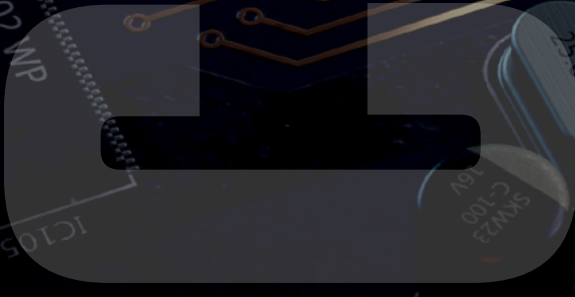
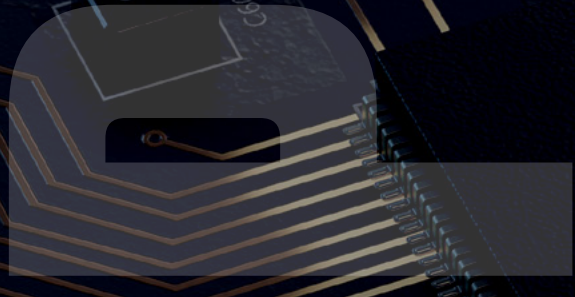


THE CAPCO INSTITUTE
JOURNAL
OF FINANCIAL TRANSFORMATION



CRYPTO

Central bank digital currencies:
Much ado about nothing?

JAY CULLEN

CLOUD

#55 MAY 2022

a wipro company

THE CAPCO INSTITUTE

JOURNAL OF FINANCIAL TRANSFORMATION

RECIPIENT OF THE APEX AWARD FOR PUBLICATION EXCELLENCE

Editor

Shahin Shojai, Global Head, Capco Institute

Advisory Board

Michael Ethelston, Partner, Capco

Michael Pugliese, Partner, Capco

Bodo Schaefer, Partner, Capco

Editorial Board

Franklin Allen, Professor of Finance and Economics and Executive Director of the Brevan Howard Centre, Imperial College London and Professor Emeritus of Finance and Economics, the Wharton School, University of Pennsylvania

Philippe d'Arvisenet, Advisor and former Group Chief Economist, BNP Paribas

Rudi Bogni, former Chief Executive Officer, UBS Private Banking

Bruno Bonati, Former Chairman of the Non-Executive Board, Zuger Kantonalbank, and President, Landis & Gyr Foundation

Dan Breznitz, Munk Chair of Innovation Studies, University of Toronto

Urs Birchler, Professor Emeritus of Banking, University of Zurich

Géry Daeninck, former CEO, Robeco

Jean Dermine, Professor of Banking and Finance, INSEAD

Douglas W. Diamond, Merton H. Miller Distinguished Service Professor of Finance, University of Chicago

Elroy Dimson, Emeritus Professor of Finance, London Business School

Nicholas Economides, Professor of Economics, New York University

Michael Enthoven, Chairman, NL Financial Investments

José Luis Escrivá, President, The Independent Authority for Fiscal Responsibility (AIReF), Spain

George Feiger, Pro-Vice-Chancellor and Executive Dean, Aston Business School

Gregorio de Felice, Head of Research and Chief Economist, Intesa Sanpaolo

Allen Ferrell, Greenfield Professor of Securities Law, Harvard Law School

Peter Gomber, Full Professor, Chair of e-Finance, Goethe University Frankfurt

Wilfried Hauck, Managing Director, Statera Financial Management GmbH

Pierre Hillion, The de Picciotto Professor of Alternative Investments, INSEAD

Andrei A. Kirilenko, Reader in Finance, Cambridge Judge Business School, University of Cambridge

Mitchel Lenson, Former Group Chief Information Officer, Deutsche Bank

David T. Llewellyn, Professor Emeritus of Money and Banking, Loughborough University

Donald A. Marchand, Professor Emeritus of Strategy and Information Management, IMD

Colin Mayer, Peter Moores Professor of Management Studies, Oxford University

Pierpaolo Montana, Group Chief Risk Officer, Mediobanca

John Taysom, Visiting Professor of Computer Science, UCL

D. Sykes Wilford, W. Frank Hipp Distinguished Chair in Business, The Citadel

CONTENTS

CLOUD

08 Cloud's transformation of financial services: How COVID-19 created opportunities for growth across the industry

Peter Kennedy, Partner (UK), Capco

Aniello Bove, Partner (Switzerland), Capco

Vikas Jain, Managing Principal (US), Capco

Chester Matlosz, Managing Principal (US), Capco

Ajaykumar Upadhyay, Managing Principal (US), Capco

Frank Witte, Managing Principal (Germany), Capco

18 Cloud finance: A review and synthesis of cloud computing and cloud security in financial services

Michael B. Imerman, Associate Professor of Finance, Peter F. Drucker and Masatoshi Ito Graduate School of Management, Claremont Graduate University; Visiting Scholar, Federal Reserve Bank of San Francisco

Ryan Patel, Senior Fellow, Peter F. Drucker and Masatoshi Ito Graduate School of Management, Claremont Graduate University

Yoon-Do Kim, Quantitative Analyst, Federal Reserve Bank of Minneapolis; Ph.D. Student in Financial Engineering, Claremont Graduate University

