rolls Out Pilot Test of Digital Currency," *Wall Street Journal*, April 20, 2020.

[7] Marc Jones, "Over $315,000 in Digital Yuan Used Every Day at Olympics, PBOC Official Says," Reuters, February 16, 2022.

[8] Josephine Ma, "Chinese City of Changshu Plans to Pay Employees Using Digital Yuan," *South China Morning Post*, April 22, 2023.

[9] Chunlin Zhang, *How Much Do State-Owned Enterprises Contribute to China's GDP and Employment?* World Bank Group, 2019.

[10] These data are from 2020. See Statista, "Number of Users of Alipay and WeChat Pay in China in 2020, with Forecasts from 2021 to 2025," webpage, May 2021.

[11] Jesse Coghlan, "Former Chinese Central Banker Says Digital Yuan 'Usage Has Been Low'," *Cointelegraph*, December 30, 2022.

[12] People's Bank of China's (PBOC's) end-of-year report stated there was 13.6 billion RMB circulating as e-CNY, which equates to approximately 50 RMB per user (13.6 billion divided by the estimated 260 million users). This equates to approximately $7.50 per user. See People's Bank of China, "Financial Statistics Report (2022)," webpage, last updated January 10, 2023.

[13] Changchun Mu, "Balancing Privacy and Security: Theory and Practice of the E-CNY's Managed Anonymity," People's Bank of China, undated, pp. 2–3.

[14] Duffie and Economy, 2022, pp. xi–xii.

[15] Retired U.S. Treasury official with expertise in international monetary and financial policy, discussion with the authors, February 6, 2023.

[16] Digital currency expert, discussion with the authors, February 7, 2023.

International Efforts

Technocrats operating in China's financial system have been at the forefront of international efforts to use CBDCs to settle payments between central banks (known as *wholesale payments*).[17] The most visible and successful of these efforts is China's participation in *Project mBridge*, a four-nation pilot effort operated in 2022 to demonstrate the feasibility of "a multi-CBDC, cross-border payments platform" used by constituent banks and their host-nation central banks.[18]

Some analysts have cautioned that this success might increase e-CNY's desirability as a reserve currency because it could provide a new and more efficient mechanism for settling cross-border payments; however, the experts that we interviewed were skeptical that the e-CNY posed any novel threat to the U.S. dollar's dominance as the world's reserve currency. While interviewees acknowledged that China could potentially compel other nations to use the e-CNY for bilateral trade, China's strict capital controls would function as a barrier to the rapid expansion of a Chinese CBDC for international payments. One expert summarized this dilemma as follows: "the Chinese leadership will say they want [to internationalize their currency], but then when you actually propose what the costs are, they say 'oh, actually this is not what we want to do.'"[19] In addition, other nations might be reluctant to permit the use of e-CNY because of the risk of currency substitution (with the e-CNY replacing the domestic currency), which would "undermine monetary policy independence" and "the ability of the domestic central bank to carry out the lender of last resort function."[20]

Competing Equities Within the Chinese Government

There are competing and complementary e-CNY interests within the Chinese government. For example, while the Ministry of State Security might seek to use the e-CNY for espionage counter to U.S. interests,[21] the Ministry of Finance and other economic entities are likely to seek to use the e-CNY to support domestic economic objectives (e.g., manage systemic risk).

Figure 2.1 captures the characteristics of these equities by summarizing how various Chinese entities have described the merits of e-CNY. This figure is based on a RAND review of official, Chinese-language press releases by China's State Council Information Office (SCIO).[22]

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[17] A recurring motivation for pursuing CBDCs is to reduce interbank payment frictions and settle payments more rapidly. See Ousmène Jacques Mandeng, "CBDC for Retail, Wholesale and International Payments," *Accenture* blog, January 15, 2021; and Anneke Kosse and Ilaria Mattei, *Gaining Momentum – Results of the 2021 BIS Survey on Central Bank Digital Currencies*, Bank for International Settlements [BIS], BIS papers, No. 125, May 2022, pp. 7–8.

[18] Hong Kong, Thailand, China, and the United Arab Emirates participated in mBridge. According to BIS, the effort reportedly succeeded in building a bespoke CBDC platform that facilitated payments between the twenty banks and four central banks in August and September 2022. See BIS, *Project mBridge: Connecting Economies Through CBDC*, October 2022, p. 4.

