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After FTX: Can the Original Bitcoin Use Case Be Saved?

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AFTER FTX: CAN THE ORIGINAL BITCOIN USE CASE BE SAVED?

Mark Edwin Burge*

Abstract

Bitcoin and the other cryptocurrencies spawned by the innovation of blockchain programming have exploded in prominence, both in gains of massive market value and in dramatic market losses, the latter most notably seen in connection with the failure of the FTX cryptocurrency exchange in November 2022. After years of investment and speculation, however, something crucial has faded: the original use case for Bitcoin as a system of payment. Can cryptocurrency-as-a-payment-system be saved, or are day traders and speculators the actual cryptocurrency future? This article suggests that cryptocurrency has been hobbled by a lack of foundational commercial and consumer-protection law similar to the law that enabled the rise of other noncash payment systems, such as credit cards. The original use case of Bitcoin and its progeny as a system of payment is at a legal fork and is, at this moment, eminently savable because of the presence of two uniform acts that are ripe for enactment by the states. First, the 2022 amendments to the Uniform Commercial Code, which add the new Article 12, fill in gaps in commercial law for cryptocurrency that give it transactional certainty on a par with traditional checks and payment cards. Second, the Uniform Regulation of Virtual Currency Businesses Act creates crucial consumer protection for users of third-party digital wallets, transforming a technical convenience into a safer interface for mainstream users. If proponents of cryptocurrency wish to see it thrive as a mainstream payment system, then they would do well to press for enactment of the 2022 UCC Amendments

* Professor of Law, Texas A&M University School of Law. I am especially indebted to my panel colleagues at the 16th International Conference on Contracts—Bill Henning, Matt Crockett, and Andrea Tosato—for the opportunity to explore with them the impact of the 2022 amendments to the Uniform Commercial Code in discussions that greatly enriched the final form of this article. Special thanks go to Bobby Ahdieh, Huyen Pham, and the Texas A&M School of Law administration generally for generous support of scholarship. All errors are—per usage of trade—solely the responsibility of the author.

and the URVCBA. Otherwise, the future of decentralized cryptocurrency is likely to be dominated by a potentially endless series of speculative bubbles rather than as acceptance as a payment system.

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I. INTRODUCTION

A funny thing happened on the way to explosive interest in blockchain assets: they became predominantly investments rather than substitute currency. The extent of this phenomenon became fully apparent in November 2022 in the dramatic collapse of the FTX cryptocurrency exchange, an event that itself followed a \$2 trillion crash of the cryptocurrency market in May of the same year.¹ The ongoing ripple effects of these events include the March 2023 collapse of crypto-heavy Silvergate Bank.²

Apart from its negative newsworthiness, blockchain-based cryptocurrency has been doing many things since its inception, such as forming a basis for corporate governance,³ for so-called smart contracts,⁴ and even for recording transfers of real property.⁵ But more than anything else, cryptocurrency's main place to thrive in actual use and in public consciousness has been as a speculative investment, and an especially volatile one at that.⁶ What cryptocurrency has decidedly *not* done on a

1. See generally Kalley Huang, *Why Did FTX Collapse? Here's What to Know*, N.Y. TIMES (Nov. 18, 2022), <https://www.nytimes.com/2022/11/10/technology/ftx-binance-crypto-explained.html>.

2. Bradley Keoun & Helene Braun, *How Silvergate's Crypto Collapse Differed from Silicon Valley Bank's: No Bailout*, COINDESK (Mar. 15, 2023, 1:27 PM), <https://www.coindesk.com/tech/2023/03/10/how-silvergates-crypto-collapse-differed-from-silicon-valley-banks-no-us-government-bailout/> [<https://perma.cc/L7M8-BACR>] (“A glance at Silvergate Bank’s filings with bank regulators shows just how devastating the fourth quarter was, as crypto clients scrambled to redeem deposits in the wake of the collapse of Sam Bankman-Fried’s FTX exchange.”).

3. See Alexandra Andhov, *Corporations on Blockchain: Opportunities & Challenges*, 53 CORNELL INT’L L.J. 1, 29 (2020) (“The use of blockchain as a corporate governance tool—for information-sharing, shareholder voting, or shareholder incentivizing—is further supported by the fact that blockchain technology includes transparent and tamper-resistant registries.”).

4. See Kevin Werbach & Nicolas Cornell, *Contracts Ex Machina*, 67 DUKE L.J. 313, 330–31 (2017) (“Bitcoin’s success in decentralizing trusted financial transactions gives hope to those who advocate similar decentralization of trusted contractual agreements. Smart contracts may actually be a bigger idea than Bitcoin as a currency. They take the static ledger and turn it into a dynamic system capable of executing the business logic of a contractual agreement.”).

5. Mercedes Tunstall, Andrew Caplan, Nathalie Prescott & Brittney Sandler, *Real Property Transfers Ripe for Blockchain Disruption: Laws in the U.S. Must Follow the Technology*, 31 INT’L L. PRACTICUM 16, 18 (2018) (“Despite potential legal impediments, blockchain’s potential in the real property recordation space (and for recordkeeping, generally) is more than conceptual.”).

6. See Craig Calcaterra, Wulf A. Kaal & Vadhindran Rao, *Stable Cryptocurrencies*, 61 WASH. U. J.L. & POL’Y 193, 216 (2020) (“Speculators know better than investors what generates supply and demand in cryptocurrency markets. The very high illiquidity of the cryptocurrency market in combination with the herd mentality of crypto-investors benefits speculators because it allows scarcity to appear out of nowhere including for investors who are about to make an investment decision.”); see

large scale is thrive in the mainstream in its original intended use—as a decentralized alternative payment system. Indeed, in coverage of the October 2023 fraud trial of Sam Bankman-Fried, the FTX founder has been characterized as “a stand-in for the cryptocurrency industry, the nefarious face of a business in dire need of regulation. He designed FTX as an exchange that would entice everyday Americans to take risks trading in digital assets[.]”⁷ Can cryptocurrency ever return to a focus on payments, or is it doomed to exist principally as a treacherous plaything for investors? This article identifies specific legal and systemic pitfalls that keep cryptocurrency from succeeding as a mainstream payment system and argues that mainstream acceptance cannot and will not occur without certain, identifiable legal reforms. Because these reforms are well thought out and ripe for enactment, however, cryptocurrency is now approaching a metaphorical “hard fork”⁸ as to whether it can break through to acceptance as a mainstream payment system.