26 Multi-cloud: The why, what, and how of private-public cloud setups and best practice monitoring

Florian Nemling, Senior Consultant (Austria), Capco

Martin Rehker, Managing Principal (Germany), Capco

Alan Benson, Managing Principal (Germany), Capco

CRYPTO

- 32 Digital assets and their use as loan collateral: Headline legal considerations**
Phoebus L. Athanassiou, Senior Lead Legal Counsel, European Central Bank
- 40 Central bank digital currencies and payments: A review of domestic and international implications**
Lilas Demmou, Deputy Head of Division – Structural Policy Analysis Division, Head of Financial Policy, Investment and Growth Workstream, Economics Department, OECD
Quentin Sagot, Junior Advisor, Centre for Tax Policy and Administration, OECD
- 56 Decentralized Finance (DeFi) from the users' perspective**
Udo Milkau, Digital Counsellor
- 68 Central bank digital currencies: Much ado about nothing?**
Jay Cullen, Professor of Financial Regulation and Head of Law, Criminology and Policing, Edge Hill University; Research Professor in Law, University of Oslo
- 76 Bitcoin's impacts on climate and the environment: The cryptocurrency's high value comes at a high cost to the planet**
Renee Cho, Staff Writer, Columbia Climate School, Columbia University
- 82 The evils of cryptocurrencies**
Jack Clark Francis, Professor of Economics and Finance, Bernard Baruch College
Joel Rentzler, Professor of Economics and Finance, Bernard Baruch College
- 94 At last a really socially useful stablecoin: SNUT (the specialized national utility token)**
Stephen Castell, Founder and CEO, Castell Consulting

CYBER

- 102 A semantic framework for analyzing "silent cyber"**
Kelly B. Castriotta, Global Cyber Underwriting Executive, Markel Corporation
- 112 Cyber resilience: 12 key controls to strengthen your security**
Sarah Stephens, Managing Director, International Head of Cyber & FINPRO UK Cyber Practice Leader, Marsh
- 122 Europe's push for digital sovereignty: Threats, E.U. policy solutions, and impact on the financial sector**
Lokke Moerel, Professor of Global ICT Law, Tilburg University
- 136 Construction of massive cyberattack scenarios: Impact of the network structure and protection measures**
Caroline Hillairet, Professor and Director of the Actuarial Science engineering track and Advanced Master, ENSAE and CREST.
Olivier Lopez, Professor of Applied Mathematics (Statistics), Laboratoire de Probabilités, Statistique et Modélisation, Sorbonne Université
- 142 Cyber insurance after the ransomware explosion – how it works, how the market changed, and why it should be compulsory**
Jan Martin Lemnitzer, Department of Digitalization, Copenhagen Business School



DEAR READER,

Welcome to edition 55 of the Capco Institute Journal of Financial Transformation. Our central theme is cloud computing, which has transformed from an efficiency initiative for our clients, to an indispensable growth driver for financial services.

The pandemic has changed consumer expectations, with consumers now demanding 24/7 access to their financial resources from anywhere, as well as hyper-personalized products that reflect their lifestyle choices.

In this edition of the Journal, we explore the power of cloud and its potential applications through the lens of a joint Capco and Wipro global study, and take a deeper look at the financial services data collected in Wipro FullStride Cloud Services' 2021 Global Survey. The survey was focused on perceptions of cloud and its importance to business strategy from over 1,300 C-level executives and key decision-makers across 11 industries.

The study indicates that cloud is becoming ever more intelligent, hyperconnected, and pervasive, and enables companies to offer their end users the personalized, user-centric experience that they have come to expect. It's clear that only the financial services firms that can successfully leverage cloud, will thrive.

In addition, this edition of the Journal examines important topics around digital assets and decentralized finance, including central bank digital currencies, and bitcoin's impact on the environment, and cybersecurity and resilience.

As ever, you can expect the highest calibre of research and practical guidance from our distinguished contributors, and I trust that this will prove useful in informing your own thinking and decision-making.

Thank you to all our contributors and thank you for reading. I look forward to sharing future editions of the Journal with you.

A handwritten signature in black ink, appearing to read 'Lance Levy', with a stylized, flowing script.

Lance Levy, **Capco CEO**

CENTRAL BANK DIGITAL CURRENCIES: MUCH ADO ABOUT NOTHING?

JAY CULLEN | Professor of Financial Regulation and Head of Law, Criminology and Policing, Edge Hill University;
Research Professor in Law, University of Oslo

ABSTRACT

This article examines retail central bank digital currencies (CBDCs), a proposed financial technology that central banks around the world are considering implementing. Proponents of such payment instruments argue that they will produce considerable benefits for adopting countries, principally in the fields of competition in payments markets, financial inclusion, and macroeconomic stability. This article critically evaluates these purported benefits and finds that many of the claims made in their support do not stand up to scrutiny and could, in fact, be realized without the introduction of a central bank retail payment instrument. More significantly, the benefits cited by proponents of such instruments may produce considerable negative externalities in other domains, particularly in relation to financial stability.

