FOREWORD

STEVEN L. SCHWARCZ, SPECIAL EDITOR &

DOUGLAS W. ARNER AND DIRK ZETZSCHE, ASSOCIATE SPECIAL EDITORS

Over the past fifty years, money and payments have evolved from largely paper-based analogue physical instruments and processes to largely digital in nature. This process has included the development of electronic payment systems such as CHIPS and Fedwire, the evolution of card-based payments such as Visa and MasterCard, cross-border systems such as SWIFT, and implementation of wholesale real time gross settlement systems (RTGS) in over 130 countries since the 1980s. With the advent of mobile and smart phone based payment systems such as mPesa and Alipay over the last 20 years, around the world, cash is being used less and less. This trend was significantly accelerated during the COVID pandemic and by the launch of digital public financial infrastructures such as digital IDs and "fast payment systems" such as Pix in Brazil, bringing billions of people into the formal financial system for the first time via instantaneous electronic payments.

In parallel, over the past fifteen years, a range of new alternatives have emerged, following the Bitcoin Whitepaper in 2008[1] and the launch of the Bitcoin blockchain in 2009[2] These "cryptocurrencies" were designed to address the many issues which have afflicted finance over the past several thousand years, replacing state-based systems with decentralized technological alternatives.[3] Cryptocurrencies have been followed by stablecoins from 2013—linked in value to fiat currencies or other real-world benchmarks.[4] In the aftermath of Facebook's proposal in 2019 to create its own cryptocurrency called Libra, which would have been the first "global stablecoin,"[5] a global regulatory reaction via the Group of Twenty and the Financial Stability Board emerged,[6] along with an explosion in state-based projects called "central bank digital currencies"

This Article is also available online at http://lcp.law.duke.edu/.

1. *See* Wolfgang Karl Härdle, Campbell R. Harvey, & Raphael C.G. Reule, *Understanding Cryptocurrencies*, 18 J. OF FIN. ECONOMETRICS 181 (Feb. 13, 2020) (detailing the rise of cryptocurrencies following publication of a white paper by Satoshi Nakamoto).

2. Andria van der Merwe, *A Taxonomy of Cryptocurrencies and Other Digital Assets*, 41 REV. OF BUS. 30 (2021).

3. SATOSHI NAKAMOTO, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM 1 (2006).

4. Mary E. Burke, *From Tether to Terra: The Current Stablecoin Ecosystem and the Failure of Regulators*, 28 FORDHAM J. CORP. & FIN 99, 103 (2023).

5. Oliver Reed & Stefan Shäfer, *Libra Project: Regulators Act on Global Stablecoins*, 6 INTERECONOMICS 392, 395–96 (2020).

6. *Id.*

(CBDCs), with over 130 countries exploring retail and/or wholesale CBDCs as of 2024.[7]

This special issue—bringing together some of the leading experts working in the area from around the world—seeks to explore these developments from a legal and regulatory context.

I

STEVEN L. SCHWARCZ, *DE-MYSTIFYING DIGITAL CURRENCIES*

This article attempts, as its title indicates, to de-mystify digital currencies.[8] It also sets some definitional groundwork for the remainder of this symposium issue.

Three approaches to digital currency have emerged with varying levels of governmental and private sector support: generic cryptocurrencies, stablecoins, and CBDCs. Generic cryptocurrencies refer to digital currencies that are electronically evidenced using secure cryptography. Many generic cryptocurrencies, such as Bitcoin, are not backed by underlying valuable assets. Their market price therefore tends to fluctuate. Stablecoins are a subset of cryptocurrencies that are backed by assets having intrinsic value. CBDCs may be either a type of central bank sponsored cryptocurrency or a central bank sponsored digital currency issued under account-based models (even using existing electronic funds transfer systems).

Monetary currencies generally have three primary functions: as a medium of exchange, as a store of value, and as a unit of account. The first two are most relevant to digital currencies. Stablecoins and CBDCs can better serve those functions than generic cryptocurrencies.

A significant portion of the currency transfers among businesses and financial institutions already occur digitally, without the need for cash. So, the current emphasis is on developing digital currencies for facilitating *retail* consumer payments, both domestically and across national borders. Retail digital currencies have the potential to improve the speed and efficiency of payments, both domestically and worldwide, and also to broaden financial inclusion to consumers who lack bank accounts because they are poor or remotely located.

