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Central Bank Digital Currencies and National Security: Policy Considerations

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EXECUTIVE SUMMARY

Central bank digital currencies (CBDCs) have come to the fore in recent years, developing organically alongside the steady decline in the transactional use of cash, the rise of cryptocurrency and the emergence of financial technology. Many scholars and policymakers note both exciting benefits and potentially worrying consequences. CBDCs seek to offer a central bank-issued fiat currency in digital form. In essence, CBDCs are the digitisation of the bank note in a user's wallet. CBDCs are envisioned to come in two forms: retail, aimed at consumers, and wholesale, aimed at financial institutions. Numerous governments are assessing the utility of CBDCs, with some conducting pilot trials. However, concerns over the impact of CBDCs feature prominently in current discourse, with analyses noting risks such as reduced privacy, a single point of failure, banking disintermediation leading to a reduction in the availability of credit, and even the potential for external foreign interference in domestic payments. This paper examines the international security risks posed to the UK by foreign retail and wholesale CBDCs.

Due to the novelty of CBDCs, current debates are relatively narrow and rarely examine CBDCs in the wider context of international security. This is of particular concern as CBDCs could radically transform the way that people and businesses interact with fiat currency, both nationally and internationally. Therefore, this paper seeks to further understanding of the potential adverse international security effects of the development of foreign CBDCs – that is to say, of CBDCs developed outside the UK, backed by a central bank other than the Bank of England. International security concerns that emerged in the research for this paper centre principally on four themes:

- Unease regarding China's possible dominance in the CBDC market.
- Implications of first-mover advantage (and conversely the implications of delaying domestic development of a CBDC).
- The role of CBDCs in international sanctions.
- The impact of foreign CBDCs on the UK as a financial centre.

As a result, the paper proposes action including greater awareness-raising, advocacy and research on these potential international security threats. The paper concludes that it is now vital to engage with CBDCs in order to develop the necessary preventative and mitigatory actions (regardless of whether an economic benefit to the introduction of a CBDC is currently identified)

to avert the challenges posed by retrospective remedial action, the likes of which is likely to be challenging, costly, and time-consuming.

INTRODUCTION

The decline of cash usage as a medium of exchange is a societal transformation occurring worldwide.[1] This transition has been spurred on by a range of factors including the rise of e-money, the increased use of debit cards, contactless payment, e-commerce, and the emergence of peer-to-peer digital exchange mediums such as Bitcoin. Furthermore, the increased digitisation of finance and banking operations underpinned by the financial technology (fintech) movement has resulted in customers opting for more sophisticated online banking solutions, a development that has further compounded the digitisation of finance. Other factors fuelling the decline in cash usage include security and transport costs incurred by merchants, the convenience of cashless payments, fears of disease transmission since the Covid-19 pandemic, and increased digital connectivity.[2]

Society's transition away from cash has resulted in governments beginning to assess the presence of cash within society, while seeking to offer fiat currency in a time of waning cash circulation. Moreover, the steady decline in cash usage has resulted in some nations deliberating over viable alternatives amid fears of a banking crisis or a serious power outage or technology failure, while others seek to diversify away from a payment infrastructure that is not domestically owned or controlled. Thus, more than 100 countries are exploring central bank digital currencies (CBDCs) in varying capacities, all seeking to understand these currencies' role in society, ensure proper implementation, and deliver safe and robust functionality.[3]

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1. Tanai Khiaonarong and David Humphrey, 'Falling Use of Cash and Demand for Retail Central Bank Digital Currency', *IMF Working Papers* (Vol. 2022, No. 27, 4 February 2022), <https://doi.org/10.5089/9798400200861.001>, accessed 1 October 2023; see also Ellen Caswell, 'Knocked Down During Lockdown: The Return of Cash', Quarterly Bulletin 2022 Q3, Bank of England, 2022, <https://www.bankofengland.co.uk/quarterly-bulletin/2022/2022-q3/knocked-down-during-lockdown-the-return-of-cash>, accessed 20 May 2023.
2. Radoslaw Kotkowski and Michal Polasik, 'COVID-19 Pandemic Increases the Divide Between Cash and Cashless Payment Users in Europe', *Economics Letters* (Vol. 209, Article No. 110139, December 2021), accessed 15 November 2023; IMF, 'Going Cashless', June 2018, <https://www.imf.org/en/Publications/fandd/issues/2018/06/central-banks-and-digital-currencies-point>, accessed 15 November 2023.
3. Atlantic Council, 'Central Bank Digital Currency Tracker', <https://www.atlanticcouncil.org/cbdctracker/>, accessed 24 March 2023; Bank of England and HM Treasury, *The Digital Pound: A New Form of Money for Households and Businesses?*, Consultation Paper, CP 797 (London: The Stationery Office, 2023), <https://www.bankofengland.co.uk/-/media/boe/files/paper/2023/the-digital-pound-consultation-working-paper.pdf>, accessed 24 March 2023; Board of