1. INTRODUCTION

The emergence of cryptocurrencies and alternative currency systems such as stablecoins holds promise for widening access to finance and addressing certain socio-economic issues. However, these new currencies also present considerable challenges in relation to consumer protection, the dangers of data mismanagement, preservation of privacy, and the mitigation of cybersecurity risks. Cryptocurrencies are, for example, prone to security issues, susceptible to theft, and extremely energy intensive. Such factors have led some jurisdictions to ban them altogether [BBC (2021), Fabrichnaya and Marrow (2022)]. Stablecoins such as Facebook's Diem¹ offer more stability than cryptocurrencies, but if widely adopted they also threaten to concentrate power further in the hands of large multinational corporations. Moreover, the financial stability dangers of privately-created "monies", designed to operate like regulated money but in largely unregulated spaces, are well documented.

Given these trends, a much-heralded recent development has been the mooted introduction of retail central bank digital currencies (CBDCs). This financial instrument would be provisioned to households and businesses alike: individuals

and firms would be granted the option to have an account at the central bank holding fiat digital money that would provide, *inter alia*, convenient real-time payments, cash-like peer-to-peer functionality, and, where appropriate, anonymity between users. By nature, the CBDC would also provide a safe asset for holders, as the digital money held would be subject to zero default risk [Auer and Boehme (2020)].

Many leading central banks are now researching and assessing the feasibility and desirability of introducing such payment instruments, including the European Central Bank [ECB (2020)], the Bank of England [Bank of England (2021)], and the U.S. Federal Reserve [Federal Reserve System (2022)]. The People's Bank of China has already taken the decision to implement a CBDC [People's Bank of China (2021)] whilst the Bank of Japan is piloting CBDC in experimental settings with a view to potential introduction at a later date [Bank of Japan (2020)].

In this article, the claims of CBDC supporters are assessed to determine whether, on balance, the introduction of a retail CBDC would result in a net positive outcome for those jurisdictions with the capacity to do so. It considers whether the purported benefits of such instruments outweigh the

¹ Diem is the latest name of the currency proposed by the Libra Association in its White Paper v2.0.

potential risks attached to their introduction, particularly in the domains of competition in the payments market and financial stability. The article concludes that the answer to whether retail CBDCs would, on balance, be a progressive development in the monetary space, is no. Instead, regulation should be used to improve access to existing payments infrastructure and improve efficiencies in the consumer-finance interface.²

2. THE CONTEMPORARY PAYMENTS SYSTEM

At root, a payments system is the system through which units in an economy – governments, households, and businesses – move money between one another. There are two dominant payment media in modern economies: electronic money (often bank deposits) and physical currency. Electronic payments systems are used in lieu of tendering physical currency in transactions and in most countries continue to comprise by far the largest payment instrument by volume, a trend which was exacerbated by the COVID-19 pandemic. Cash substitutes including debit cards, credit cards, direct debits, and e-commerce payment service providers continue to expand, as demonstrated in the data from the U.K., where use of cash has fallen from over 50 percent of all payments in 2010 to around 17 percent in 2020 [U.K. Finance (2021)].³

Table 1: Total payment volumes in the U.K. 2020 (excluding CHAPS)

	£ MLN	%
Debit card	15,812	44.43
Cash	6,075	17.07
Direct debit	4,507	12.66
Faster payments (including other remote banking)	2,952	8.29
Credit/charge/purchasing card (of which 1,216 was contactless)	2,827	7.94
Bacs direct credit	1,945	5.46
Other	732	2.06
Standing order	557	1.56
Cheque	185	0.52
Total	35,592	100

Source U.K. Finance (2021)

But how are such electronic payments ultimately executed? In most jurisdictions, only a limited number of commercial (“settlement” or “clearing”) banks hold accounts at their national central bank (so-called reserve accounts) and engage in direct participation with the central bank’s payment infrastructure. When payments are made between accounts at these banks, the central bank moves reserves (central bank money) between the reserve accounts corresponding to the amounts paid. The outstanding bilateral “netted” balance is transferred in reserves each day. In turn, other financial institutions, which are not part of the clearing system (so-called indirect participants), hold accounts at commercial banks.

When a payment is made between these financial institutions, instructions are sent to debit or credit the correspondent accounts at the clearing banks, and reserves will be transferred at the central bank level to settle the payment. This means that at present a payment made through a payments service provider that does not have a reserve account at the central bank is still transacted via reserve accounts held at the central bank by the clearing banks.

Access to the central bank’s balance sheet for a narrow set of financial institutions, referred to as a “tiered participation arrangement” (TPA), is therefore a feature of today’s payments market infrastructure in many countries. These TPAs allow many participants to access the central payments system, but they must do so indirectly, building upon the settlement and clearing services provided by those institutions with access to the central bank’s reserve systems. This means that most payment institutions have no access – direct or indirect – to central bank money. Network effects, in combination with economies of scale and regulatory access restrictions, mean that establishing competing networks is economically unviable. Instead, the only option for rival suppliers wishing to compete in the market is to gain access to an existing installed infrastructure base [Cullen (2021)].