As the original cryptocurrency, Bitcoin has received more than its share of exposure, including as a harbinger of the possibilities of blockchain. Commentators praising the innovation have called it revolutionary⁹ and game changing,¹⁰ with potential for reaching the

also Rachel Silverstein, *The Future of Cryptocurrency and Real Estate Transactions*, 38 TOURO L. REV. 871, 891 (2022) (“‘Volatile’ is a word incessantly used when describing cryptocurrencies.”).

7. Christine Adams, *The FTX Trial Is a Bad Look for the Barely Regulated Cryptocurrency Industry*, MSNBC (Oct. 8, 2023, 12:54 PM), <https://www.msnbc.com/opinion/msnbc-opinion/new-york-trial-crypto-king-sbf-ftx-rcna119257>.

8. In blockchain parlance, a “fork in a cryptocurrency happens when a majority of the users of a blockchain cannot come to an agreement on an update” and certain users adopt the update while others remain committed to the existing format. *Hard Forks*, CORP. FIN. INST. (Jan. 26, 2023), <https://corporatefinanceinstitute.com/resources/cryptocurrency/hard-fork/#:~:text=A%20hard%20fork%20is%20a,or%20upgrades%20to%20the%20blockchain> [<https://perma.cc/D48S-SX8C>]. Although both sides can continue to coexist, one may eventually die out or otherwise fall out of usage. But, like the metaphorical fork in the road, a hard fork is a place of choice between two alternative paths.

9. See, e.g., Marc Andreessen, *Why Bitcoin Matters*, N.Y. TIMES: DEALBOOK (Jan. 21, 2014, 11:54 AM), <http://dealbook.nytimes.com/2014/01/21/why-bitcoin-matters/> [<https://perma.cc/2ELF-KKAN>]; see also Michael J. Casey & Paul Vigna, *Bitcoin and the Digital-Currency Revolution*, WALL ST. J. (Jan. 23, 2015, 12:44 PM), <https://www.wsj.com/articles/the-revolutionary-power-of-digital-currency-1422035061> [<https://perma.cc/ZZX7-J52G>] (recounting former U.S. Treasury Secretary Lawrence Summers’s observation that the financial system is “ripe for disruption”).

10. E.g., Rich Daly, *Blockchain: Wall Street’s Most Game-Changing Technology Advance Since the Internet*, FORBES (July 11, 2016, 6:00 AM), <https://www.forbes.com/sites/richdaly/2016/07/11/blockchain-wall-streets-most-game-changing-technology-advance-since-the-internet/?sh=30f1d70c4d87> [<https://perma.cc/86ZQ-Y3U7>].

unbanked,¹¹ eliminating costly intermediaries,¹² and freeing monetary-system operations from government control.¹³ On the flipside, critics and those with more cautionary reactions to Bitcoin and its cryptocurrency siblings warn of potential for fraud against users,¹⁴ facilitation of criminal activity,¹⁵ and harmful volatility.¹⁶

Regardless of one's opinion of the relative efficacy or desirability of widespread cryptocurrency adoption, any observer would be hard-pressed to dispute that the technology is largely a curiosity to the broader public of payment consumers. More than one intrepid soul has sought to live (financially) on nothing but Bitcoin.¹⁷ While no one perished from the experience, the required effort fell somewhere far short of convenient. Although some notable vendors have agreed to accept Bitcoin or other

11. John O. McGinnis & Kyle Roche, *Bitcoin: Order Without Law in the Digital Age*, 94 IND. L.J. 1497, 1502 (2019) ("Bitcoin provides an alternative for citizens in monetarily oppressive regimes and for the many poor people, especially in the less developed world, who are unbanked.").

12. Justin S. Wales & Richard J. Ovelmen, *Bitcoin Is Speech: Notes Toward Developing the Conceptual Contours of Its Protection Under the First Amendment*, 74 U. MIA. L. REV. 204, 206 (2019) (describing Bitcoin as "the first global network that lets participants engage in electronic relationships without centralized intermediaries to authenticate the integrity of the communication") (emphasis omitted).

13. See Halil Rahman Basaran, *Businesspersons, Governments, and International Law*, 79 LA. L. REV. 749, 769 (2019) ("Bitcoin challenges governments' control of the legal currency market because it proves to governments and the international community that private initiatives and private consent may be sufficient to transact exchanges. The existence and the value of Bitcoin depends merely on the participation and the consent of businesspersons.").

14. See Isaac Pflaum & Emmeline Hateley, *A Bit of a Problem: National and Extraterritorial Regulation of Virtual Currency in the Age of Financial Disintermediation*, 45 GEO. J. INT'L L. 1169, 1194 (2014) ("[W]hile both senders and receivers of Bitcoin payments may see Bitcoin as an economically efficient alternative to more traditional methods, such as wire transfers, such users must bear risks posed by disintermediation, such as fraud, as well.").

15. See Kevin V. Tu, *Perfecting Bitcoin*, 52 GA. L. REV. 505, 522 (2018) ("[C]riminals have requested ransom payments in Bitcoin, and defendants charged with identity theft have admitted to using Bitcoin to purchase stolen credit card numbers and fraudulent driver's licenses on the Internet. As a result, some view Bitcoin as inextricably tied to illicit activity and useful only for criminals.").

16. See Mary E. Maginnis, Comment, *Money for Nothing: The Treatment of Bitcoin in Section 550 Recovery Actions*, 20 U. PA. J. BUS. L. 485, 487 (2018) ("The high volatility of Bitcoin's market price and the inability to track down hackers and recover lost Bitcoins, moreover, put individuals who have invested in Bitcoin at a higher risk of losing value.").

17. See, e.g., MacKenzie Sigalos, *How This Family Survived 40 Countries Living Solely Off Bitcoin for Four Years*, CNBC (Dec. 6, 2020, 9:47 PM), <https://www.cnbc.com/2020/12/05/bitcoin-price-buying-bitcoin-how-this-family-buys-sells-everything-in-cryptocurrency.html> [https://perma.cc/N49T-M44Q]; see also Laura Shin, *This Man Has Been Living On Bitcoin for 3 Years*, FORBES (Jan. 7, 2016, 8:00 AM), <https://www.forbes.com/sites/laurashin/2016/01/07/this-man-has-been-living-on-bitcoin-for-3-years/?sh=52818e9a2697> [https://perma.cc/SZ9N-2LF8].

cryptocurrency for sales transactions,¹⁸ such acceptance seems mostly a form of virtue signaling to the technology-and-crypto enthusiasts. The payment product itself has had little more than niche acceptance amongst the broader public. This article evaluates pending legal reforms that could facilitate a change.