At the time of writing, the UK government is engaged in a three-year internal research project led by HM Treasury, the aim of which is to assess the validity, utility and design of a UK CBDC.[4] The principal mechanism behind CBDCs is to offer fiat currency in a digital format, for both retail and wholesale purposes. In essence, CBDCs would enable citizens and businesses alike to move and use fiat currency digitally, offering instantaneous settlement and reduced transaction costs.[5]

Proponents of this innovation, which goes beyond the digital settlement system we have today, note that CBDCs could unlock various economic benefits, including heightened financial inclusion, reduced financial friction, automation, fractional payments and enhanced international settlement possibilities.[6] However, like every other financial innovation, CBDCs could bring unintended and unforeseen consequences. Research and interest surrounding the utility, purpose and design of CBDCs is a topic of contention due to concerns over privacy, safety and necessity.[7] For example, the House of Lords has questioned the validity and necessity of CBDCs, noting that current mechanisms can be easily adapted to solve the issues (such as more efficient transaction settlement) that CBDCs seek to address, negating the need for an entirely new system.[8] In parallel, fears about related international security implications, impacts on international trade and the efficacy of financial sanctions, curtailment of financial norms, data capture, economic coercion, hegemony and the cyber security threat are slowly emerging.[9]

Like every other financial innovation, CBDCs could bring unintended and unforeseen consequences

Governors of the Federal Reserve System, 'Central Bank Digital Currency (CBDC)', 2023, <https://www.federalreserve.gov/central-bank-digital-currency.htm>, accessed 24 March 2023.

4. Bank of England, 'The Digital Pound', <https://www.bankofengland.co.uk/the-digital-pound>, accessed 3 May 2023.
5. *Ibid*.
6. Sebastian Infante et al., 'The Macroeconomic Implications of CBDC: A Review of the Literature', Finance and Economics Discussion Series, 2022-076 (Washington, DC: Board of Governors of the Federal Reserve System, 2022), <https://doi.org/10.17016/FEDS.2022.076>, accessed 30 November 2022; Yibin Mu and Angela Mu, 'CBDC: Concepts, Benefits, Risks, Design, and Implications', *SSRN Electronic Journal*, October 2022, <https://doi.org/10.2139/ssrn.4234876>, accessed 24 March 2023.
7. Andrea Baronchelli, Hanna Halaburda and Alexander Teytelboym, 'Central Bank Digital Currencies Risk Becoming a Digital Leviathan', *Nature Human Behaviour* (Vol. 6, No. 7, July 2022), pp. 907–09; Philip Middleton, 'How Real is the CBDC Threat to Privacy?', OMFIF, 29 April 2022, <https://www.omfif.org/2022/04/how-real-is-the-cbdc-threat-to-privacy/>, accessed 24 March 2023.
8. House of Lords Economic Affairs Committee, 'Central Bank Digital Currencies: A Solution in Search of a Problem?', HL 131, Third Report of Session 2021–22, 13 January 2022, <https://committees.parliament.uk/publications/8443/documents/85604/default/>, accessed 15 November 2023.
9. Andreas Nölke, 'The Weaponization of Global Payment Infrastructures: A Strategic Dilemma', SAFE White Paper No. 89, Leibniz Institute for Financial Research, June 2022; Michael Robinson, Kevin Jones and Helge Janicke, 'Cyber

With this in mind, and due to the possible international nature of foreign CBDCs, concerns over the broader security impact on the UK have become increasingly important.[10] If left unchecked, the consequences of foreign CBDCs for the UK have the potential to be significant. Thus, offering insight and recommendations on the potential security implications of foreign CBDCs is important, timely and necessary. While current literature and policy dialogue focuses on the technological, economic and financial inclusion dimensions that may accompany the development and introduction of CBDCs, no significant consideration has been given to the international security implications. Consequently, this paper seeks to enhance the CBDC debate by examining the core security challenges that accompany the introduction of foreign CBDCs from a UK perspective, in a bid to help policymakers understand the associated risks and make informed decisions when developing, implementing and managing CBDCs.