In recognition of these obstacles, in some jurisdictions, attempts have been made to expand payments market access. For example, the E.U. has introduced the second Payments Services Directive (PSD2) [E.U. (2015)], which enables retail and business bank customers to use third-party providers (TPPs) to manage their finances and initiate

² The article cannot evaluate all public digital currency initiatives in all jurisdictions. It, therefore, confines its analysis to the purported generalized benefits of CBDC in principle, which may vary in some states. For a discussion of the potential forms of new digital money, see Grey (2019).

³ In fact, cash payments decreased by 35 percent to 6.1 billion between 2019 and 2020.

electronic payments on their behalf, removing the need for banks to actively participate in a payments service. To achieve this, PSD2 requires firms that hold individuals' payment accounts to provide TPPs with access to bank's customer data and payment functionality of users' online payment accounts. Indeed, some countries, including the U.K. and Lithuania, have gone further and access to the central bank balance sheet has been expanded to include non-banks, although this arrangement remains uncommon globally.

3. ENTER CBDACS

The Bank for International Settlements (BIS) notes that central bank digital currencies are "envisioned by most to be a new form of central bank money. That is, a central bank liability, denominated in an existing unit of account, which serve both as a medium of exchange and a store of value" [BIS (2018)]. Although central bank money already exists, most proposed iterations of a central bank digital currency would expand user eligibility to encompass retail consumers. In legal terms central bank digital currencies would, like paper banknotes and coins, be fiat money: a liability of the government. As such, it would provide a digital counterpart to physical cash and should, therefore, share the features of cash, which make it attractive as a payment medium. Such features include trust in the issuing entity, guaranteed real-time finality and settlement, widespread acceptance, ease-of-use, unfettered access to the medium, and legal tender status.

Proponents claim that the benefits – both direct and indirect – of a retail central bank digital currency would be substantial. These benefits are normally grouped into three broad categories:

1. Financial market competitiveness: because central bank digital currency users would be granted direct access to central bank money, existing payments markets would be liberalized and the tiered participation arrangement model would become defunct. Consumers and less-established financial institutions in many jurisdictions remain reliant upon access to the rails of a few large providers of settlement systems. Whilst the provisions of legislation such as PSD2 mandate that payments providers must be granted access to the data held by settlement banks, the network effects of holding consumer bank information mean that banks operate at a competitive advantage in relation to these payment providers. Because banks may offer bundled products alongside payment services, they can cross-subsidize their payments services and infrastructure costs; there are well-established findings that banks and other financial institutions

with direct access to central bank settlement systems enjoy competitive rents from these privileges [Ferreira (2013)].

2. Financial inclusion: a retail central bank digital currency with universal coverage would ensure access for all citizens to a simple method of payment and store of value, particularly in circumstances where alternative payments providers have been unable to offer transaction accounts to target populations. A central bank digital currency might be highly beneficial for low-income households, which tend to rely heavily on cash and whose access to bank accounts may be limited. Introducing retail central bank digital currencies might, therefore, promote financial inclusion amongst economically vulnerable households. A central bank digital currency might also enhance commerce. Small businesses, which are often charged large account and transaction fees, and must contend with additional charges for accepting debit and credit card payments, might benefit from the introduction of a central bank digital currency; research suggests that removal of existing payment transaction fees has the capacity to raise GDP by as much as 3 percent [Barrdear and Kumhof (2016)].

3. Financial stability: in a financial world in which institutions rely upon the production of a constant flow of safe assets to act as repositories for capital and for funding purposes, central bank digital currencies provide a new asset class of secure central bank instruments, no different in credit or liquidity terms than bank reserves. Large institutional cash pools held by money managers cannot be deployed in meaningful volumes into bank deposits thanks to deposit insurance caps that limit their utility as stores of value. This, in turn, reduces the supply of safe assets to the financial system and has contributed to the growth of shadow banking which, at its core, is a system designed to cater to the institutional need for private forms of money. History has demonstrated on numerous occasions that runs on forms of such private money-substitutes present systemic threats to the wider economy [Ricks et al. (2021)]. Central bank digital currencies would also conceivably make monetary policy more effective. On the assumption that central bank digital currencies pay a rate of interest, they could increase the responsiveness of an economy to changes in the policy rate. If any entity in the economy can earn the central bank rate, then there would be no incentive to place their funds on deposit or make loans for lower than the rate they could earn, risk-free, from the central bank. In the event of recession or other form of economic crisis, central bank digital currencies would facilitate provision of fiscal stimulus to citizens, thereby avoiding some of the blockages that undermine rescue and recovery efforts during times of stress.

4. CBDC: MUCH ADO ABOUT NOTHING?

Notwithstanding the putative benefits of central bank digital currencies, it remains unclear whether they would solve any of the supposed market failures they are designed to address or, even if those problems might be addressed, why the private sector cannot do the same at less cost and less disruption. While it is important to note that the claims made in favor of central bank digital currencies enjoy different degrees of salience dependent upon the jurisdiction in question, when weighed against the potential damage they could inflict upon the financial system, it becomes clear that many of the claimed benefits of central bank digital currencies also involve considerable negative externalities.