This article also discusses how to approach regulatory design, which governments are just beginning to envision. The article shows that retail digital currencies present innovative legal issues as well as the types of legal issues normally associated with money and payment systems—including risk of loss, counterfeiting, privacy, money laundering, and consumer protection—although in novel contexts. For example, privately issued stablecoins, if widely used, could impair central banks' ability to control monetary policy and possibly undermine

7. *Central Bank Digital Currency Tracker*, ATL. COUNCIL (Feb. 2025) https://www.atlanticcouncil.org/cbdctracker/ [https://perma.cc/86BL-RXSF].

8. Steven L. Schwarcz, *De-Mystifying Digital Currencies,* 87 LAW & CONTEMP. PROBS., no. 2, 2025, at 1.

confidence in the value or operational continuity of currencies. This, in turn, could threaten international monetary and financial stability. Digital currencies used for making international payments also would require coordinated and effective cross-border regulation and supervision.

II

YESHA YADAV, JOSE FERNANDEZ DA PONTE, & AMY DAVINE KIM, *THE EVOLVING ROLE OF DIGITAL CURRENCIES IN THE GLOBAL ECONOMY*

Although consumers and businesses are moving away from in-person and toward remote payments, consumers with lower-income or from communities of color continue to use cash frequently because they lack access to affordable banking services and to a full range of payment options. This can be both expensive—fostering reliance on prepaid cards or check cashing services—as well as time-consuming and unsafe—waiting in line to get or pay cash and carrying around sums of money. These problems are amplified within the international payments system, which involve the complex system of international correspondent banking.

This article focuses on whether digital currencies such as stablecoins and CBDCs can enhance U.S. dollar payments, without compromising consumer protection and market integrity.[9] The goal is to explore ideas that can help ensure that the United States remains a leader within the increasingly global financial and monetary system.

This raises a host of questions and considerations for policymakers seeking to design a robust and well-regulated digital payments system. For example, should state or federal governments regulate stablecoins? Although one might immediately say federal, many non-bank payment service firms in the United States are currently regulated at the state level as money transmitters. Similarly, should non-banks as well as banks have the right to issue stablecoins? One might intuitively say banks, but the article points out that banks are risky by design because they engage in fractional reserve banking (being subject to "runs" if depositors or stablecoin claimholders choose to enforce their claims and redeem all at once). The failure of a bank that issues large quantities of stablecoins could have a systemic impact on the stablecoin system. Diversifying stablecoin issuers could reduce that systemic risk.

Other questions concern the quality of the reserve assets needed to support stablecoin redemption. For example, should those assets be limited to cash, U.S. Treasuries, or high quality short term fixed-income assets? And should these reserve assets be protected, for the benefit of stablecoin holders, from claims against the issuers? This is virtually the same intermediary risk question that

9. Yesha Yadav, Jose Fernandez da Ponte, & Amy Davine Kim, *Payments and the Evolution of Stablecoins and Central Bank Digital Currencies in the Global Economy,* 87 LAW & CONTEMP. PROBS., no. 2, 2025, at 31.

concerns securities intermediaries in the indirect holding system for securities.[10]

III

ROSS P. BUCKLEY, *IMPLICATIONS FOR THE DOLLAR OF CENTRAL BANK DIGITAL CURRENCIES*

Professor Buckley's article takes in parts a different view than the previous article.[11] Given Central banks around the world are engaging in trials and pilot programs for CBDCs, both domestic and cross-border, the meaning and significance of a CBDC tends to vary among central banks.

There are also mixed views on whether a CBDC is needed. People in developed countries tend to be somewhat negative, whereas those in developing countries with limited payment systems tend to be more positive. The latter see a CBDC, especially a retail CBDC, as a means to increase financial inclusion. Regardless of the country, many think that a CBDC could at least help to reduce the expense and delays in making cross-border payments.

There are many ways to design a CBDC. For example, should it be for retail use (among consumers and small businesses) or wholesale use (among banks and other large institutions), or both? Should it be token-based (e.g., evidenced by digital tokens) or account-based (e.g., evidenced by book entries)? Should its usage be anonymous, like cash, or traceable, like bank payments? And should it be solely for domestic use or also useable across borders?

There are also privacy issues. A token-based CBDC would have more privacy protection than one which is account-based, wherein the transfers are recorded in the accounts. The article emphasizes that "the first step in any analysis of CBDCs is to be clear about the characteristics of the CBDC being proposed."[12]

Professor Buckley believes that the use of CBDCs "will reduce demand for the US dollar."[13] He questions why the United States does not "guard this exorbitant privilege"[14] of having the preeminent global currency. CBDCs could be designed, for example, to enable the "direct exchange of two nations' currencies . . . [without] going through the US dollar—thereby reducing usage of the dollar in much international trade."[15] That, in turn, could "affect the proportion of foreign exchange reserves other nations need to hold in dollars, which in turn will affect the depth of markets in US Treasuries, *et cetera*."[16] On the other hand, any "attempt to dissuade or prevent other nations from issuing

10. *Cf.* Steven L. Schwarcz, *Intermediary Risk in a Global Economy*, 50 DUKE L. J. 1541 (2001) (examining that risk).