METHODOLOGY

Research for this paper began with an in-depth literature review of primary and secondary sources, covering academic as well as government/policy documents. This identified a gap in the research and knowledge on the security implications of foreign CBDCs for the UK. To gain further insight, a series of 18 online semi-structured interviews were conducted over a period of three months in the first quarter of 2023. Interviews were conducted based on wide outreach to relevant international experts and officials from central banking, policymaking and academia based in the UK and other leading Western economies with active national CBDC projects. Interviewees were chosen based on their expertise, and were identified via snowball sampling. To diversify and strengthen the data obtained, outreach was international and multidisciplinary. Once research was completed, the information obtained was synthesised and refined, and core themes were extrapolated. These themes were presented in July 2023 at a roundtable event attended by a selection of the interviewees and additional experts.[11] This process enabled the research team to validate, assess and refine its findings. This research paper underpins wider work by RUSI on the financial crime and security threats related to emerging financial technologies in general, and the impact of CBDCs on national and international security in particular.

The primary challenge associated with this research lies in the fact that CBDCs are a new technology; this challenge is compounded by the limited

Warfare: Issues and Challenges', *Computers & Security* (Vol. 49, March 2015), pp. 70–94.

10. Jan Knoerich, 'China's New Digital Currency: Implications for Renminbi Internationalization and the US Dollar', in Nicola Bilotta and Fabrizio Botti (eds), *The (Near) Future of Central Bank Digital Currencies: Risks and Opportunities for the Global Economy and Society* (Bern: Peter Lang, 2021).
11. This was a closed event, conducted to present initial findings to a group of 10 experts and subsequently gather their feedback.

international security scholarship on this innovation. Thus, there is little publicly available data on the intrinsic benefits or disadvantages of CBDCs from a security perspective. Consequently, the information presently available is open to challenge; moreover, the information gleaned from interviews, although based on experience and expertise, is somewhat speculative, due to the fact that CBDCs are an emerging technology. Additionally, it should be acknowledged that the snowball sampling method presents limitations as participants are not chosen randomly, reducing impartiality and potentially increasing error margins and bias.

CORE FINDINGS

The following core findings emerged from the research:

1. China's CBDC undertakings, alongside its first-mover advantage, present potential security concerns.
2. Foreign CBDCs may result in the reduced usage of global exchange currencies, with impacts on the effectiveness of international financial sanctions, economic prosperity and civil liberties.
3. Foreign CBDCs may have detrimental effects on the UK's longstanding position as a global financial centre.

To consider these findings in more detail, this paper will contextualise each in turn, while evaluating concerns and offering grounded policy recommendations, before concluding on how best to proceed.

CHINA AND FIRST-MOVER ADVANTAGE

China began its CBDC exploration in 2014, spurred on by the desire of the Chinese administration to limit the power, influence and market share of non-state payment service providers such as Alipay,[12] and by its awareness of the financial sanctions imposed upon Russia in the aftermath of its annexation of Crimea and invasion of Eastern Ukraine in the same year.[13] China is the largest economy to explore and successfully pilot a CBDC and, inevitably, China's intentions and ambitions regarding its CBDC, the so-called e-CNY, raise security concerns among Western nations. Underpinning the concerns identified by this research – noted only briefly in the literature, but voiced repeatedly during expert interviews – is the potential internationalisation and extended usage of the renminbi (the Chinese national currency) via the deployment of the e-CNY. It should be noted that these concerns are based on an assessment of China's current geopolitical inclination, a position that is open to change. Thus, the following should be viewed as an evaluation rather than a prediction.

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12. Theodore Benzmiller, 'China's Progress Towards a Central Bank Digital Currency', Center for Strategic and International Studies (CSIS), 19 April 2022.
13. Jianguo Xu, 'Developments and Implications of Central Bank Digital Currency: The Case of China e-CNY', *Asian Economic Policy Review* (Vol. 17, No. 2, July 2022), pp. 235–50.

Attempts to internationalise the renminbi for commercial use already exist in multiple forms, be that the creation of alternatives to the SWIFT messaging system, the backbone of the international payments system,[14] or through the use of the renminbi as an alternative settlement currency to the US dollar for commercial business such as trade in commodities including iron ore[15] and potentially petroleum.[16] China's desire for greater power and influence, both regionally and internationally, is not contested, with commentators highlighting concerns such as the impact of the Belt and Road Initiative (BRI), influence via foreign direct investment, and increased armament.[17] These concerns are compounded when assessed against the benefits that an operable Chinese CBDC (i.e., the e-CNY) could grant, with trade and economic influence noted as core concerns. For example, if China continues with its BRI endeavours, making the e-CNY widely available (in contrast to the current status of the renminbi) could allow it to mandate trade via the e-CNY, thus forcing partner states to settle trade and investment debt in renminbi rather than in a currency such as the US dollar or the euro. Such a development might prompt or force those engaged with the BRI scheme to reduce their usage of traditional international exchange currencies, resulting in reduced financial influence of the West, diminishing the potential effectiveness and weight of financial sanctions.[18]