4.1 Claim 1: CBDCs will break oligopoly in payments markets

In the context of payments systems competition, claims are made frequently that incumbent private payment service providers, such as Visa and Mastercard in the West, and Alipay and Tencent in Asia, enjoy oligopolistic powers.⁴ As such, the introduction of a central bank digital currency would arguably serve to widen access to payments markets infrastructure by permitting access to the central bank balance sheet to non-bank competitors. This would have the potential to significantly disrupt the payments markets through offering routes to circumvent the hold that existing payment providers enjoy over the payments market through their relationships with large commercial banks.

Yet, there are at least two principal objections to this claim. The first is that it is far from clear that introducing a central bank digital currency would improve competition in the payments market. Indeed, central banks' cost efficiencies and potential dominance in such markets – and the fact that they are rule-setters for market participants – might stifle competition and dissuade potential alternative payment infrastructure development. Public funds would necessarily have to be employed to administer such accounts, which is, in and of itself, an allocation decision that ought to be subject to democratic, not technocratic, scrutiny. Even if a retail central bank digital currency system was approved

by legislators, the central bank – indeed any government entity – can provide such services at or below cost, which is a substantial competitive advantage in a market with such volume and scale. Whilst private sector providers might have to increase prices elsewhere to subsidize the costs of maintaining payment systems, a central bank would be under no such pressure. Moreover, as central banks progressively ate into the payments market space, it would likely require private sector entities to increase, rather than decrease, prices in other business lines in order to maintain margins. Given that it is not envisaged that central banks would offer products beyond basic payment services, the knock-on effects of central bank digital currency introduction might actually force some providers out of the market, reducing competition in the process, while simultaneously making financial products in other areas less affordable.

In the case of a central bank digital currency, payment markets – which are often not the preserve of central bank oversight alone – would be drawn into central banks' direct regulatory purview. The central bank would, by implication, be required to act as regulator and competitor in the payments market. This is, by any standard, unusual in markets. Accordingly, even if a potential market failure is identified – which arguably exists in relation to markets for payment media technologies in some jurisdictions – remedying it through the introduction of a government instrumentality might be considered excessive intrusion.

4.2 Claim 2: CBDCs will improve financial inclusion

This is, on the face of it, a compelling claim. In Eastern Europe, for example, large proportions of citizens remain unbanked.⁵ Similar trends exist in the U.S., where in 2021 the Federal Reserve estimated that 5 percent of U.S. citizens were unbanked, with a further 13 percent “underbanked” [Federal Reserve System (2021)]. Where someone lacks access to bank account services, they will often suffer significant financial detriment; for example, they may be charged higher fees for making payments, those payments may take longer to clear, and they are subject to increased risk of fraud or theft because

⁴ There are many different payment markets and technologies used, so direct comparisons are difficult to make. However, card payments and mobile payments are two of the largest payment markets. In the debit and credit card payment market, Visa and Mastercard between them controlled approximately 90 percent of the U.S. market in 2020. Alipay and TenCent controlled approximately 95 percent of the mobile payments market in China in 2020, where mobile payments comprised over 85 percent of all payments made.

⁵ According to recent research by the World Savings Bank Institute, in the European context, more than 37 million adult E.U. citizens (8.6 percent of Europe's adult population) lack access to formal financial services. The numbers in Eastern Europe (including euro area countries) are noteworthy. In Romania, almost 40 percent of the population is unbanked, in Bulgaria it is 37 percent, in Hungary it is 27.7 percent, in Slovakia it is 22.8 percent, and in Lithuania and Poland it is 22.1 percent each. Even countries with relatively advanced financial systems have a large proportion of unbanked adults, including Italy (12.7 percent), Portugal (12.6 percent), and Greece (12.5 percent) [WSBI (2016)].

they usually transact in cash. Such citizens also find it more difficult to access credit. A retail central bank digital currency would potentially reduce the number of citizens locked out of basic financial services, which would not only improve quality of life but would also boost economic performance, as the citizens in turn could divert their resources away from the time-consuming and expensive tasks of meeting basic banking needs.

On the other hand, it is also true that not accessing basic financial services is often a choice for people, rather than an imposition. Although it is correct to note that many citizens in some countries do not hold bank accounts, their motivations for not doing so are plural and – in many cases – entirely unrelated to a lack of access to available services. For example, in the U.S., of the 5 percent of adults without a bank account, the most common reason (29 percent of respondents) provided for why this was the case was because they did not have enough money to open one. Now, this might be because the associated bank account fees are too high, but this is not conclusive. Moreover, if this was indeed the case, as will be explained shortly, there are better solutions to remedying such a problem than by deconstructing the incumbent payments industry.

In the same survey, just over 16 percent of respondents stated that the main reason they did not hold bank accounts was that they did not trust banks. While this may be understandable given recent banking history, it is certainly not out of the question that those people would be equally distrustful of a government-sponsored instrumentality. Other reasons for not accessing regulated financial services included that respondents did not want to compromise their privacy (7.1 percent), which provides another potential stumbling block for the adoption of a government-issued digital currency: after all, is it likely that consumer would be more willing to hold an instrument that might be monitored by government than one issued by a private sector entity? The only motivations to the question of why respondents lacked access to basic financial services that a central bank digital currency might conclusively address were that they had poor credit histories and were, therefore, ineligible (8 percent), or that account fees were too high (7.3 percent).