11. Ross P. Buckley, *Implications for the Dollar of Central Bank Digital Currencies*, 87 LAW & CONTEMP. PROBS., no. 2, 2025, at 69.

12. *Id.* at 73.

13. *Id.*

14. *Id.* at 87.

15. *Id.* at 79.

16. *Id.* at 88.

CBDCs . . . will almost certainly fail."[17] He believes that the best way to protect the US dollar is to implement a "wholesale digital United States dollar for offshore use. To the extent there is choice, merchants will opt for the more trustworthy US digital currency if it exists."[18] Otherwise, the "demand for the dollar in international transactions may well fall precipitately."[19]

IV

YULIYA GUSEVA, SANGITA GAZI, & DOUGLAS S. EAKELEY, *ON INNOVATION AND THE COEXISTENCE OF STABLECOINS AND CENTRAL BANK DIGITAL CURRENCIES*

Because banks "do not serve every part of our economy," there are "millions of unbanked and underbanked residents in the United States," raising "social justice and equity concerns and undermining the economic potential and productivity of the most vulnerable parts of the population." [20] The existing payment systems also are inefficient, slow, and costly. This is especially true for making cross-border payments, which rely on correspondent banks and networks.

We therefore need reform. Digital assets have given market participants new ways to transact. To that end, this article considers CBDCs and stablecoins and "the coexistence of private and public money in the new digital world." It also identifies "the pros and cons of the relationship between stablecoins and CBDCs."[21]

The authors' examination "reveals a complex and evolving landscape of technological innovation in the payment and financial sectors."[22] Stablecoins can offer "innovative solutions and contribute to diversification within the financial and payment sectors," but their "regulatory challenges and risk factors necessitate careful oversight."[23] CBDCs can modernize monetary systems and potentially enhance financial inclusion, but they "raise their own sets of challenges and risks."[24]

The most important role of regulators will be to "create reliable regulatory safeguards for this public-private economic partnership."[25] Those safeguards must "simultaneously capitalize on the benefits of private innovation, control its

17. *Id*.
18. *Id*.
19. *Id*.
20. Yuliya Guseva, Sangita Gazi, Douglas S. Eakeley, *On Innovation and the Coexistence of Stablecoins and Central Bank Digital Currencies*, 87 LAW & CONTEMP. PROBS., no. 2, 2025, at 91.
21. *Id.* at 97.
22. *Id.* at 127.
23. *Id*.
24. *Id*.
25. *Id*.

negative externalities, safeguard financial stability, and protect consumers."[26]

V

CARLOS CANTÚ, JON FROST, & THOMAS NOONE, *SOME PERSPECTIVES ON THE REGULATION OF STABLECOINS*

In theory, central bankers (like the authors) "should aim to be boring."[27] Their goals are to achieve stability, predictability, a minimum of scandal, and an absence of crisis. Nonetheless, now is the time to innovate to try to develop faster payment by taking advantage of financial technology (FinTech).

The article focuses on stablecoins. There is broad support for certain "high-level" regulatory goals. For example, regulation should encourage innovation that leads to "cheaper, more efficient, and more reliable financial products and payments."[28] Similarly, regulation should protect consumers and investors against fraud.

Different jurisdictions are at different stages of examining how to regulate stablecoins. Differences of opinion about the relative importance of stablecoins to the economy "may help explain the different paces in which policymakers in different jurisdictions have regulated."[29] In the United States, for example, stablecoin usage "isn't yet a material [systemic] risk to the financial system."[30] Nonetheless, "there is value to experimentation among approaches"[31] to show which policy choices are more efficient. Effective regulation, the authors observe, almost invariably entails some trial and error.

The authors identify possible regulatory choices and considerations. These include asking how comprehensive stablecoin regulation should be, should it cover only issuers or other market participants (such as "wallet" providers), and should it stand alone or be part of a broader regulation of the crypto sector. Other considerations include asking how much discretion should be left to regulatory agencies and what role should industry self-governance play.

The authors emphasize that any stablecoin regulation should be based on evidence of problems that actually require new regulatory solutions. New regulation may not be needed, for example, for controlling money-laundering, terrorist financing, or cyber-crime. The existing regulation, they believe, should be adequate.

Furthermore, even where new regulation may be needed, there is a question of timing. Prospective regulation can be premature, running the risk of being underinclusive or overbroad (thereby imposing unnecessary costs). Those costs

---

26. *Id*.