Countering this concern is the argument that China could already mandate such a financial relationship, prompting questions as to why a CBDC per se would encourage such a move. One possible benefit to China might be the degree of governmental oversight, data collection and control provided by the use of the e-CNY. This contrasts with the opacity of the current correspondent banking system, which introduces layers of separation and data isolation into the current international payments system. In addition, commentators posit that the introduction of a CBDC directly controlled by China's central bank, the People's Bank of China, might allow China to manage its capital controls and other financial restrictions more effectively, although this would not remove the concern that potential adoptees are

14. Barry Eichengreen, 'Sanctions, SWIFT, and China's Cross-Border Interbank Payments System', Marshall Papers, CSIS Briefs, 20 May 2022.
15. Su-Lin Tan, 'China's Yuan Gains Foothold in Iron Ore Deals, Could Increase Chinese Self-Reliance, Analysts Say', *South China Morning Post*, 4 September 2020.
16. Summer Said and Stephen Kalin, 'Saudi Arabia Considers Accepting Yuan Instead of Dollars for Chinese Oil Sales', *Wall Street Journal*, 15 March 2022.
17. Eric Heginbotham et al., *The U.S.–China Military Scorecard: Forces, Geography, and the Evolving Balance of Power, 1996–2017* (Santa Monica, CA: RAND Corporation, 2015), <https://www.rand.org/pubs/research_reports/RR392.html>, accessed 15 November 2023; Daniel R Russel and Blake H Berger, 'Weaponizing the Belt and Road Initiative', Asia Society Policy Institute, September 2020, <https://asiasociety.org/sites/default/files/2020-09/Weaponizing%20the%20Belt%20and%20Road%20Initiative_0.pdf>, accessed 15 November 2023.
18. Jonathan Kirshner, 'Dollar Primacy and American Power: What's at Stake?', *Review of International Political Economy* (Vol. 15, No. 3, July 2008), pp. 418–38.

likely to have about such a currency, in contrast to the security offered by freely traded currencies such as the US dollar.[19]

Concerns also extend to the impact that the e-CNY could have on international trade. If China is successful in integrating the e-CNY into its trade settlements, a development aligned with its ambitions,[20] it could request that all nations settle with Chinese-based merchants via the e-CNY. This would exacerbate issues surrounding the reduced usage of traditional international exchange currencies, but would also offer China access to large amounts of valuable trade data,[21] the aggregation of which has been traditionally slow due to retrospective reporting. Such untapped data could provide China with an instant overview of world trade, enabling it to identify core needs, market trends and developing crises. Examples could include insight regarding possible health crises or food shortages, permitting China to influence trade or the movement of goods, or consolidate power. Furthermore, concerns have been raised in respect of China offering an 'off the shelf' currency to less developed nations seeking an alternative to their domestic currency, potentially compounding the trade influence concerns raised above. Historically, countries have chosen the US dollar in such cases, favouring its ubiquity and stability. During the research workshop, a participant highlighted Timor-Leste as one such example, where the common currency is the US dollar.[22] As dollar circulation wanes following economic activity (including currency moving across the border into Indonesia),[23] Timor-Leste is required to procure additional physical currency at great cost. A cheaper, publicly accessible digital currency that could be used internationally would be an attractive alternative,[24] offering China a new potential avenue for drawing countries into its orbit.

Uncertainties have also been raised regarding economic prosperity. In an increasingly globalised and digitised world, underpinned by financial innovations of which CBDCs are a part, citizens may soon have expanded opportunities to choose to use non-native currencies. This has historically been a limited and expensive option due to the high transaction costs incurred by correspondent banking. However, if China is successful in offering a CBDC that is independent of commercial banks and which

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19. This point was repeatedly emphasised during the virtual roundtable event held on 5 July 2023, which sought to synthesise the core concerns emanating from our empirical research.
20. *South China Morning Post*, 'China's New Digital Plan to Help Country's Battered Internet Sector: Analysts', 1 March 2023.
21. Author interview with fintech academic, online, 7 February 2023.
22. World Bank Group, 'Timor-Leste Economic Report: Honoring the Past, Securing the Future', December 2022, <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099093502072333494/P17968902205ad04c0bbc7049b7cd866277>, accessed 15 July 2023.
23. The number of dollars in circulation decreases as they are spent or saved; ultimately, they will naturally leave the country the more they are used. The number of dollars also reduces following damage and loss.
24. Author interview with academic CBDC expert, online, 7 February 2023.

competes with the US dollar in terms of transaction costs and accessibility, merchants and customers may decide to trade with each other in e-CNY. This could result in reduced capital flows for domestic currencies and potentially result in economic activity moving offshore.[25] Moreover, it may result in limited domestic policy autonomy, impacting the ability to borrow in or devalue domestic currencies, with associated macroeconomic challenges. These concerns are exacerbated by the fact that only a facilitatory device and an internet connection would be required to transact in e-CNY. Furthermore, China could attempt to influence current norms and consensus surrounding financial crime and regulation, for example by re-categorising financial offences, limiting access to e-CNY holdings, imposing arbitrary restrictions, or barring certain products or services if deemed illicit.