Even if one agrees that a lack of access to basic financial services amongst certain segments of the population is a problem that must be tackled, it is not clear that the provision of a system of government bank accounts, serviced by a central bank digital currency, is a prerequisite to achieving that objective; indeed, in many cases providing a central bank

digital currency might not improve financial inclusion levels amongst citizens. First, the introduction of digital technology does not always guarantee greater access to services if it is done in a way that does not preserve older, more established technologies. In the U.K. context, several studies have found that increasing digitalization in banking is likely to reduce access to finance for the most vulnerable [House of Lords Liaison Committee (2019)]. Second, although some are excluded from the credit system or are charged more for financial services due to their lack of stable financial histories, a central bank digital currency would likely not help with this. As noted by Barry Eichengreen, the unbanked pay more for services because credit providers treat possession of a bank account as a signal of financial responsibility and reliability, yet a central bank digital currency “available to everyone unconditionally would not signal anything” [House of Lords Liaison Committee (2019)].

For these reasons, it could be argued that a better solution to addressing the problem of affording basic financial services to individuals who are involuntarily unbanked is to require private sector organizations with expertise in delivering such services to provide them directly. Evidence from the U.K. suggests strongly that laws requiring private sector financial firms to offer basic bank accounts – accounts with feature such as direct debit facilities, debit cards, cash machine access, and no fees – can work exceptionally well. In December 2016, the U.K. Treasury reported that 4 million such accounts had been opened in the U.K. since the 1990s [H.M. Treasury (2016)]. In other jurisdictions, such accounts could also be provided by existing government instrumentalities, such as postal service organizations or national savings banks. In short, while there may be an issue of financial inclusion in some jurisdictions, it is not settled as to whether a retail central bank digital currency is the solution.

4.3 Claim 3: CBDCs could be used to improve macroeconomic outcomes

As noted in the opening section, there are many convincing arguments that the introduction of central bank digital currencies would enhance macroeconomic outcomes: in particular, they would improve the stability of the financial system by restricting the universe of “shadow” monies, and they would also make monetary policy more efficacious. Whilst perhaps seemingly distinct, these themes are closely linked.

Taking the financial stability point first; no doubt that there are good arguments for restricting the creation of private monetary instruments, which are often at the root of financial crises. Yet, introducing a retail central bank digital currency

could actually impact financial stability in a most perilous fashion. If retail bank deposits were made exchangeable at par for central bank money, and non-banks and individuals were permitted to hold central bank accounts, a significant proportion of bank deposits may flow into central bank digital currencies. This would lead to the – potentially fatal – loss of low-cost and stable funding for the commercial banking system. Banks could attempt to address any deposit outflows by raising deposit rates or seeking other funding sources, such as wholesale or bond financing, but such funding sources are more expensive and, in the case of wholesale funding, much less stable. Such funding structures would also be penalized by liquidity regulations under the Basel Accords, placing cost pressures on bank balance sheets and forcing them to shrink. This may be a desirable outcome from a public policy perspective, but it is unclear why introducing a central bank digital currency ought to be the gateway to this shift.

These dangers would only be exacerbated during financial crises: there are strong incentives for bank depositors to “run” from bank deposits into central bank digital currencies during periods of banking system stress. As noted earlier, private monetary liabilities, including bank deposits, are subject to credit risk, whereas claims on the central bank are not. At present, during systemic financial distress depositors may shift their deposits to alternative financial institutions, into financial assets such as government securities, or withdraw their deposits in cash. The widespread availability of a safe central bank asset would give them the option to instead move their deposits into central bank money and give rise to the potential of a “digital run” even on the strongest financial institutions, leading to contagion and wider financial system instability. This was witnessed during the great financial crisis (GFC), as governments in many countries were forced to guarantee the entire bank deposit base in order to forestall a widespread run on national banking systems.

These issues are amplified when central bank digital currencies are invoked as a potential monetary policy tool. As stated by many proponents of central bank digital currencies, monetary policy transmission could be optimized using such balances by the central bank paying interest on accounts at approximately the same rate it pays currently on bank reserves. According to Bordo and Leven (2019), for example: “Consumers and businesses would be able to receive essentially the same interest on checkable deposits and other current accounts that commercial banks receive on reserves held at the central banks, that is, the interest rate on reserves (IOR) less a very small margin to cover operating costs.”

“

There are extremely serious consequences for the banking system that might flow from the introduction of central bank digital currencies. ”

The consequence of such a development is likely to be that prompted by the safety that central bank digital currencies provide, depositors will transfer their funds from the banking system (where deposits are normally not remunerated or pay very little interest) to central bank digital currencies, where holders will be guaranteed somewhat close to the interest rate on reserves paid by the central bank. In addition, because the interest rate on reserves exceeds the return on other safe liquid assets, such as Treasury bonds, the likelihood that other near-monies would also come under pressure cannot be discounted. Accordingly, there are tremendous incentives for bank depositors to switch into central bank digital currencies with the likely result that bank liquidity will dry up.