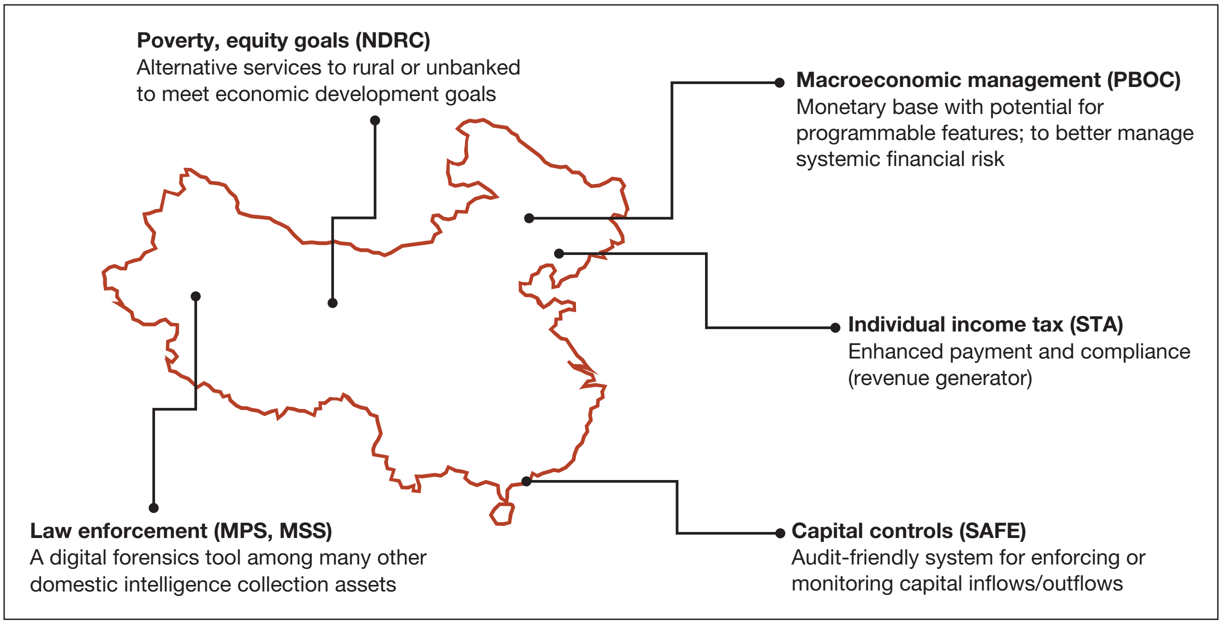
[19] Expert in international political economy, discussion with the authors, February 10, 2023.

[20] BIS, *Central Bank Digital Currencies for Cross-Border Payments: Report to the G20*, July 2021b, p. 16. This point was suggested to the authors by Barry Eichengreen through personal communication on August 9, 2023.

[21] For an overview of the U.S. perspective on the Ministry of State Security, see Cybersecurity and Infrastructure Security Agency, "China Cyber Threat Overview and Advisories," webpage, undated. For an overview of China's perspective, see Global Times, "China's State Security Ministry Publicly Reveals Recruitment Method for First Time," January 7, 2021.

[22] Our review included all reports that mentioned "digital renminbi" and "e-CNY" from 2017 to 2021. In some cases, the specific PRC government entity was directly mentioned in the press or was the originating source of the official news item; in other cases, we can infer that a state entity would have to be involved in e-CNY administration as a user or validator of data (for example, China's State Taxation Administration would have some part of e-CNY income audit).

FIGURE 2.1
PRC's Official Common Narratives on the Merits of the e-CNY, 2017–2021



SOURCE: RAND analysis of SCIO 2017–2021 references and press releases regarding e-CNY and digital renminbi.

NOTE: MPS = Ministry of Public Security; MSS = Ministry of State Security; NDRC = National Development and Reform Commission; SAFE = State Administration for Foreign Exchange; STA = State Taxation Administration. Geographic disposition of e-CNY policy use is illustrative as capital controls are most closely aligned with Hong Kong, economic policy is aligned with Beijing, and poverty and law enforcement applications are most closely aligned with non-coastal areas.

The key insight that can be drawn from Figure 2.1 is that China's e-CNY is primarily a domestic effort. While it could one day provide financial leverage and other policy tools for China's numerous foreign policy actors, there is little evidence that the e-CNY is intentionally and primarily designed to support China's international ambitions. In addition, Figure 2.1 demonstrates that the Chinese government is not shy about highlighting the law enforcement implications of the e-CNY, which suggests that concerns about domestic coercive potential are significant.

Table 2.1 provides a more detailed review of these various equities by describing the potential value of e-CNY to the portfolios of key Chinese government entities. The intent of this table is to characterize the potential conflicting equities of different elements of the Chinese government based on their public statements regarding e-CNY and organizational remit. While e-CNY flows might be minor and manageable in small numbers, this table demonstrates that PRC authorities still have many competing tensions that will need to be reconciled to design an e-CNY that satisfies both domestic and international needs.

Implications for U.S. National Security

We found no evidence that the e-CNY or broader Chinese CBDC efforts pose any meaningful risk to U.S. economic security or national security—at least in the short- to medium-term. Interviewees did not believe that there was any evidence that China's early lead in CBDC development provided China any type of first mover advantage, with these interviewees highlighting the difficulty that the e-CNY had faced in building a critical mass of users and acceptance in international transactions.