Further, while this did not feature in the literature, several experts who participated in the research noted the important role of cash in international security, highlighting how the anonymity offered by cash supports clandestine activity, while at the same time offering opportunities for supporting associated preventative efforts via its traceability (for example through the use of marked notes, or tracking serial numbers).[26] However, the introduction of foreign digital currencies such as the e-CNY could hamper this dynamic, resulting in increased oversight and less flexibility, especially if usage is mandated. Thus, a reduction in the use of traditional international exchange currencies, increased e-CNY trade, and economic shifts could result in greater Chinese influence,[27] impact the legitimacy and liberalism of financial controls, and possibly curtail financial freedoms.

Citizens may soon have expanded opportunities to choose to use non-native currencies

Compounding these China-specific concerns, first-mover advantage more broadly is regarded by officials and experts as a core concern, although interviewees emphasised that this is not country-specific and that China's progress should not be considered a 'Sputnik' moment.[28] First-mover advantage fears are currently exacerbated by the perceived leadership that China has gained in the CBDC arena. While this primacy might not impact the principles being set by the collaboration between G7 central banks, it may affect other countries that enter the e-CNY ecosystem, allowing it to

25. Aaron Klein, 'Is China's New Payment System the Future?', Brookings, 16 June 2019.
26. Author interview with UK national security official, online, 21 April 2023.
27. Teoman Ertuğrul Tulun, 'Possible Effects of a Russian–Chinese Joint SWIFT System on the Eurasian Economy and the World Trade System', Analysis No. 2021/30, AVIM Center for Eurasian Studies, 22 December 2021, <https://doi.org/10.31219/osf.io/tj4hs>, accessed 24 March 2023; Robert O'Brien, 'Legalizing China's Economic Coercion Toolkit', *UCLA Pacific Basin Law Journal* (Vol. 39, No. 1, July 2022), pp. 99–121, <https://doi.org/10.5070/P839158050>, accessed 18 November 2022.
28. Author interview with computer science academic, online, 20 January 2023. The inference is that countries should not view CBDCs as a 'must have', in the way that victory in the space race was perceived. Instead, CBDCs should be regarded as a 'nice to have', with benefits being subjective and primarily a product of good design and implementation.

influence and dominate CBDC development, consensus and understanding in this wider community. The opportunity for China to leverage this influence to its advantage compounds international security concerns.

Data and privacy also feature as concerns. As seen with past innovative developments, such as the rise of social media, a surge in adoption can result in considerable data collection opportunities, the consequences of which are predominantly revealed retrospectively. Hence, a CBDC without competition or jurisdictional boundary, or at least a CBDC that makes the first move internationally, may lead to considerable interest and, depending on the provider, ill intent on receipt of associated data.

Lastly, first-mover advantage is seen to offer a greater level of influence when seeking to develop or push alternative financial norms, standards and conventions. Risk areas include re-categorisation or redefinition of certain financial crimes, limiting access to CBDCs to certain regions or groups, and imposing restrictions on CBDC usage.

The concerns outlined above are inherently subjective, and the uses under discussion are potentially available to any state that develops a CBDC – indeed, concerns circulate equally widely about Western CBDCs. Furthermore, China or any other state may decide to use first-mover advantage not for ulterior motives but instead merely to explore CBDCs for the benefit of its domestic financial systems. Nonetheless, the opportunity for misuse exists, and the UK must be prepared for and defend against this risk.

EFFECTIVENESS AND IMPACT ON FINANCIAL SANCTIONS

Western sanctions have proven to be a central tool when seeking to impede the resourcing and funding of Russia's illegal war in Ukraine.[29] This capability is underpinned by continued Western hegemony in the international financial system, both in terms of infrastructure (the dominance of Western financial centres and their correspondent banks that provide the 'plumbing' of the global financial system) and the ubiquity of the US dollar, the prevalence, resilience and status of which remain uncontested. The 'exorbitant privilege'[30] of the US dollar also affords soft power, enabling the 'global West' to push for new sanctions or rally states in response to collective interests while reinforcing the values of the international community.[31] As a result, the stronghold offered by the US dollar presents hurdles for countries seeking to challenge international norms, circumvent sanctions or pursue contentious agendas. As such, the introduction and wide adoption

29. Dursun Peksen, 'When do Imposed Economic Sanctions Work? A Critical Review of the Sanctions Effectiveness Literature', *Defence and Peace Economics* (Vol. 30, No. 6, 2019), pp. 635–47.
30. Wolfgang Münchau, 'America's "Exorbitant Privilege" is Europe's Sin of Omission', *Financial Times*, 26 May 2019.
31. Gita Gopinath and Jeremy C Stein, 'Banking, Trade, and the Making of a Dominant Currency', *Quarterly Journal of Economics* (Vol. 136, No. 2, May 2021), pp. 783–830.

of another currency that offers benefits which challenge the US dollar could impact the status quo, as seen when the dollar itself replaced the British pound in the mid-20th century.