Following this introduction, Part II of this article addresses the current status of cryptocurrency in its original use case, that of a payment system, and demonstrates that despite its increasing ubiquity, cryptocurrency has fallen far short of its original hype.¹⁹ Part III evaluates a much older success story in the payments realm—card networks—to determine which of its features both were salient to the system’s success and are arguably capable of replication in the realm of cryptocurrency.²⁰ Part IV then analyzes pending legal innovations that could reproduce for cryptocurrency many of the key conditions that facilitated the breakthrough successes of the card-network system, particularly focusing on the new Article 12 of the Uniform Commercial Code and the Uniform Regulation of Virtual Currencies Act.²¹ With these statutes in mind, Part V concludes by considering the disjunction between the libertarian-infused original vision for Bitcoin and the reality of the need for certain regulatory guardrails.²²

Bitcoin and its decentralized cryptocurrency cousins are at a fork in the road, but the fork is legal rather than digital. While blockchain technology likely has a future as a records custodian, as a token of tangible assets, or even as investment securities, it likely cannot succeed as a mainstream payment system absent the establishment of legal frameworks that facilitate passive consumer convenience and legitimate payment certainty.

II. CRYPTOCURRENCY’S PATH AS A PAYMENT SYSTEM

The original use case for Bitcoin was as a system of payment, one that would avoid the necessity of established financial institutions and

18. *See infra* notes 52–54 and accompanying text.

19. *See infra* Part II.

20. *See infra* Part III.

21. *See infra* Part IV.

22. *See infra* Part V.

government control of the monetary supply.²³ One could fairly say that, at its inception in 2008, Bitcoin embodied hopes consistent with a libertarian paradise—a stateless monetary system controlled by the users rather than by central-banking authorities. By many standards, to be sure, Bitcoin and select other cryptocurrencies have been a rousing success. After the market volatility was dramatically on display in the first half of 2022,²⁴ Bitcoin retained market value in excess of \$20,000 per BTC as of August 2022.²⁵ In the months following the FTX collapse, Bitcoin’s market value actually rose to above \$24,000 per BTC in March 2023.²⁶ Either of those measures would have seemed like a pipe dream in 2008.²⁷

But after two decades on the (digital) streets, cryptocurrency has not achieved acceptance as a mainstream payment system. It is instead predominantly a niche speculative investment, albeit one operating at a large scale. By the standard of its original intended use, it is hard to characterize Bitcoin as anything other than an underachiever at best and a failure at worst. Recent dramatic attempts in some jurisdictions to give cryptocurrency official status—most prominently in El Salvador—have not significantly moved the needle on this front,²⁸ and much of the outside world’s concern is more with systemic volatility than with the practicalities of payment.²⁹ Present and pending studies by larger

23. Tara Mandjee, *Bitcoin, Its Legal Classification and Its Regulatory Framework*, 15 J. BUS. & SEC. L. 157, 214 (2015) (“Bitcoin was created with the intention of offering an alternative to traditional payments by depriving it from governmental supervision, which is often a flaw. For instance, Bitcoin is not subject to inflation and correlated deflationary measures because it is not tied to the politics of a central bank.”).

24. After hitting a high point of \$68,789 for one BTC on November 10, 2021, Bitcoin’s value went into a sustained decline, falling to \$29,089.30 for one BTC on June 10, 2022. An investor over that seven-month period would have lost roughly 50% of her investment. See James Royal, *Bitcoin’s Price History: 2009 to 2023*, BANKRATE (June 14, 2023), <https://www.bankrate.com/investing/bitcoin-price-history/> [<https://perma.cc/UDZ2-D57L>].

25. See generally INVESTING.COM, <https://www.investing.com/crypto/bitcoin/historical-data> [<https://perma.cc/RL54-NBZ2>] (recording pricing data, including during August 2022 and March 2023) (last visited Sept. 22, 2023).

26. *Id.*

27. Although Bitcoin pricing was not widely reported in its first years, its value reasonably was zero before a market existed. During all of 2010, Bitcoin never surpassed a market value of \$0.40 per BTC. Royal, *supra* note 24.

28. MacKenzie Sigalos & Arjun Kharpal, *El Salvador’s Bitcoin Experiment: \$60 Million Lost, \$375 Million Spent, Little to Show So Far*, CNBC (Oct. 13, 2022, 8:18 AM), <https://www.cnbc.com/2022/10/13/el-salvadors-bitcoin-holdings-down-60percent-to-60-million-one-year-later.html> [<https://perma.cc/X3XM-FF7J>].

29. See, e.g., Brendan O’Boyle, *IMF Says El Salvador’s Bitcoin Risks Have Not Materialized*

institutions and jurisdictions speak highly of the potential for blockchain payments, but they do so as centralized or government-issued money, effectively making cryptocurrency an adjunct of traditional fiat currency.

This article posits that cryptocurrency—at least in its original and decentralized state—is currently best understood as an underachieving payment system. It may yet reach its potential but is by no means guaranteed to do so. This part of the article articulates how this state of affairs came to be.

A. From Users to Investors

The original intended use of Bitcoin (and blockchain more generally) was as a means to make electronic payments outside of the banking system, and not as an investment. The earliest promotional and analytical literature on this earliest blockchain application assumed the purpose of payment.

The original whitepaper by Bitcoin’s inventor, the pseudonymous “Satoshi Nakamoto,” explicitly characterized Bitcoin as an “electronic cash system” for the purpose of making payments.³⁰ The principal innovation of Bitcoin was that—although electronic and not policed by an authoritative intermediary—blockchain files are not susceptible to counterfeiting due to their verification on a dispersed and decentralized computer network that verifies transactions through a “proof-of-work” protocol.³¹ Nakamoto critiqued the public’s reliance on third parties such

but ‘Should Be Addressed’, REUTERS (Feb. 10, 2023, 6:28 PM), <https://www.reuters.com/business/finance/imf-says-el-salvadors-bitcoin-risks-have-not-materialized-should-be-addressed-2023-02-11/>.

30. Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, BITCOIN, <https://bitcoin.org/bitcoin.pdf> [<https://perma.cc/6JRH-5R3D>] (last visited Sept. 22, 2023).

31. A technological description of the proof-of-work protocol is well beyond the scope of this article, but Carol Goforth has written a useful summary of the path of a Bitcoin transaction that is worth repeating here:

A transaction is reported to the network. At that point every network node (in other words, every computer with access to the network) examines the ledger (the digital record of prior transactions) to ensure the transaction is legitimate. Stated differently, the computers each must agree that the ledger shows that the transferor has the Bitcoins that are proposed to be transferred. Once the transaction is accepted as legitimate, it becomes part of the aggregated transactions that form a potential block in the chain. However, in order to actually be added to the chain, the nodes must solve the mathematical puzzle or problem known as the “Proof-of-Work.” Nodes that attempt to solve the puzzle are said to be miners, and a miner that successfully

as banks and issuers of credit cards to process electronic payments and the problems these third parties can cause, such as increased transaction costs.³² Proponents of cryptocurrency as a payment system have followed this lead, observing the potential benefits for the large “unbanked” population who do not have ready access to financial services.³³ Moreover, academic writing from a decade ago predominantly described cryptocurrency (or alternatively, “virtual currency”) as a payment system, albeit a nascent one.³⁴

Of course, being cash-like is not a guarantee that an asset cannot be used as an investment. Currency traders do precisely that with traditional government-issued fiat money. Currency trading is, however, a sideshow and not the main intended purpose when a government issues money. And such was thought to be the case with Bitcoin. The classic description of a cryptocurrency set out by Bitcoin’s pseudonymous creator is that it is “an electronic *payment system* based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party.”³⁵ Thus, the key feature was not that Bitcoin could be held as an asset, but rather that they could be spent without resort to the institutional banking system. “Indeed, frustration with government control of and perceived manipulation of existing fiat currency values was one of the drivers for the creation of Bitcoin.”³⁶

solves the puzzle sends the solution to the network for verification. Upon verification, that block becomes part of the chain, and the miner is rewarded for the “work” in solving the puzzle.

Carol R. Goforth, *How Blockchain Could Increase the Need for and Availability of Contractual Ordering for Companies and Their Investors*, 94 N.D. L. REV. 1, 7 (2019).

32. Nakamoto, *supra* note 30; *see also* Michael L. D’Ambrosio, *Virtual Currency Regulation: From the Shadows of the Internet to the Floor of Congress*, 19 WAKE FOREST J. BUS. & INTELL. PROP. L. 249, 252 (2019).

33. *See* Calcaterra, *supra* note 6, at 214–15 (“The disproportionate effects of cash economies on the poor and the unbanked can be remedied with stable cryptocurrencies. Access to cryptocurrency transactions is possible without a banking relationship. With equality of payment system access, the poor and unbanked would no longer be disadvantaged through the use of cash.”); *see also* Pflaum, *supra* note 14, at 1187 (“For the unbanked in the United States and across the globe, virtual currencies such as Bitcoin offer several advantages over commonly available non-bank financial services, including reduced transaction costs from removal of intermediary third parties.”).

34. *See, e.g.*, Omri Marian, *Are Cryptocurrencies Super Tax Havens?*, 112 MICH. L. REV. FIRST IMPRESSIONS 38, 38 (2013) (“Virtual currencies are online payment systems that may function as real currencies but are not issued or backed by central governments.”).

35. Nakamoto, *supra* note 30 (emphasis added).

36. Sarah Jane Hughes & Stephen T. Middlebrook, *Advancing a Framework for Regulating Cryptocurrency Payments Intermediaries*, 32 YALE J. ON REG. 495, 504 (2015); *see also id.* at 504

Increasingly, however, cryptocurrency is viewed primarily as a vehicle for speculative investment³⁷: an asset one would hold or trade in hopes of turning a profit or hedging a loss,³⁸ as opposed to saving or spending as one would with money in a bank account. Indeed, much of the language now employed in the discussion of cryptocurrencies is that of investment and not of payment.³⁹ The buzz over cryptocurrency as a payment system continues in specialty circles, such as attorneys who evaluate the ethics of accepting cryptocurrency for payment of legal fees.⁴⁰ Some vendors take cryptocurrency as a means of payment not because of broad-based demand, but more as a means of signaling solidarity with certain tech-savvy or libertarian segments of their customer base.

Despite the trend towards cryptocurrency as an investment, some of that enthusiasm has begun to wane. According to a Bank of America report issued near the end of June 2022, “[a]lmost 70% of the U.S.

n.33 (“The economic theory underlying cryptocurrency stems from the Austrian school of economics and its critique of central bank intervention in support of government issued fiat currency.”).

37. Edmund Mokhtarian & Alexander Lindgren, *Rise of the Crypto Hedge Fund: Operational Issues and Best Practices for an Emergent Investment Industry*, 23 STAN. J.L. BUS. & FIN. 112, 112 (2018) (“In the last several years, a discreet \$800+ billion financial system has emerged in the form of cryptocurrency markets. The extraordinary returns generated by cryptocurrencies such as Bitcoin have led to a frenzy of investment activity and interest from traditional investors. This interest has, in turn, spawned dozens of cryptocurrency-focused hedge funds to service this growing demand.”); Elizabeth Davidson, Note, *A Middle-Ground for Cryptocurrency Regulation: Using Delaware’s Incentive-Driven Private-Ordering Model*, 44 J. CORP. L. 789, 808–09 (2019) (“While technically there is some level of speculation with every kind of investment, buyers of cryptocurrencies are typically speculators.”).

38. See Adam Chodorow, *Bitcoin and the Definition of Foreign Currency*, 19 FLA. TAX REV. 365, 376 (2016) (recounting that one IRS justification for classifying cryptocurrency as property was that “Bitcoin was held more for investment than used as a currency”); see also Drew C. Schaefer, Note, *Applying the SEC Custody Rule to Cryptocurrency Hedge Fund Managers*, 107 CAL. L. REV. 1381, 1389 (2019) (evaluating “for the purposes of hedge funds and the custody rule” how blockchain technology “is used to manage and ‘hold’ cryptocurrency”).