27. Jon Frost, Carlos Cantú, & Thomas Noone, *Some Perspectives on the Regulation of Stablecoins*, 87 LAW & CONTEMP. PROBS., no. 2, 2025, at 129.

28. *Id.* at 130.

29. *Id.* at 141.

30. *Id*.

31. *Id.* at 130.

can include the expenses of preparing and implementing a supervisory program, developing employee expertise, and updating examination and training manuals as well as databases for receiving, analyzing, and storing information.

Prospective regulation also may have to be more principles- than rules-based, deferring granular decisions about implementation to regulators. That can be controversial, entrusting unelected officials "with choices that could have significant consequences for an industry, its customers, and perhaps the broader economy."[32] Therefore, "a first choice facing policymakers should be whether regulation should wait until it is truly needed—until an untenable or undesirable set of circumstances emerge that show clearly what the goals of regulation should be."[33]

The cross-border usage of global stablecoins also will require coordination among multiple regulators. Inconsistent regulation could "affect where issuers and other crypto firms choose to incorporate or do business."[34] The easiest way to achieve that coordination, they believe, is perhaps "to seek agreement on high-level principles" or to have "a model law approach or an international treaty."[35] Regulators should be cautious, however, to avoid implementing specific stablecoin regulation that could undermine international cooperation, "especially if there is no emergent problem to address." The bottom line, as the authors see it, is to act cautiously.

VI

DIRK ZETZSCHE & JULIA SINNIG, *THE EU APPROACH TO DIGITAL CURRENCIES*

This article discusses the EU's approach to regulating digital currencies under the new Market in Crypto-assets Regulation, known as MiCA.[36] MiCA regulates privately issued digital currencies unless they are fully decentralized, like bitcoin. The regulation divides the currencies between global stablecoins (labeled as asset-related tokens, or ARTs), more traditional stablecoins (labeled as e-money tokens, or EMTs) and other digital currencies than ARTs and ENTs.

MiCA also contemplates licensing and supervising parties that provide certain digital-currency services, like brokerage, transfer, and custody, whether or not those currencies are otherwise decentralized. These rules impose fiduciary duties on the parties providing these services; they also subject those parties to governance, asset segregation, and operational risk requirements. Oddly, though, MiCA does not cover some important digital-currency services such as crypto-lending and crypto-staking. The authors suggest that those services might be

32. *Id.* at 141.

33. *Id*.

34. *Id.* at 143.

35. *Id.* at 143.

36. Dirk Zetzsche & Julia Sinnig, *The EU Approach to Digital Currencies*, 87 LAW & CONTEMP. PROBS., no 2., 2025, at 157.

covered by other provisions of EU financial regulation.

The authors believe that MiCA imposes overly burdensome rules on ARTs, possibly in order to prevent the development of large-scale global stablecoins. For EMTs, however, they believe that MiCA's rules are "light-touch, largely piggybacking on existing EU rules on e-money."[37]

MiCA combines regulatory goals from other types of financial regulation. That combination, though, is untested. Furthermore, given the speed of digital-currency innovation, it faces the risk of soon becoming outdated. The authors would welcome consideration of the "more traditional concepts of EU financial law" to fill MiCA's gaps.[38]

Finally, the authors argue that MiCA illustrates the more general problem of regulating rapid financial innovation. To try to avoid becoming outdated, regulation could start with broad default rules based on traditional financial law goals, while enabling regulators to use their judgment to waive application of those rules as appropriate.

VII

DOUGLAS W. ARNER, TANVI RATNA, SIJUADE ANIMASHAUN, JATIN BEDI, & NAVEEN MISHRA, *CENTRALIZATION IN DECENTRALIZED FINANCE: SYSTEMIC RISK IN THE CRYPTO ECOSYSTEM AND CRYPTO'S FUTURE AS A REGULATED INDUSTRY*

Akin to traditional financial systems, crypto markets have developed into networks of complex interrelationships among infrastructures, intermediaries, and market participants. These interrelationships create the interconnection, interdependencies, and concentration that can foster systemically risky contagion in the financial system. Any regulatory scheme for digital currencies should take account of this systemic riskiness.

The known factors contributing to interdependencies in traditional financial systems have their analog in the crypto-asset ecosystems. Notably, there are connections between "systemically important crypto institutions" and "systemically important crypto market infrastructures." But regulation has not yet required adequate transparency of the institutions and infrastructures, nor has it adequately imposed appropriate risk-management controls.