Concerns regarding the potential of the renminbi to challenge the power of the US dollar featured in the review of contemporary literature and during research interviews. However, research also highlighted that concerns related to the use of the renminbi (for example, capital controls and governmental oversight) would impede any challenges against the US dollar. Interviewees noted that the availability of the e-CNY – with appropriate adaptations to address the concerns noted above – could encourage more wide-scale adoption by those interested in developing their partnership with China outside the orbit of the US. As a result, the potency of US-led financial sanctions – a tool currently to the fore in international security policy – could diminish.[32] However, the ability of a foreign currency to challenge the US dollar or other traditional exchange currencies is by no means a universal point of agreement. Counterarguments point to core facets such as trust, stability, economic weight and foreign policy ties as strong elements of dissuasion for users considering deserting to other alternatives.[33]

IMPACT ON THE UK AS A FINANCIAL CENTRE

Given the important link between prosperity and national security, it is also important to consider the potential impact of a foreign CBDC on a country's financial health.

If current trends continue, societies will become increasingly digital, leading to a further gradual reduction in cash usage.[34] As the UK is a major financial centre and an exemplar of strong financial regulation, missing out on a potential financial revolution could have numerous adverse effects.

A primary concern emanating from this research centred on the emergence of new forms of financial instruments and products heralded by the advent of CBDCs. Examples may include CBDC-denominated foreign exchange

32. Tulun, 'Possible Effects of a Russian–Chinese Joint SWIFT System on the Eurasian Economy and the World Trade System'; Eichengreen, 'Sanctions, SWIFT, and China's Cross-Border Interbank Payments System'.
33. Sophia Kuehnlenz, Bianca Orsi and Annina Kaltenbrunner, 'Central Bank Digital Currencies and the International Payment System: The Demise of the US Dollar?', *Research in International Business and Finance* (Vol. 64, Article No. 101834, January 2023); Benjamin J Cohen, 'The Demise of the Dollar?', *Revue de la régulation* (Vol. 18, Autumn 2015).
34. Henry G Roseveare, *The Financial Revolution 1660–1750* (Abingdon: Routledge, 2014), ebook, <https://doi.org/10.4324/9781315839776>, accessed 24 March 2023; Mohammed Mudasir Yussif, Anthony Kofi Osei-Fosu and Emmanuel Buabeng, 'Digitisation, Financial Development and Economic Growth in Emerging Economies', *ADRRI Journal (Multidisciplinary)* (Vol. 28, No. 8, 2019), pp. 59–93.

contracts, bond issuance, or private enterprise seeking to offer new services on the back of CBDCs. This business would likely be predominantly limited to jurisdictions that have established CBDC ecosystems, expertise and track records. Thus, a failure to develop the necessary CBDC profile and capabilities could have negative consequences for the UK as a financial hub, with attendant economic impacts. The development of a CBDC by the UK was therefore seen by some interviewees as a means of mitigating a potential loss of financial influence and reduced economic activity as business migrates to foreign CBDCs, rather than a homegrown CBDC necessarily being something that is needed to improve the existing national payments system. (Examples of cases where ignorance around innovation led to a loss in business include the impact of digital streaming on the music industry[35] – or, indeed, the extent to which deregulation in the 1980s allowed London to steal a march on New York as a global financial centre.)

Furthermore, as the UK is an international standard-setter in financial services, often showcasing prudent financial policy and regulation that is followed around the world, developing a CBDC capability would enable the UK to maintain this status while also supporting innovation. Therefore, for the UK, developing the necessary expertise and technology that would allow for the introduction of a CBDC could be viewed as a defensive endeavour, protecting the UK's existing position in global finance and avoiding the possibility of reduced economic output and waning international financial influence. Sweden provides a useful case study for contextualising this issue: the current Swedish administration is mindful of the EU's digital euro developments, and how they may affect the position and stability of the krona.[36]

POLICY RECOMMENDATIONS

The potential challenges outlined above are not insurmountable. This section therefore proposes recommendations for engaging with and mitigating each challenge in turn.