39. See, e.g., Rebecca M. Bratspies, *Cryptocurrency and the Myth of the Trustless Transaction*, 25 MICH. TECH. L. REV. 1, 18 (2018) (recounting a routine Forbes editor’s note in its cryptocurrency articles stating that “[i]nvesting in cryptocoins or tokens is highly speculative and the market is largely unregulated. Anyone considering it should be prepared to lose their entire investment” alongside proclamations by “cryptocurrency’s most avid promoters” who foresee a “new bull market that will see cryptocurrencies cross \$1 trillion in valuation”).

40. See, e.g., Lisa Miller, *Getting Paid In Bitcoin: Attorneys Accepting Cryptocurrency as Payment Should Be Sensitive to the Fact That the Regulatory Landscape Is Likely to Change in the Near Future*, 41 L.A. LAW. 18, 18 (2018) (“Counsel likely may accept payments in the form of cryptocurrency so long as counsel adjusts the law firm’s trust accounting procedures to comply with the requirements of the State Bar of California and also track, protect, and manage digital asset deposits and payments.”).

population hasn't invested in crypto or isn't interested in investing in cryptocurrencies . . . [and] it appears that many consumers haven't participated in crypto markets and if anything their 'inclination toward doing so has waned' in recent months."⁴¹ Moreover, the bank found "that relatively few people view crypto assets as a 'reliable long-term investment.'"⁴² Regulators have—unsurprisingly—also been less than enthused about cryptocurrency as an investment vehicle. On May 18, 2022, well before the FTX fallout, Securities and Exchange Commission Chairman Gary Gensler stated public concerns that more investors would be harmed in cryptocurrency markets. "I think a lot of these tokens will fail," Gensler told a House Appropriations Committee panel.⁴³ "I fear that in crypto . . . there's going to be a lot of people hurt, and that will undermine some of the confidence in markets."⁴⁴ Events in the year following the SEC Chairman's statements have shown the concerns to be well-founded.

Bitcoin in 2023 is in a very different place from where it was at its inception fifteen years prior. The original cryptocurrency and its progeny have become mainstream in one sense—more people than ever have heard of cryptocurrency and these digital coins have substantial, albeit volatile, market capitalization.⁴⁵ But Bitcoin has not, as of yet, proven to be the harbinger of a revolutionary decentralized payment system. Indeed, on the payment-systems front, decentralized digital tokens are actually at risk of being replaced by newer, centralized counterparts, a variation that stands to reintroduce the need for a trusted intermediary into blockchain payments.

41. Will Canny, *Bank of America Customers' Crypto Activity Slowed as Market Slid*, COINDESK (Mar. 11, 2023, 1:03 PM), <https://www.coindesk.com/markets/2022/07/01/bank-of-america-customers-crypto-activity-slowed-as-market-slid/> [<https://perma.cc/4GB5-U59J>].

42. *Id.*

43. *Legislative Highlights*, 41 AM. BANKR. INST. J. 10, 62–63 (2022) ("SEC Continues to Caution Investors on Cryptocurrency Amid Recent Downturn").

44. *Id.*

45. See Rachel Savage & Elizabeth Howcroft, *Central African Republic Delays Crypto Token Listing, Cites 'Market Conditions'*, REUTERS (Dec. 20, 2022, 3:09 AM), <https://www.reuters.com/technology/central-african-republic-delays-crypto-token-listing-cites-market-conditions-2022-12-20/> ("More than \$2 trillion has been wiped off the cryptocurrency market since its peak in November 2021 Investors have been spooked by the collapse of several crypto firms, including major exchange FTX last month, rising interest rates and recession fears.").

B. Adoption on the Margins

Despite the overall trend toward cryptocurrency as an investment vehicle, movement toward currency-like usage proceeded on two fronts. First—and at first blush beneficial for the acceptance of cryptocurrency as a payment system—government units have sought to authorize the use of cryptocurrency. The authorization ranged from payment of taxes in certain U.S. states to outright adoption of Bitcoin as legal tender, most famously in El Salvador.⁴⁶ The move in U.S. states regarding tax payments is less significant than it might initially appear, as cryptocurrency acceptance provides merely a niche method of payment for a niche (but disproportionately enthusiastic) audience. Once-a-year payments of property or income taxes are unlikely to establish a habit. When denominated as legal tender, Bitcoin has had the potential to be more consequential, but even it demonstrates the hazard of mixing command-and-control measures with the decidedly libertarian ethos of decentralized cryptocurrency.⁴⁷ Involuntary adoption may be worse than no adoption for establishing the use case for cryptocurrency as a payment system.

Within the United States, news of localized official uses of cryptocurrency has tended to be more smoke than fire. In November 2018, Ohio became the first U.S. state to accept Bitcoin for payment of state taxes, potentially suggesting a breakthrough for Bitcoin as a regular, mainstream payment.⁴⁸ The experiment proved to be short-lived, however, as less than a year later, the Ohio Attorney General issued an opinion finding that the then-state treasurer had exceeded his legal authority by setting up a cryptocurrency payment portal.⁴⁹ State

46. See generally Brian M. McCall, *How El Salvador Has Changed U.S. Law by a Bit: The Consequences for the UCC of Bitcoin Becoming Legal Tender*, 74 OKLA. L. REV. 313, 313–14 (2022).

47. Georgios Dimitropoulos, *The Law of Blockchain*, 95 WASH. L. REV. 1117, 1166 (2020) (“Bitcoin and other cryptocurrencies have been produced by libertarians, anarchists, and other opponents of the global financial system in an effort to by-pass the institutions of the financial markets, the central banks, and the commercial banks.”).

48. Michael C. Tomkies & Lindsay P. Valentine, *Are Cryptocurrencies on Their Way to Becoming a Trusted Payment Alternative?*, 38 BANKING & FIN. SERVS. POL’Y REP. 1, 2–3 (2019) (“Even if states are beginning to approve the use of certain cryptocurrencies, the question remains whether more businesses will accept cryptocurrencies as a form of payment for goods and services.”).