TABLE 2.1
PRC State Organizations and Likely e-CNY Remit

PRC State Entity[a]	Organizational Remit	e-CNY Equity
National Development and Reform Commission (NDRC)	Referred to as a "super ministry," NDRC holds multiyear economic agenda setting responsibilities for PRC growth[b]	Domestic poverty alleviation and other development initiatives
Ministry of Commerce (MOFCOM)	Wide remit, developing domestic and foreign trade and international economic cooperation[c]	Negotiated counterparty acceptance (in tandem with MOFA) in bilateral or multilateral agreements
Ministry of Finance (MOF)	Public finance management included, managing the central government's fiscal revenue and expenditure[d]	Promote and harmonize payment resolution
Ministry of State Security (MSS)	National intelligence development, espionage, "anti-espionage" missions[e]	Law enforcement and criminal proceedings enforcement via e-CNY audit trail
Ministry of Foreign Affairs (MOFA)	Diplomatic engagement, representing PRC policy to foreign nations[f]	Negotiated counterparty acceptance (in tandem with MOFCOM) in bilateral or multilateral agreements
Ministry of Public Security (MPS)	Criminal activity response, border security, firefighting, broad "stability and order" roles[g]	Law enforcement and criminal proceedings enforcement via e-CNY audit trail
PBOC	Act as the central bank for the PRC, sovereign issuer of RMB, administer foreign exchange (FOREX) and foreign debt[h]	Technocratic manager of the e-CNY, final arbiter of issuance and e-CNY ledger
State Taxation Administration (STA)	Collect, administer, and audit taxes[i]	Audit role in e-CNY paid as income or earnings

SOURCE: RAND analysis of SCIO 2017–2021 references and press releases regarding e-CNY and digital renminbi.

[a] Listed in a generalized order of seniority: commission, ministry, department, administrations, and offices.

[b] National Development and Reform Commission (NDRC), People's Republic of China, "Main Functions of the NDRC," webpage, undated.

[c] Ministry of Commerce, People's Republic of China, "Mission," webpage, September 13, 2018.

[d] Ministry of Finance, People's Republic of China, "Duties and Functions of the Ministry of Finance," webpage, undated.

[e] Global Times, 2021.

[f] Ministry of Foreign Affairs, People's Republic of China, "Main Responsibilities of the Ministry of Foreign Affairs of the People's Republic of China," webpage, undated.

[g] State Council, People's Republic of China, "Ministry of Public Security," August 25, 2014.

[h] State Administration for Foreign Exchange, People's Republic of China, "About SAFE: Major Functions," webpage, undated.

[i] State Taxation Administration of the People's Republic of China, "What We Do," webpage, undated.

Rather than creating risk, some interviewees believed that Chinese CBDC efforts might in fact prove a net boon for U.S. national security. For one, the e-CNY might enhance China's capacity to comply with Financial Action Task Force (FATF) standards for anti-money laundering, particularly for criteria related to internet and digital asset financing that require traceability of funds. According to one interviewee, "I think it is sincere that the [PBOC] wants to use this as a means of cracking down on their own illegal activity as they see it."[23] To the degree that such enforcement corresponds with international financial standards, the e-CNY might actually reinforce U.S. interests in anti-money laundering and countering financial crime.

The surveillance capability of the e-CNY might also make it easier for the United States to hold China accountable for sanctions violations. For example, while most Chinese firms have sought to terminate their

[23] Expert in international political economy, discussion with the authors, February 10, 2023.

dealings with Russia,[24] several Chinese firms have been accused of continuing to support Russia's war efforts throughout the conflict, although the Chinese government denies that this is true.[25] If the e-CNY were used to govern cross-border payments, the Chinese government would have complete visibility of these transactions and could be held culpable if they were indeed lying in an effort to protect these firms.[26] As one expert put it, the Chinese government would have "zero plausible deniability" if the e-CNY were involved in evading sanctions.[27] At a minimum, it would make it harder for China to claim ignorance (as it did in the 2010 Huawei-Iran sanctions evasion case) if Chinese government firms are operating in a financial ecosystem in which the e-CNY is king.[28]

China wants to ensure that the e-CNY is the only permissible form of digital cash.[29] These efforts might further stymie China's opportunities to broaden or mature its financial services. Government overreach might also lead to the cannibalization of the WeChat and Alipay customer base through a kind of digital "eminent domain," which could retard financial innovation in China and undercut the existing dynamism of China's e-payment technology.

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[24] Vita Spivak, *How Sanctions Have Changed the Face of Chinese Companies in Russia*, Carnegie Endowment for International Peace, May 18, 2023; Lizzi C. Lee, "China's Long Game in Russia: Violating Sanctions? No. Ensuring Russia's Survival? Yes." *Russia Matters*, June 30, 2022.

[25] "China protests US Sanctioning of Firms Dealing with Russia," *Associated Press*, April 15, 2023.

[26] Barry Eichengreen, *Sanctions, SWIFT, and China's Cross-Border Interbank Payments System*, Center for Strategic & International Studies, May 20, 2022.

[27] Expert in international political economy, discussion with the authors, February 10, 2023.

[28] Steve Stecklow, "Exclusive: Newly Obtained Documents Show Huawei Role in Shipping Prohibited U.S. Gear to Iran," Reuters, March 2, 2020.