Now, at first brush this may seem reasonable: after all, why should commercial banks profit from interest on their assets at the central bank, which other entities cannot hold, particularly as the spread between deposit rates at banks and the interest rates they charge are often large? To this, one must consider the costs that banks must contend with, above and beyond the costs that maintaining a payment system entails. Private intermediaries must cover their non-interest expenses, in particular the costs associated with maintaining physical infrastructure and IT systems, guarding against fraud, engaging in compliance, and assessing borrower creditworthiness. In addition, banks must absorb bad debts, which, if not accounted for fully though interest rate offsets elsewhere, must be written off against capital.

There are, therefore, extremely serious consequences for the banking system that might flow from the introduction of central bank digital currencies. Although there may be ways to mitigate the risk of deposit outflows into central bank digital currencies – for example, by capping the interest paid on them or, alternatively, to limit the balances that may be held in such accounts – none would be immune from potential political interference because the fundamental inequity between the interest rate on reserves paid to banks and the interest paid to retail central bank digital currencies holders would subsist [Selgin (2021)].

Moreover, assuming that a central bank digital currency would crowd out some private sector intermediaries, who will then provide credit? While banks are not the only credit providers, they remain the principal class of lenders that provide credit to the private (and indeed, public) sectors. Assuming that the introduction of central bank digital currencies impacts the banking system to the extent that many banks fail, it is likely that (i) competition in the banking system is reduced and only those institutions that are large and strong enough survive; and (ii) sources of credit in the economy for retail borrowers are narrowed. Neither of these outcomes would be net positive for the majority of consumers. To the extent that the central bank becomes pressured itself to issue credit to fill the gap left by those that have exited the market, the consequences might be disastrous.

5. A MIDDLE WAY: THE BANK OF ENGLAND

There are design options available to central banks that would diminish the impact that central bank digital currencies would exert on the financial system while allowing citizens more choice and flexibility in their selection of financial services and accelerating financial inclusion. If such designs were adopted, a central bank digital currency, rather than threatening the financial system might be financial stability enhancing.

The most convincing, from the perspective of promoting equity between financial institutions and promoting consumer choice, is for central banks to open their settlement systems to non-bank payment service providers. By doing so, such firms would be able to access the same payment systems as traditional commercial banks. This avoids the obstacles of PSD2 discussed earlier, the provisions of which are predicated on a special category of financial institution opening their payment rails to rival firms. Instead, under a broadened access plan, wholesale access to digital currency is provided to non-bank payment firms outright. In fact, this has been the approach taken by the Bank of England since 2017, when it allowed fintech firms to open settlement accounts with it [Bank of England (2017)]. Under this arrangement, the Bank of England permits non-banks to hold reserve accounts directly, although importantly, not their customers.

This initiative could be operationalized by other means, by allowing financial institutions to hold what is referred to as “synthetic CBDC” (sCBDC) [Adrian and Mancini-Griffoli (2019)]. In this case, the accounts would contain central bank

digital currencies rather than central bank reserves. Private tech firms would then issue their own e-money which would be backed by the synthetic central bank digital currencies. The central bank would thereby merely offer settlement services to e-money providers. While full access to central bank reserves would not be a part of this plan, it would be expected to increase payments market efficiency by carving out a payments infrastructure with access to the central bank’s balance sheet that is not routed through incumbent banks. In this way, competitor institutions would have the ability to tap into the central bank framework and diminish the market power of existing large financial institutions.

In combination, these factors might also improve financial stability by broadening the landscape of institutions able to offer settlement services in central bank money. It would also arguably reduce the potential for a further financial stability risk from crystallizing: the risk that rival unregulated currencies and means of payment might emerge to rival fiat money and undermine regulatory capacities. Planned forms of such alternative currencies anchor themselves to fiat money in order to gain broad acceptance and trustworthiness. By offering a standardized and non-proprietary interoperable payments infrastructure, this might also ensure that large tech firms could not come to dominate payments markets; in effect avoiding the replacement of one set of dominant institutions by another.

6. CONCLUSION

In most jurisdictions, there is very little that a central bank digital currency might achieve that current public and private sector solutions cannot, provided that certain access rules to payments infrastructure are modified. In relation to financial stability and competition in the payments landscape, a retail central bank digital currency has the potential to upend the traditional banking and payments systems. Whether this would be a welcome turn depends upon a number of judgments but most pertinently: whether one believes that retail central bank digital currencies would offer services that properly regulated private sector intermediaries could not; that the introduction of a potential monopoly power in the payments space is desirable; and that the potential destruction of the predominant source of credit in the economy is warranted. If there is insufficient evidence for these propositions, as this article suggests, regulators in most jurisdictions should remain circumspect about retail central bank digital currencies.