49. See Catherine Candisky, *Ohio AG Finds Mandel’s Bitcoin Move Violated Law*, COLUMBUS DISPATCH (Nov. 5, 2019, 8:22 PM), <https://www.dispatch.com/story/news/columns/the-daily-briefing/2019/11/05/ohio-ag-finds-mandel-s/2356902007/> [<https://perma.cc/M8SY-KN5Z>] (“The

legislatures in Arizona, Georgia, Illinois, and elsewhere have considered bills that would follow the short-lived Ohio example, but none have become law.⁵⁰ Florida is currently studying the possibility of letting businesses pay their taxes in cryptocurrency, as is the local government in Miami-Dade County,⁵¹ and there may well be others seeking to experiment with such payments.⁵² These proposals and enactments feel more like publicity stunts than like a financial revolution, but they nonetheless represent possible movement on the margins advancing cryptocurrency as a payment system.

Outside of government, however, some technology-adjacent vendors—such as AT&T⁵³ and Microsoft⁵⁴—have elected to allow for payment of bills in Bitcoin in certain circumstances.⁵⁵ Payments giant PayPal has also entered the game by adding cryptocurrency to the stable of payments offered in its digital wallet, alongside credit cards and automated clearing-house (ACH) bank payments.⁵⁶ The use of cryptocurrency within PayPal is simultaneously enormous news and smaller-than-it-looks news for the payments arena. PayPal advertises its feature as allowing its customer to “[b]uy, hold, and sell crypto” and also

State Board of Deposit must approve the collection of state taxes using OhioCrypto.com, or a similar financial transaction device . . . before the treasurer may collect taxes using OhioCrypto.com or a similar financial transaction device,’ [Ohio Attorney General Dave] Yost concluded.”)

50. See Tomkies & Valentine, *supra* note 48, at 3.

51. Joshua Ceballos, *Miami-Dade Commissioner Wants to Let Residents Pay Taxes with Cryptocurrency*, MIAMI NEW TIMES (Apr. 15, 2021), <https://www.miamiherald.com/news/miami-dade-county-may-let-people-pay-taxes-with-bitcoin-12117680> [<https://perma.cc/33XM-RQ2D>].

52. See Nathan Crooks, *DeSantis Says Florida Should Let Businesses Pay Tax in Crypto*, BLOOMBERG (Mar. 22, 2022, 11:48 AM), <https://www.bloomberg.com/news/articles/2022-03-22/desantis-says-florida-should-let-businesses-pay-tax-in-crypto#xj4y7vzkg>.

53. Jamie Redman, *Telecom Giant AT&T Now Accepts Bitcoin Cash Payments*, BITCOIN.COM (May 23, 2019), <https://news.Bitcoin.com/telcom-giant-att-now-accepts-Bitcoin-payments/> [<https://perma.cc/4AG8-9EL5>].

54. Christophe Lassuyt, *PayPal and Microsoft Adopt Cryptocurrencies: What This Means for the Future*, NASDAQ (July 7, 2022, 2:51 PM), <https://www.nasdaq.com/articles/paypal-and-microsoft-adopt-cryptocurrencies%3A-what-this-means-for-the-future> [<https://perma.cc/P6K2-DVGE>] (“Microsoft (MSFT) opened up to the use of Bitcoin as a new payment option as far back as 2014 through a partnership with Bitpay that enabled users to buy apps and games for Windows Phone, Xbox, or Windows operating system.”).

55. Sofya Bakradze, *To Tax or Not to Tax or How to Tax: Tax Policy and Its Role in Cryptocurrency Adoption*, 28 RICH. J.L. & TECH. 340, 343–44 (2021).

56. See Lassuyt, *supra* note 54 (“In October 2020, PayPal (PYPL) announced that it would allow its customers to buy, hold and sell cryptocurrencies directly from their PayPal accounts. The move was seen as a way for PayPal to capitalize on the growing interest in cryptocurrencies.”).

to “set up price alerts” for when supported cryptocurrencies fluctuate.⁵⁷ In short, the usage is substantially structured toward *investment* activity. While PayPal will allow and facilitate vendor purchases, those must naturally be authorized by the vendors in the first place. Because sales are denominated in local legal tender (frequently U.S. dollars) and because PayPal charges exchange fees, as would a more typical currency exchange,⁵⁸ its use of cryptocurrency lacks a compelling benefit outside that for investors looking for a place to “buy, sell, and hold” the digital asset. Despite these inroads, evidence suggests that these technology-adjacent vendors do not use cryptocurrency because of its business utility, but rather that the vendors accept payments as a means of establishing credibility with a crypto-savvy customer segment.⁵⁹

Many of the most notable efforts to mainstream cryptocurrency as a method of payment have occurred outside the United States. El Salvador created a stir in June 2021 by adopting Bitcoin as legal tender, operating alongside its existing use of the U.S. dollar.⁶⁰ While El Salvador’s president who promoted the law apparently envisioned many uses on his country’s path to becoming a hub for global blockchain activity, the main payment use was a major goal. “Under the law, Bitcoin must be accepted by firms when offered as payment for goods and services. Tax contributions can also be paid in the cryptocurrency.”⁶¹ Whether or not El

57. *PayPal Cryptocurrency FAQs*, PAYPAL, <https://www.paypal.com/us/cshelp/article/paypal-cryptocurrency-faqs-help565> [<https://perma.cc/7FZ7-UVVK>] (“[Y]ou can set up price alerts by clicking on the Bell Icon within your profile to customize a price alert if the value changes by (5) %, (8) %, or (10) %. We’ll send a push notification to your mobile device if the price goes up or down over 24 hours.”) (last visited Sept. 25, 2023).

58. *Id.* (“There are no PayPal fees for holding cryptocurrency in your account, transferring cryptocurrency to other PayPal cryptocurrency accounts, or for receiving cryptocurrency from outside of PayPal. We charge a transaction fee when you buy or sell most cryptocurrencies and network fees apply when you send cryptocurrency outside of PayPal.”).

59. *But see* Bakradze, *supra* note 55, at 344 (suggesting that companies “acquire and keep cryptocurrency on their balance sheets and use it to conduct business and compensate their employees and executives, thus putting more cryptocurrency into circulation.”).