[29] Rain Xie, "Why China Had to 'Ban' Cryptocurrency but the U.S. Did Not: A Comparative Analysis of Regulations on Crypto-Markets Between the U.S. and China," *Washington University Global Studies Law Review*, Vol. 18, No. 2, 2019.

CHAPTER 3

CBDC Global Governance and U.S. National Security

While China is moving ahead with a CBDC, it is not alone. By late 2022, every member of the Group of Seven (G7)—Canada, France, Germany, Italy, Japan, the United Kingdom, the United States, and the European Union[1]—and more than 100 other nations were in some stage of CBDC exploration.[2] Though these collaborations represent only experiments, pilots, and research studies, it seems to be a question of when and not if formal cross-border arrangement will be established.

The future governance of these CBDCs and their cross-border interoperability could impact U.S. security. This governance has the potential to undermine traditional banks and associated financial systems,[3] transform money laundering and counterproliferation finance,[4] alter international U.S. dollar dominance,[5] and exacerbate global financial systemic risk.[6] The decisions taken by China, the United States, and European nations are widely believed to play central roles in determining this future governance.

This section seeks to explore the national security implications of the possible future governance arrangements for CBDCs. We first examine the opportunities and benefits from collaboration with G7 partners. We then examine the emerging bifurcation in CBDC governance coordination, with the G7 members on one side and the non-G7 members of the Group of 20 (G20) on the other side, and options that might be taken to ameliorate the risks posed by this possible bifurcation.

G7 Collaboration in CBDC Governance

Recognizing the potential threat to global financial integrity, the United States and its G7 partners had published a set of policy principles for retail CDBCs and issued a statement on CBDCs and digital payments in fall 2021. These efforts reflect a cautious approach to CBDCs, emphasizing that CBDCs must "not compro-

1 The European Union is a non-enumerated member of the G7.

2 Ananya Kumar, Alisha Chhangani, Greg Brownstein, and Phillip Meng, "Central Bank Digital Currency Tracker," webpage, Atlantic Council, December 2022.

3 Ulrich Bindseil, *Tiered CBDC and the Financial System*, European Central Bank Working Paper Series No. 2351, 2020, pp. 8–13.

4 Financial Action Task Force, *FATF Report to the G20 Finance Ministers and Central Bank Governors on So-Called Stablecoins*, June 2020, pp. 26–27.

5 Daleep Singh, "It's Not Just the Economics: Why U.S. Leadership on CBDCs Is a National Security Imperative," *Harvard National Security Journal*, Vol. 14, No. 49, December 28, 2022; Christopher J. Waller, "The U.S. Dollar and Central Bank Digital Currencies," *Harvard National Security Journal*, Vol. 14, No. 60, October 14, 2022.

6 BIS, *Central Bank Digital Currencies: Financial Stability Implications*, September 2021c.

mise financial and monetary stability" and that any CBDC must be "grounded in long-standing commitments to transparency, the rule of law, and sound economic governance."[7]

These policy principles focus on three domains with direct implications for U.S. national security. The first is ensuring that CBDCs do not undermine traditional financial services and instead "coexist with, and complement existing forms of money, and promote innovation and efficiency in payments."[8] The other two domains are mitigating the potential use of CBDCs for illicit finance (money laundering, terrorist financing, and proliferation of weapons of mass destruction) and preventing the potential use of CBDCs for sanctions evasion.[9]

Ensuring that CBDCs do not undermine the existing financial services industry will entail significant restrictions on how CBDCs are to operate across borders. CBDCs could lead to *financial disintermediation* in which individuals and businesses move large sums of money out of banks and other financial institutions both domestically and internationally, depending on the specific design parameters of the CBDC.[10] Our interviewees indicated that the core G7 members and the European Union are likely to continue to focus on developing wholesale rather than retail CBDCs in part because this reduces the risk to the financial services industry.

Mitigating the potential use of CBDCs for illicit finance means that the G7 members are likely to reject cross-border retail CBDCs with strong anonymity.[11] *Strong anonymity* refers to a high level of privacy protection that prevents the identification of individuals involved in a transaction. According to the experts consulted for this research, this strong anonymity would hinder U.S. anti-money laundering and countering the financing of terrorism (AML/CFT) efforts.[12]

None of the experts we consulted expressed that the United States was concerned about CBDCs presenting a viable workaround to financial sanctions as long as the dollar remains central to international finance. Furthermore, as noted earlier, if the e-CNY were used to evade sanctions, the Chinese government's visibility over it would give China "zero plausible deniability" regarding the involvement of Chinese entities in sanctions evasion.[13] This would place the Chinese government and PBOC directly in the crosshairs of secondary sanctions,[14] which is a risk China has avoided to date.[15]

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7 G7, *Public Policy Principles for Retail Central Bank Digital Currencies (CBDCs)*, October 14, 2021, p. 4.

8 G7, 2021, p. 4.

9 G7, 2021, p. 10.

10 As an example, a CBDC could lead to domestic intermediation if it pays sufficiently high interest. See Jonathan Chiu, Seyed Mohammadreza Davoodalhosseini, Janet Jiang, and Yu Zhu, "Will Central Bank Digital Currencies Lead to Bank Disintermediation?" webpage, London School of Economics, May 5, 2023.