REFERENCES

- Adrian, T., and T. Mancini-Griffoli, 2019, "The rise of digital money," IMF FinTech Note no. 19/01
- Auer, R., and R. Boehme, 2020, "The technology of retail central bank digital currency," BIS Quarterly Review, March 1, <https://bit.ly/3rSVGqF>
- Bank of England, 2017, "Bank of England extends direct access to RTGS accounts to non-bank payment service providers," July 19, <https://bit.ly/3sl6FIP>
- Bank of England, 2021, "Statement on central bank digital currency next steps," November 9, <https://bit.ly/3gJPN8R>
- Bank of Japan, 2020, "The Bank of Japan's approach to central bank digital currency," October, <https://bit.ly/3rR4aP2>
- Barrdear, J., and M. Kumhof, 2016, "The macroeconomics of central bank issued digital currencies," Bank of England Staff Working Paper no. 605
- BBC, 2021, "China declares all crypto-currency transactions illegal," September 24, <https://bbc.in/3HM6E6J>
- BIS, 2018, "Central bank digital currencies," Bank for International Settlements, Committee on Payments and Market Infrastructures Markets Committee Paper no. 174, <https://bit.ly/3LDxW1y>
- Bordo, M. D., and A. T. Levin, 2019, "Digital cash: principles and practical steps," NBER working paper no. 25455, <https://bit.ly/3LAIqms>
- Cullen, J., 2021, "'Economically inefficient and legally untenable': constitutional limitations on the introduction of central bank digital currencies in the EU," Journal of Banking Regulation, Special Issue, <https://bit.ly/3rQiQ0g>
- ECB, 2020, "Report on a digital euro," European Central Bank, October, <https://bit.ly/3GQDWAAn>
- E.U., 2015, "European Parliament and Council Directive (EU) 2015/2366 of November 25, 2015, on payment services in the internal market," OJ L 337, <https://bit.ly/351xeud>
- Fabrichnaya, E., and A. Marrow, 2022, "Russia proposes ban on use and mining of cryptocurrencies," Reuters, January 21, <https://reut.rs/3GTnEqp>
- Federal Reserve System, 2021, "Report on the economic well-being of U.S. households in 2020 – May 2021," May, <https://bit.ly/3Lyq29F>
- Federal Reserve System, 2022, "Money and payments: the U.S. dollar in the age of digital transformation," January, <https://bit.ly/3JszPfn>
- Ferreira, C., 2013, "Bank market concentration and bank efficiency in the European Union: a panel Granger causality approach," International Economics and Economic Policy 10:3, 365-391
- Grey, R., 2019, "Banking in a digital fiat currency regime," in Hacker, P., I. Lianos, G. Dimitropoulos, and S. Eich (eds.), Regulating blockchain: techno-social and legal challenges, Oxford University Press
- H.M. Treasury, 2016, "Basic bank accounts: January to June 2016," December, <https://bit.ly/3HVJqLE>
- House of Lords Liaison Committee, 2019, "Tackling financial exclusion: A country that works for everyone? Follow-up report," 10th Report, Session 2019-21, HL Paper 267, <https://bit.ly/3LBFIT5>
- People's Bank of China, 2021, "Working group on E-CNY Research and Development of the People's Bank of China," July, <https://bit.ly/3Ju9bd3>
- Ricks, M., J. Crawford, and L. Menand, 2021, "FedAccounts: digital dollars," 89 George Washington Law Review 113
- Selgin, G., 2021, "Central bank digital currency as a potential source of financial instability," Cato Journal 41, 333-341
- U.K. Finance, 2021, "UK payment markets 2021," June, <https://bit.ly/33rFh30>
- WSBI, 2016, "Close to 40 million EU citizens outside banking mainstream," World Savings Banks Institute, Latest News, April 5, <https://bit.ly/3HUHQ67>

© 2022 The Capital Markets Company (UK) Limited. All rights reserved.

This document was produced for information purposes only and is for the exclusive use of the recipient.

This publication has been prepared for general guidance purposes, and is indicative and subject to change. It does not constitute professional advice. You should not act upon the information contained in this publication without obtaining specific professional advice. No representation or warranty (whether express or implied) is given as to the accuracy or completeness of the information contained in this publication and The Capital Markets Company BVBA and its affiliated companies globally (collectively "Capco") does not, to the extent permissible by law, assume any liability or duty of care for any consequences of the acts or omissions of those relying on information contained in this publication, or for any decision taken based upon it.

ABOUT CAPCO

Capco, a Wipro company, is a global technology and management consultancy specializing in driving digital transformation in the financial services industry. With a growing client portfolio comprising of over 100 global organizations, Capco operates at the intersection of business and technology by combining innovative thinking with unrivalled industry knowledge to deliver end-to-end data-driven solutions and fast-track digital initiatives for banking and payments, capital markets, wealth and asset management, insurance, and the energy sector. Capco's cutting-edge ingenuity is brought to life through its Innovation Labs and award-winning Be Yourself At Work culture and diverse talent.

To learn more, visit www.capco.com or follow us on Twitter, Facebook, YouTube, LinkedIn, Instagram, and Xing.

WORLDWIDE OFFICES

APAC

Bangalore
Bangkok
Gurgaon
Hong Kong
Kuala Lumpur
Mumbai
Pune
Singapore

EUROPE

Berlin
Bratislava
Brussels
Dusseldorf
Edinburgh
Frankfurt
Geneva
London
Munich
Paris
Vienna
Warsaw
Zurich

NORTH AMERICA

Charlotte
Chicago
Dallas
Hartford
Houston
New York
Orlando
Toronto
Tysons Corner
Washington, DC

SOUTH AMERICA

São Paulo



WWW.CAPCO.COM



CAPCO
a wipro company