ADDRESSING THE e-CNY

The e-CNY is viewed by academics, commentators and our research participants as presenting several risks, including economic coercion following an internationalisation agenda, the infringement of established financial norms, and the use of e-CNY trade-related data to advance China's geopolitical and security interests. Consequently, the manner of e-CNY development, exacerbated by the increasingly muscular economic stance of

35. Felix Richter, 'Charted: The Impact of Streaming on the Music Industry', World Economic Forum and Statista, 30 March 2023, <https://www.weforum.org/agenda/2023/03/charted-the-impact-of-streaming-on-the-music-industry/>, accessed 1 October 2023.
36. Author interview with central bank representative, online, 20 January 2023.

China, should be a primary focal point for governments, the private sector and academia. The international security risks related to China's CBDC developments, underpinned by the country's desire for increased power, influence and presence, should be clearly identified, and work undertaken to design mitigating strategies. Core countermeasures should predominantly focus on seeking to identify viable alternatives to Chinese offerings while remaining vigilant and monitoring ongoing e-CNY developments, particularly where they seek to embrace third countries in order to offer an alternative to the traditional Western financial system.

Given the size, scale, position and scope of China's CBDC, and given that attempts to offer similar functionality are assessed as being years away for the UK and its allies, mitigation – rather than direct competition – is likely to feature as the primary method by which to address e-CNY-related concerns.

With this perspective in mind, the UK and its allies should seek to prevent current and future risks emanating from China or elsewhere via policy advocacy, the development and promotion of regulatory safeguards (for example related to data privacy), and consensus preservation. As a global financial centre, the UK should take a leading role in developing related international standards and norms.

As a global financial centre, the UK should take a leading role in developing related international standards and norms

RESPONDING TO FIRST-MOVER ADVANTAGE

First-mover advantage and the ability to set the tone within a growing international CBDC debate have also been identified as core concerns. Beyond the threat posed by China, first-mover advantage was a concern that featured most consistently during both the literature review and interviews with experts and officials. Specifically, concerns related to first-mover advantage include the potential for a foreign CBDC to become widely, or selectively, available in the UK, potentially beyond the control of national authorities. Consequences could include economic activity being offshored (that is, financial activity being conducted in the UK that is outside the control of the Bank of England or the Financial Conduct Authority), the aggregation by a foreign government of large swathes of personal UK data, and the ability of such a government to influence domestic economic activity – all of which has the potential to undermine national security. Limiting the associated risks is important, but presents difficulties. Specifically, attempting to resist the penetration of the UK by a foreign CBDC may require the implementation and maintenance of sweeping restrictions on internet access and currency controls, a step the UK would not want – or would most likely find impossible – to take.

In light of this, this paper's second recommendation is that a more comprehensive understanding and quantification of the potential impact of foreign CBDCs on the UK is required, perhaps led by an adjustment to the mandate of the Bank of England, which does not currently include formal national security objectives. Such an approach would help to articulate the security implications involved and calibrate the required policy or legislative interventions. This analysis should be carried out as soon as possible, as attempts to do so retrospectively once foreign CBDCs are in active circulation may be challenging, with limited ability to belatedly address the emerging national security implications.

ASSESSING THREATS TO GLOBAL RESERVE CURRENCY AND THE INTERNATIONAL PAYMENTS ORDER

As CBDCs come to the fore, their place within international markets has been identified as a core risk area, especially where global reserve currencies are concerned. The primacy of current global currencies such as the US dollar underpins an ability to leverage power and assert action in line with Western values. The impact of a Chinese CBDC on the existing global reserve currency order – notably the hegemony of the US dollar – forms the basis of ancillary concerns, with the associated impacts on the effectiveness of financial sanctions being the primary focus both within the literature and among experts.[37] Concerns extend to enabling factors such as the weaponisation of payment infrastructures and the reduced efficacy of international financial sanctions, as an increased proportion of global financial activity occurs beyond the reach of Western financial systems.[38]

Yet some argue that this risk will not manifest into a serious issue, resulting in only marginal consequences in the immediate term due to the characteristics of the US dollar (trust in its stewardship, its stability, and its convertibility in comparison to possible alternatives), the structure of the existing global payments architecture, and the Chinese political landscape.[39] Some argue that 'while the renminbi has the potential to become a significant reserve currency, it is unlikely to attain safe haven status in the absence of far-reaching reforms to China's institutional and political structures'.[40] Thus, this paper's third policy recommendation centres on mitigatory efforts to limit the desire among states to develop CBDC capabilities in response to Western-led financial sanctions, including greater engagement by the US to assuage concerns over the current ubiquity of the US dollar. Sanctions action taken by Western states against Russia following its annexation of Crimea in 2014 clearly accelerated China's decision to develop a CBDC, alongside its