11 U.S. government official, discussion with the authors, February 9, 2023; two international political economists, discussion with the authors, February 10, 2023.

12 Two digital currency experts, discussion with the authors, February 7, 2023 and February 17, 2023; Howard Shatz, personal communication with the authors, August 21, 2023.

13 Two international political economists, discussion with the authors, February 10, 2023.

14 Eichengreen, 2022, p. 6.

15 Maia Nikoladze, Phillip Meng, and Jessie Yin, *How Is China Mitigating the Effects of Sanctions on Russia?* Atlantic Council, June 14, 2023.

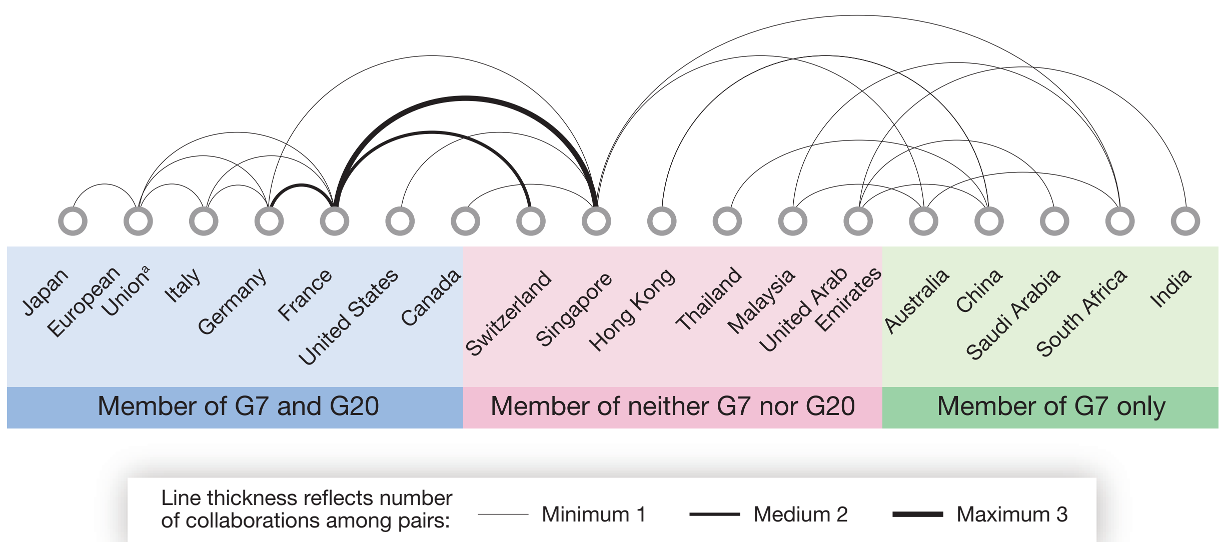
G7 Versus G20

While the G7 is taking a collaborative approach toward CBDC governance, there is evidence that the G20—an international forum of 19 states plus the European Union, originally envisioned as a "global financial and economic steering committee"[16]—may be more divided. This bifurcation is reflected in Figure 3.2, which illustrates all publicly acknowledged CBDC collaborations in which at least one collaborator is a G7 or G20 member.

The activity depicted in Figure 3.2 is all relatively new: The oldest of these collaborative projects began in 2016, and the vast majority are far newer (see the Appendix). However, a few observations are striking. First, there are no direct collaborations between G7 members and states that are only members of the G20. Second, apart from intra-European collaborations, states that are only members of the G20 have formed a more diverse array of collaborations than G7 jurisdictions have. Third, more economies outside the G7 and G20, including those home to major financial centers, have collaborated with G20 states that are not G7 members. Singapore is unique among the jurisdictions experimenting with CBDCs because it is the only jurisdiction with both G7 and G20 collaborations.

There is also a major difference in the approach between the G7 and the G20, with the G20 initiatives focused less on preserving the existing financial system and more on enhancing cross-border payments.[17] None of our interviewees were concerned that this would necessarily create national security challenges for the United States in the near term, although they did agree that this focus could potentially undermine the effectiveness of AML/CFT mechanisms and financial sanctions.

FIGURE 3.2
G7 and G20 Members' Cross-Border CBDC Project Collaboration Network



SOURCE: Features information from CBDC collaboration project reports (see the Appendix).

NOTE: BIS has also participated in several of the collaborations depicted (see the Appendix). This figure omits the United Kingdom (member of G7 and G20) and seven G20 members (Argentina, Brazil, Indonesia, Mexico, Russia, South Korea, and Turkey) because they have not disclosed participation in cross-border CBDC projects as of May 12, 2023.

[a] The European Union is represented here by collaborations involving the European Central Bank.

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[16] John J. Kirton, *G20 Governance for a Globalized World*, Routledge, 2013, p. 3.