60. Seamus A. Howard, *Remittances and Global Development*, 37 GEO. IMMIGR. L.J. 321, 339 (2023) (recounting the fact that “El Salvador uses the US Dollar as one of two fiat currencies”). El Salvador began using the U.S. dollar as fiat currency in 2001 following devaluation and ultimate decommissioning of its native fiat currency, the colon. *See generally* Juanita Darling, *Adoption of Dollar Irks Salvadorans*, L.A. TIMES (Jan. 6, 2001, 12:00 AM) <https://www.latimes.com/archives/la-xpm-2001-jan-06-fi-9012-story.html> [<https://perma.cc/3UDF-F3Z7>].

61. Nelson Renteria, Tom Wilson & Karin Strohecker, *In a World First, El Salvador Makes Bitcoin Legal Tender*, REUTERS (June 9, 2021, 10:24 PM), <https://www.reuters.com/world/americas/el-salvador-approves-first-law-bitcoin-legal-tender-2021->

Salvador's adoption of Bitcoin would promote its payment usage, the new law illustrated an apparent flaw in the Uniform Commercial Code⁶²—one that was addressed in the 2022 amendments discussed later in this article.⁶³

El Salvador is no longer alone in its grant of legal-tender status to Bitcoin, as the Central African Republic followed suit in April 2022,⁶⁴ as a prelude to launching its own central bank-issued cryptocurrency, the Sango.⁶⁵ Both the El Salvador and the Central African Republic adoptions of Bitcoin suggest that, whatever legal hindrances exist to cryptocurrency's becoming a mainstream payment system, the problem is *not* a need for sanction as legal tender. While both of these exemplar Bitcoin adopters are small and relatively poor countries, they did have the ability to grant the currency-like status Bitcoin has lacked since its inception. Yet becoming legal tender has been largely irrelevant to the market's ups and downs of Bitcoin. Legal-tender status is similarly irrelevant to the mainstream acceptance of decentralized cryptocurrency as a system of payment.

C. *The Specter of Centralization*

Apart from the challenges they have faced thus far in becoming a mainstream system, Bitcoin and its decentralized cryptocurrencies face another rapidly approaching threat to push them out of the market: central-bank digital currencies, or CBDCs for short. This second pending trend in cryptocurrency involves its adoption in wholly centralized fashion. Some actors in large banks and government are actively exploring the use

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62. See generally McCall, *supra* note 46, at 320 ("Prior to El Salvador's Bitcoin Act, commentators agreed that Bitcoin, although a medium of exchange, was not 'money' since no government had authorized or adopted it. Now that El Salvador has adopted Bitcoin as money, for all purposes in the UCC, money includes Bitcoin.")

63. See *infra* notes 155–56 and accompanying text (describing aspects of the 2022 amendments to the Uniform Commercial Code, particularly the creation of new Article 12).

64. Nellie Peyton, *Central African Republic Adopts Bitcoin as Official Currency*, REUTERS (Apr. 27, 2022, 2:10 AM), <https://www.reuters.com/world/africa/central-african-republic-adopts-bitcoin-an-official-currency-2022-04-27> ("Central African Republic has adopted bitcoin as an official currency . . . becoming the first country in Africa and only the second in the world to do so. Despite rich reserves of gold and diamonds, Central African Republic is one of the world's poorest and least-developed countries and has been gripped by rebel violence for years.")

65. Rachel Savage, *Central African Republic Launches 'Sango Coin' Cryptocurrency Amid Industry Rout*, REUTERS (Jul. 15, 2022, 9:46 AM) <https://www.reuters.com/world/africa/central-african-republic-launches-sango-coin-cryptocurrency-amid-industry-rout-2022-07-15/>.

of blockchain and its (thus far) nonreplicable tokens as a means for exchanges of value, but one for which the ledger for those tokens is in the hands of one entity. While large commercial banks (e.g., JP Morgan Chase, CitiBank, Bank of America, etc.) are certainly part of the landscape on which centralized cryptocurrency may arise, a far more consequential change would arise from the creation of CBDCs. In theory, the Federal Reserve Bank and the U.S. Department of the Treasury could issue a “digital dollar,” a legal tender–currency equivalent in value to the U.S. dollar, with the principal difference being that the dollar is accounted for in a centralized blockchain managed by the Federal Reserve or another designate. Such a development is far more than theoretical as it is one of several blockchain initiatives under consideration within the Biden Administration Treasury Department.⁶⁶

While the payments vision of Bitcoin was built around the core concept of a decentralized network that replaces trusted intermediaries, CBDCs use Bitcoin’s innovation of blockchain programming but tether it to a government-backed central bank, such as (in the case of the United States) the Federal Reserve. To the extent that Bitcoin was a stand against the practices of central banks in the wake of the 2008 financial crisis, CBDCs turn the Bitcoin ethos on its head, using blockchain as a tool to enhance—rather than undermine—central banks. A CBDC would place an intermediary where none was originally intended, and the pseudo-anonymity of decentralized currency could be replaced with financial transaction monitoring by a central authority in which a central bank can track every purchase made using the currency.⁶⁷ A national bank could not only be the gatekeeper for a national digital currency, but it would—much to the chagrin of privacy advocates—have direct access to information on all transactions involving the currency. To be sure, private banks, payment-card networks, and other institutions in the position of a trusted financial intermediary also have access to customer financial activity. Use of a CBDC would, however, generally remove the subpoena-sized distance between privately held information and the government by placing it directly in the hands of the government-adjacent central bank.

66. See generally Exec. Order No. 14,067, 87 Fed. Reg. 14143 (Mar. 9, 2022).

67. See John O. McGinnis, *Two Paradoxes of Crypto*, 26 CHAP. L. REV. 445, 446 (2023) (observing the paradox “that while Bitcoin began as a radical libertarian project, it now inspires central bank digital currency, which ironically can give far more power to the government over the financial lives of its citizens than it has today”).

To an enthusiast for decentralized cryptocurrency, displacement of Bitcoin and its cyber-cousins by a CBDC would indeed be the worst of all possible worlds.

Centralized-bank digital currencies are already a reality, some primarily in smaller-circulation currencies. “The original CBDC was the Sand Dollar adopted by The Bahamas.”⁶⁸ The Central African Republic Sango mentioned earlier is another, although it has had a number of post-launch problems, including those stemming from its legally controversial tie to an ability to purchase citizenship.⁶⁹ These are relatively small exemplars of CBDC, but they illustrate the essential characteristics. Like decentralized cryptocurrency, a CBDC passes in trade and commerce by way of a recorded blockchain of transactions where the digital asset can pass freely without real risk of being copied or counterfeited. Unlike Bitcoin-style cryptocurrency, the issuing central bank is the verifier and ultimate backer of the transactions, denominated in digital fiat currency recorded in the central bank’s own blockchain ledger.