37. For a summary of the current situation from a Chinese perspective, see Karen Yeung, 'How the US Uses the Dollar Payments System to Impose Sanctions on a Global Scale', *South China Morning Post*, 25 August 2020, <https://www.scmp.com/economy/china-economy/article/3098691/how-us-uses-dollar-payments-system-impose-sanctions-global>, accessed 15 November 2023.
38. Katherine Kirkpatrick et al., 'Virtual Currency in Sanctioned Jurisdictions: Stepping Outside of SWIFT', *Journal of Investment Compliance* (Vol. 20, No. 2, 2019), pp. 39–44; Andreas Nölke, 'The Weaponization of Global Payment Infrastructures: A Strategic Dilemma', SAFE White Paper No. 89, June 2022.
39. Author interview with digital identity and digital money expert, online, 28 April 2023.
40. Eswar Prasad, 'The Renminbi Rises but Will Not Rival the Dollar', Brookings, 12 October 2020.

desire to control the rapid expansion of the services provided by new fintech services such as Alipay. Western states and multilateral organisations should encourage countries that might be attracted by approaches from China to collaborate on financial technology developments that benefit their national economies – including on CBDCs – from a positive perspective, rather than as a means of attempting to insulate themselves against Western economic coercion.

THE SYSTEMATIC COLLECTION OF TRADE DATA

The potential of CBDC integration into world trade, either organically or otherwise, is a concern presented by several observers. The primary issue relates to the idea that this could enable actors to gain greater, near real-time insights into global trade patterns and use them in service of ulterior motives. If primary export nations such as China begin to mandate trade via e-CNY, access and oversight of associated data could be possible. Similar concerns – around what are perhaps more insidious uses – can also be applied to personal transaction data gathered through the use of CBDCs. Therefore, this paper's fourth policy recommendation is that policymakers and key stakeholders should assess the validity of these concerns and, where needed, explore advocacy pathways that encourage the sovereignty and ownership of such data, while emphasising its strategic importance.

THE FUTURE OF THE UK AS A GLOBAL FINANCIAL CENTRE

CBDCs present a plethora of new opportunities, especially where financial products are concerned. However, such opportunities are perceived as being predominantly suited to states that have a CBDC capability.

Thus, the impact of foreign CBDCs on the future of the UK as a financial centre was a theme raised in the research for this paper, with experts and officials noting how the emergence of CBDCs may lead to the evolution of new financial markets that challenge the longstanding position of the UK. As the UK is a global financial centre, missing out on, or being marginalised by, the evolution of new, CBDC-based markets could have serious economic consequences for a core segment of the UK economy.

Thus our final policy recommendation is that relevant parties within the UK government and financial services community develop their understanding of the economic viability and business opportunity of CBDCs, regardless of the UK's plans to introduce a Sterling-denominated CBDC. In addition, relevant parties should ascertain the potential role of CBDCs in future financial markets and, where applicable, encourage and support the design and promotion of markets and products in London that appeal to these new developments.

CONCLUSION

This paper has sought to identify the main international security risks presented to the UK by the introduction and circulation of foreign CBDCs. Research for this paper showed that foreign CBDCs may present several security risks, including: the role of China and how its current ambitions may influence its CBDC prerogative; first-mover advantage and the ability to dominate consensus and debate; possible deleterious effects on existing global reserve currencies; and finally, the possible detrimental effects on the UK's position as a global financial hub following the introduction of novel CBDC products.

In response, the paper has presented recommendations that point to the importance of awareness-raising, policy advocacy, standard-setting and mitigatory action. Thus, for the UK to maintain an adequate protective stance concerning CBDCs, it will need to ensure that domestic CBDC development and research is at a level where the UK is not forced into the position of latecomer, requiring it to act as an interventionist in order to catch up with the progress of others. Taking retroactive steps in an attempt to catch up with states that are more advanced, particularly those emerging as adversarial states, will be difficult. Although challenging, by pursuing the recommendations proposed above, the UK will be able to build resilience against the international security implications of foreign CBDCs. Moreover, taking such a protective stance in collaboration with like-minded and partner nations has the potential to support wider financial system resilience, while safeguarding current financial norms from which the UK benefits – and to which it subscribes.

Implementation of these recommendations will not be without difficulty. Success requires CBDC action across a broad spectrum, including government, the private sector and civil society – focus should not be confined merely to those involved in technical development at the Bank of England. Current interest is limited due to the narrow and parochial focus associated with CBDCs, and the fact that they are a new and emerging development. If the concerns and policy recommendations explored above are not considered, the UK may leave itself and its allies open to considerable international security challenges, from which recovery would be difficult, costly and time-consuming. In sum, while the technical work being undertaken by the Bank of England and others in the UK is important and to be welcomed, a national security lens must also be applied to the development of CBDCs if the UK is to be truly prepared for this next wave of financial innovation.

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