[17] See Financial Stability Board, *Enhancing Cross-Border Payments: Stage 3 Roadmap*, October 13, 2020.

The split between the G7 and the non-G7 members of the G20 combined with Singapore's emergence as a highly connected node in the network of cross-border CBDC experiments illustrate an important avenue for further research.[18] This becomes increasingly important as countries experiment with CBDCs coupled to cross-border payment platforms that diverge from the existing banking network.[19]

Implications for U.S. National Security

The current trajectory of CBDC governance suggests a weakening of the dollar is indeed possible over the longer term. The first trend is the bifurcation of international CBDC efforts. In addition to the gap between the G7 and G20 in existing pilot programs, there is evidence that China's mBridge collaboration is taking an approach that the experts consulted for this study universally rejected as feasible for the G7.[20]

The risk to the United States is that participating CBDCs could become easier to use in cross-border transactions than the dollar.[21] Experts suggested that establishing a technical interface that links a U.S. CBDC—or a privately issued digital asset tied to the dollar—with other CBDCs could reinforce the dollar's role in such networks as mBridge and counter this risk.[22] However, they indicated that incumbent financial service providers would resist this solution as disruptive, preferring instead a model that enhances cross-CBDC compatibility through "similar regulatory frameworks, market practices, messaging formats and data requirements."[23] In addition, it is not clear that the United States and its potential partners could agree on governance of such an mBridge.[24]

The second potential threat to the U.S. dollar is that some G7 members might not be willing to fully collaborate with the United States on CDBCs. Several of our interviewees highlighted a growing discontent among the G7 with U.S. leadership in the global financial system and U.S. efforts to leverage this leadership to box in competitors. These experts indicated that some G7 members might seek to leverage CBDCs to revitalize historical efforts focused on enhancing their "monetary sovereignty" and might prove unwilling to fully collaborate with the United States.[25] The G7 members might be able to achieve this objective without sacrificing pragmatism; the euro area is designing a wholesale CBDC that would be impossible to integrate with a retail U.S. CBDC.[26]

[18] For example, it is possible that Singapore's position as a hub for CBDC interactivity could give it and its allies significant coercive power. See Henry Farrell and Abraham L. Newman, "Weaponized Interdependence: How Global Networks Shape State Coercion," *International Security*, Vol. 44, No. 1, Summer 2019.

[19] See Bo Li, "Cross-Border Digital Payment Systems: The Case of Singapore, Thailand, Malaysia, and Beyond," video, International Monetary Fund, November 8, 2022.

[20] This model utilizes what has been described as a "jointly operated payment system hosting multiple CBDCs" (BIS, "CBDCs: An Opportunity for the Monetary System," in *BIS Annual Economic Report 2021*, 2021a, p. 87).

[21] Robert Greene, "Asia's Interest in Wholesale Central Bank Digital Currency—and Challenges for Cross-Border Use," Carnegie Endowment for International Peace, February 7, 2023.

[22] Two digital currency experts, discussion with the authors, February 7, 2023, and February 17, 2023. Also see Greene, 2023.

[23] BIS, 2021a, p. 88.

[24] This point was suggested to the authors by Barry Eichengreen via personal communication, August 9, 2023.

[25] Digital currency expert, discussion with the authors, February 7, 2023; international political economists, discussion with the authors, February 10, 2023; European Union official, discussion with the authors, February 24, 2023. Also see European Central Bank, *The Case for a Digital Euro: Key Objectives and Design Considerations*, July 2022.

[26] This point was suggested to the authors by Barry Eichengreen via personal communication, August 9, 2023.

CHAPTER 4

A U.S. CBDC as a Tool of National Security?

President Biden's executive order on digital assets indicates that the U.S. government should examine the potential benefits and risks of a U.S. CBDC for "consumers, investors, and businesses; financial stability and systemic risk; payment systems; national security; the ability to exercise human rights; financial inclusion and equity."[1] While a Treasury-led analysis of the implications of a U.S. CDBC for illicit finance provides an in-depth analysis of the national security risks,[2] the existing analysis of the national security benefits has focused primarily on the ability of a U.S. CBDC to improve cross-border payments.[3]

This section explores two mechanisms through which the unique design features of CBDCs could potentially be leveraged to enable national security objectives. The first focuses on programmability, which could provide nation states a commitment mechanism in international negotiations by detailing in advance the types of political events that would lead to freezes or seizure of international reserves. The second examines how CBDC privacy could be used to enable assurance in investments in U.S. national security capabilities.