The authors examine the crypto-related crises to date to try to identify appropriate responses. Based thereon, they suggest "three fundamental adjustments as potential approaches to risk management and crisis mitigation going forward."[39] First, they propose that risk be assessed not only within institutions but also based on direct and indirect interdependencies among

37. *Id*.

38. *Id.* at 183.

39. Douglas W. Arner, Tanvi Ratna, Sijuade Animashaun, Jatin Bedi, & Naveen Mishra, *Centralization in Decentralized Finance: Systemic Risk in the Crypto Ecosystem and Crypto's Future as a Regulated Industry*, 87 LAW & CONTEMP. PROBS., no. 2, 2025, at 185.

institutions and infrastructures. That requires not only better risk-assessment procedures but also better transparency of the interdependencies. Second, they propose that regulators require and supervise the foregoing risk assessment. Third, they support the continuing evolution of decentralized crypto-asset frameworks.

Decentralization refers to the transfer of core governance responsibilities from a central authority (e.g., governments and central banks) to users. In turn, the users jointly perform these functions within technological frameworks to provide trust. Technologies like Blockchain and DLT make it possible for the authentication, processing, and verification of crypto-related financial transactions to be completed by individuals using embedded cryptography.

Traditional finance (TradFi) has been intermediary-based, comprised of networks of interlinked financial intermediaries such as banks. These intermediaries are heavily regulated and supervised. Although crypto-related financial transactions were originally associated with decentralized finance (DeFi), "the majority of crypto financial activities have shifted [like TradFi] to intermediary-based paradigms."[40] This is creating increasing interdependencies in the crypto-asset markets, with increasing potential for systemic contagion. The authors discuss these interdependencies as a "major reason for market failures and recurring crises in the [digital-asset] ecosystem."[41] For example, the "ineffectiveness of internal crypto risk management practices" at some intermediaries spread contagion to other intermediaries, leading to the winter 2022–2023 crypto-meltdowns.[42]

VIII

LOUISE GULLIFER & IGNACIO TIRADO, *PROPRIETARY RIGHTS AND DIGITAL ASSETS: A "MODEST PROPOSAL" FROM A TRANSNATIONAL LAW PERSPECTIVE*

Within states, much of the regulatory focus on digital assets focuses on managing the risks arising from the holding of, and trading in, these assets, and the extent to which law should and could protect market participants and the wider economy. The authors focus on the development, to help manage these risks, by the International Institute for the Unification of Private Law (UNIDROIT) of its Principles on Digital Assets and Private Law ("the Principles").[43] The Principles provide very high level guidance concerning cross-border transactions in digital assets. The goal is, ideally, that the private law governing cross-border transactions in digital assets should follow similar principles, in order to reduce transaction costs and to increase legal certainty.

The Principles are intentionally limited, designed to provide guidance to

40. *Id.* at 186.

41. *Id*.

42. *Id.* at 187.

43. Louise Gullifer & Ignacio Tirado, *Proprietary Rights and Digital Assets: A "Modest Proposal" from a Transnational Law Perspective*, 87 LAW & CONTEMP. PROBS., no. 2, 2025, at 211.

States on only certain aspects of private law, with many issues being left up to existing domestic private law. For example, the Principles leave the relationship between a transferor and a transferee of a digital asset to "other law." Accordingly, that relationship would be governed by the contract between the parties, and any legal questions concerning that contract would be governed by the applicable domestic contract law. Similarly, the Principles' statement that a digital asset can be the subject of proprietary rights "does not dictate what kinds of rights are 'proprietary'".[44] In some jurisdictions, for example, this Principle could mean that a digital asset is capable of being "owned." Whatever a "proprietary right" means in a given state, it should include the concept that the right can be asserted against third parties—in whatever way that state enables rights to be asserted against third parties.

Overall, the Principles take a "modest" approach, providing global harmonization of general principles to create international standards on digital assets. The Principles also limit their scope to commercial and financial transactions. The goal is to enable states to efficiently incorporate that harmonization on digital assets into their private law. The Principles do not cover rules that would be enforceable by public authorities, or consumer protection. A state itself, of course, could add regulation not covered by the Principles, such as digital-asset consumer protection laws.

We are experiencing the digital transformation of money and payments at a very rapid pace across the world. This is evidenced, for example, by the emergence of regulated stablecoins, CBDCs, FPS, and cryptocurrencies; by the increasing discussions around tokenized deposits; and by a series of international prototype development projects coordinated through the Bank for International Settlements to build better cross-border payment systems.

These developments bring with them many important opportunities. But they also raise a range of challenging legal, regulatory and policy issues. We suggest that 2024–2025 marks a very important period: the emergence of legal and regulatory frameworks for new monetary and payments technologies around the world.

44. *Id.* at 215.