CBDC Programmability as a Commitment Mechanism in International Conflicts

Unlike conventional financial instruments, CBDCs and other digital assets allow the issuer of that asset to establish rules "imposing restrictions on the usage of that money" or "enable automatic transfers of money when pre-determined conditions are met."[4] This characteristic of a potential U.S. CBDC—referred to as *transaction programmability*—would allow for either the U.S. government or intermediaries to establish smart contracts that automatically execute once a "certain set of conditions is true."[5]

Several major CBDC projects, including the digital euro and the digital pound, have indicated that they will not impose conditions on payments. The director of the European Central Bank, which is responsible for the digital euro project, concluded that it would "not set any limitations on where, when or to whom people can pay with a digital euro."[6] Similarly, the manager of the Bank of England's CBDC team indicated that a

1 Biden, 2022a, Section 4(a)(i).

2 U.S. Department of the Treasury, undated.

3 U.S. Department of the Treasury, 2022b.

4 European Data Protection Supervisor, "TechDispatch #1/2023 - Central Bank Digital Currency," webpage, March 29, 2023.

5 Office of Science and Technology Policy, 2022, p. 25.

6 Fabio Panetta, "The Digital Euro: Our Money Wherever, Whenever We Need It," speech delivered at the Committee on Economic and Monetary Affairs of the European Parliament, January 23, 2023.

belief that "you are not allowed to spend [the CBDC] on what you want to spend it on, because the government doesn't approve of what you're doing" would undermine a CBDC's credibility.[7]

However, given the centrality of the U.S. dollar in the international financial system, a programmable U.S. CBDC could provide a new tool for mitigating international conflicts. The idea, which was suggested by two of the experts consulted for this study, is that a U.S. CBDC could enable the United States to leverage its economic might more effectively by allowing for this programmability to be extended to dollar-denominated international transactions.[8]

This type of programmability could undermine the credibility of a U.S. CBDC by amplifying concerns that programmability would make it susceptible to political influence,[9] thus hindering uptake both domestically and internationally. However, if this challenge could be managed, a programmable U.S. CBDC could provide a new financial mechanism to discourage violations of international norms and agreements by establishing generalized public and transparent criteria governing when dollar-dominated assets would be automatically frozen or forfeited (such as in the case of the violation of the territorial integrity of another nation). It could also provide the United States a new mechanism to financially incentivize specific peace agreements. For example, the United States could agree to pay higher returns on U.S. debt held by China as long as China does not violate Taiwanese territorial integrity; those assets would be automatically frozen or forfeited if China does not abide by the negotiated terms.

CBDC Visibility as a Mechanism for Assured Investment

Threats and vulnerabilities stemming from foreign investment in the United States is a significant national security concern. This is highlighted by the recent investigations into the purchases of large land tracts near Travis Air Force Base by a single organization with unknown sources of funding,[10] and U.S. Department of Defense efforts to develop a program for "trusted capital."[11] President Joe Biden's September 2022 executive order on "Ensuring Robust Consideration of Evolving National Security Risks by the Committee on Foreign Investment in the United States" expanded the authority of the Committee on Foreign Investment in the United States (CFIUS) in its review of foreign investments that may impact national security.[12] However, the efficacy of CFIUS is dependent on its ability to identify when and what type of foreign entities are involved in such investment.[13]

A U.S. CBDC with less privacy could provide the needed assurance in the sources of capital. The e-CNY provides one possible model for this, in that the government retains complete visibility of the transactions.

7 Katie Fortune quoted in Ledger Insights, "Digital Pound CBDC Won't Be Programmable to Avoid Government Control Perceptions," April 3, 2023.

8 This idea emerged from discussion with a central bank economist and a digital currency expert and the authors, February 28, 2023.

9 Nicholas Anthony and Norbert Michel, *Central Bank Digital Currency: Assessing the Risks and Dispelling the Myths*, CATO Institute, April 4, 2023.

10 Kristina Peterson, Jack Gillum, and Kate O'Keeffe, "Investors Bought Nearly $1 Billion in Land Near a California Air Force Base. Officials Want to Know Who Exactly They Are," *Wall Street Journal*, July 7, 2023.

11 Jared Serbu, "Pentagon Launches Online Marketplace to Pair Small Firms with 'Trusted' Investors," *Federal News Network*, January 14, 2021.

12 Joseph R. Biden, "Ensuring Robust Consideration of Evolving National Security Risks by the Committee on Foreign Investment in the United States," Executive Order 14083, Executive Office of the President, September 15, 2022b.

13 National Counterintelligence and Security Center, "Venture Capital and Supply Chain Vulnerabilities," undated.

However, U.S. officials have indicated that China's approach would be inappropriate for the United States.[14] Another option could be to mandate that investments in select national security capabilities be denominated in a U.S. CBDC-like asset, thus facilitating compliance with CFIUS and addressing concerns about anonymous capital being invested in these capabilities.[15]

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[14] Henry Kenyon, "Privacy Issues Seen Reducing Appeal of Central Bank Digital Currencies," *Roll Call*, November 16, 2021.

[15] This could augment other emerging capabilities for addressing this problem, such as the Department of Defense's Trusted Capital Digital Marketplace. See U.S. Department of Defense, "Department of Defense Announces Establishment of the Trusted Capital Digital Marketplace," press release, January 13, 2021.

CHAPTER 5

Conclusion

There is no significant evidence that CBDCs pose a security threat to the United States, at least in the short-term. However it is developed, China's CBDC faces significant barriers to internationalization, including a major barrier overlooked by analysis to date: resolving competing interests within the Chinese government. Furthermore, emerging international CBDC governance is likely to reinforce the existing international financial system rather than undermine it.

However, CBDC collaborations outside the G7 are only now gathering steam. These collaborations could reconfigure parts of the global financial network, particularly as the economic might of G20 members that are not part of the G7 continues to grow relative to the G7.[1] Such reconfiguration could undermine the strength of the U.S. dollar abroad and open workarounds to financial channels that the United States currently relies on to exert leverage.

Continued monitoring and rigorous analysis of the evolution of both the e-CNY and the multi-CBDC collaboration network are essential to understanding and addressing these longer-term strategic implications. A U.S. CBDC might not be necessary to combat security threats posed by other CBDCs, but it might enable novel national security capabilities, such as new ways to freeze assets and track foreign investments in the United States.

[1] By 2036, the total gross domestic product (GDP) of the nations in the G20 that are not part of the G7 will double that of the G7; in 2023, they are approximately 40 percent larger. See Organisation for Economic Co-operation and Development, "Real GDP Long-Term Forecast," webpage, undated.

Appendix. Cross-Border CBDC Collaborations

Table A.1 summarizes the cross-border CBDC collaborations depicted in Figure 3.2. This only includes experiments and pilots and not collaborations that have been purely research-based (pre-experimental).

TABLE A.1

Summary of G7 and G20 Members' Cross-Border CBDC Collaborations

Project Name	Participating Jurisdictions	Disposition	Time Frame[a]	Source
Project Stella	European Central Bank, Japan	Wholesale	December 2016–February 2020	Bank of Japan, "Project Stella: The ECB and Bank of Japan Release Joint Report on Distributed Ledger Technology (Phase 4)," webpage, February 12, 2020.
Jasper-Ubin	Canada, Singapore	Wholesale	November 2018–May 2019	Bank of Canada, "Digital Currencies and Fintech: Projects," webpage, undated.
Project Aber	Saudi Arabia, United Arab Emirates	Wholesale	January 2019–November 2019	Saudi Central Bank and Central Bank of the U.A.E., *Project Aber: Final Report*, 2020.
Digital euro	All 20 euro area member states (including G7 members France, Germany, and Italy)	Retail	Began September 2020 (underway in summer 2023)	European Central Bank, "Eurosystem Launches Digital Euro Project," webpage, July 14, 2021.
Project mBridge	China, Hong Kong, Thailand, United Arab Emirates (with BIS)	Wholesale	February 2021–October 2022	BIS, 2022.
Onyx Multi Currency Corridor	France, Singapore	Wholesale	June 2021–November 2021	Banque de France, Monetary Authority of Singapore, and Onyx by JPMorgan, *Liquidity Management in a Multi-Currency Corridor Network*, November 12, 2021.
Project Jura	France, Switzerland (with BIS)	Wholesale	June 2021–December 2021	BIS, "Project Jura: Cross-Border Settlement Using Wholesale CBDC," webpage, December 8, 2021d.
Project Dunbar	Australia, Malaysia, Singapore, South Africa (with BIS)	Wholesale	September 2021–March 2022	BIS, "Project Dunbar: International Settlements Using Multi-CBDCs," webpage, undated.
Project Cedar Phase II x Ubin+	Singapore, United States	Wholesale	Began November 2022 (underway in summer 2023)	Federal Reserve Bank of New York, "New York Fed and Monetary Authority of Singapore Collaborate to Explore Potential Enhancements to Cross-Border Payments Using Wholesale CBDCs," press release, November 10, 2022.
Project Mariana	France, Singapore, Switzerland (with BIS)	Wholesale	Began November 2022 (underway in summer 2023)	BIS, "Project Mariana: CBDCs in Automated Market-Makers," webpage, April 11, 2023.
SWIFT CBDC Sandbox	France, Germany, Singapore (with SWIFT)[b]	Retail & Wholesale	November 2022–March 2023	Society for Worldwide Interbank Financial Telecommunication, *Connecting Digital Islands: Swift CBDC Sandbox Project*, March 2023.
India-UAE CBDC Trial[c]	India, United Arab Emirates	Undisclosed	Began March 2023 (underway in summer 2023)	Central Bank of the U.A.E., "Central Bank of the UAE and Reserve Bank of India Sign MoU to Promote Innovation in Financial Products and Services," press release, March 15, 2023.

NOTE: SWIFT = Society for Worldwide Interbank Financial Telecommunication.

[a] Project time frame is approximate, based on available press releases and project reports.

[b] Publicly named central bank participants only.

[c] Project name has not been publicized as of May 14, 2023.

Abbreviations

AML/CFT	anti-money laundering and countering the financing of terrorism
BIS	Bank for International Settlements
CBDC	central bank digital currency
CFIUS	Committee on Foreign Investment in the United States
e-CNY	electronic Chinese Yuan
FATF	Financial Action Task Force
G7	Group of Seven
G20	Group of 20
PBOC	People's Bank of China
PRC	People's Republic of China
SCIO	State Council Information Office (China)
SWIFT	Society for Worldwide Interbank Financial Telecommunication

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