Following this model, the major player looming most ominously on the horizon is China, which has launched its Digital Currency Electronic Payment, known most commonly as E-CNY, periodically increasing the number of cities in which the digital currency is available.⁷⁰ China’s CBDC is facially “intermediated by both mobile payment platforms—like WeChat and Alipay—and commercial banks and other authorized entities.”⁷¹ Even setting aside the potential for government control and influence over technically private enterprises, the ultimate fact remains that “the People’s Bank of China (PBOC) maintains sole authority to clear transactions conducted in E-CNY.”⁷² Moreover, such authority “abandons true anonymity and provides the PBOC with a clear record of all

68. Jessica G. McKinlay, *Enforcing the Rights of Cryptocreditors*, 20 *BERKELEY BUS. L.J.* 83, 99 (2023).

69. Sofia Christensen, *Central African Republic Top Court Blocks Purchases with New Cryptocurrency*, *REUTERS* (Aug. 29, 2022, 2:17 PM), <https://www.reuters.com/technology/central-african-republic-top-court-blocks-purchases-with-new-cryptocurrency-2022-08-29/> (“[T]he country’s top court deemed those [citizenship] purchases ‘unconstitutional,’ arguing among other reasons that nationality did not have a market value and that residency required a physical stay in Central African Republic The impact on the Sango Coin initiative was not immediately clear.”).

70. Nicholas P. Mack, *Obstacles to Successful Introduction of a U.S. Central Bank Digital Currency*, 18 *J. BUS. & TECH. L.* 35, 41 (2022).

71. *Id.*

72. *Id.*

transactions conducted in E-CNY.”⁷³ The technical structure assembled by China is arguably the proof of concept for privacy advocates’ worst nightmare about the implications of a centrally-controlled CBDC. Far from being private, all financial transactions are, by design, immediately and automatically reported to the government.

Setting aside the possibility of direct government control, however, the world of digital banking required for a CBDC is already here. In the United States, for instance, traditional bank accounts across the country contain entries electronically denominated in U.S. dollars. The dollars are not physically present in the bank, but are instead partially backed by reserves, through a well-established system known as fractional-reserve banking.⁷⁴ As the name suggests, the bank holds in its reserves only a fraction of the bank’s total deposit liabilities as cash or readily liquidated assets.⁷⁵ Transferring these electronic dollars from one bank to another, or even from one country to another, occurs through established financial rails,⁷⁶ such as wire transfers or automated clearing-house (ACH) transactions. As highly regulated institutions whose value is fundamentally premised on accurate and auditable records, this system of transferring funds has generally proved to be safe and stable. Money in the electronic hands of banks and similar institutions is not duplicated or lost due to the heavy consequences—both internally and systematically—of their doing so. That, fundamentally, is how and why banks reliably serve as trusted intermediaries for recording noncash electronic transactions, regardless of whether such transactions are rooted in checks,

73. *Id.*

74. See Nadav Orian Peer, *Money Creation and Bank Clearing*, 28 *FORDHAM J. CORP. & FIN. L.* 35, 51 (2023) (“[A] defining feature of banking is the bank’s maturity transformation and its operation on a fractional reserve.”).

75. See *id.* (“This business model exposes the bank to liquidity risk. If more than a small fraction of depositors simultaneously demands cash payment, the bank will exhaust its small reserve, and will have to suspend further payments.”).

76. See Erin F. Fonté, *Mobile Payments in the United States: How Disintermediation May Affect Delivery of Payment Functions, Financial Inclusion and Anti-Money Laundering Issues*, 8 *WASH. J.L. TECH. & ARTS* 419, 422–23 (2013) (“As has been the case for about the past twenty years, and remains the case today, there are five and only five methods to process and settle payment transactions: cash, check (including substitute checks created pursuant to the federal Check21 Act), credit card and debit card rails (which include debit card, credit card, and stored value card transactions), automated clearing house (ACH) rails, and wire transfers.”); Carolyn Lowry, *What’s in Your Mobile Wallet? An Analysis of Trends in Mobile Payments and Regulation*, 68 *FED. COMM. L.J.* 353, 359–60 (2016) (“In the United States, there are five methods for processing payment transactions: cash, checks, credit and debit card rails, automated clearing house (ACH) rails, and wire transfers.”).

credit cards, or electronic-funds transfers.

What, then, would be different if the Federal Reserve Bank issued a digital dollar recorded on its own blockchain rather than in private bank entries that sometimes—but usually not—are represented by paper money? If the U.S. central bank issued a digital twin of the existing U.S. dollar, it would theoretically have the same backing as its paper sibling: the full faith and credit of the United States government. As one high-level financial analyst described it, “[a] dollar in CBDC form is a liability of the central bank. The Federal Reserve has to pay you back.”⁷⁷ No less a figure than Federal Reserve Chairman Jerome Powell has suggested that one of the strongest arguments for the Federal Reserve to issue a digital dollar would be to eliminate any demand for cryptocurrency in the United States: “You wouldn’t need stablecoins; you wouldn’t need cryptocurrencies, if you had a digital U.S. currency.”⁷⁸

The possible future existence of a major CBDC in the United States does not inherently or directly threaten decentralized cryptocurrency, but concern about it is high based on its potential for crowding out Bitcoin and other digital assets and, perhaps most ominously in some circles, the potential for direct government tracking of financial transactions. In connection with the Biden Administration’s issuance of an Executive Order that sets a framework and goals for evaluating federal policy on digital assets, the White House had the following to say about a CBDC:

Exploring a U.S. Central Bank Digital Currency (CBDC)

A U.S. CBDC—a digital form of the U.S. dollar—has the potential to offer significant benefits. It could enable a payment system that is more efficient, provides a foundation for further technological innovation, facilitates faster cross-border transactions, and is environmentally sustainable. It could promote financial inclusion and equity by enabling access for a broad set of consumers. In addition, it could foster economic growth and stability, protect against cyber and operational risks, safeguard the privacy of sensitive data, and minimize risks of illicit financial transactions. A potential U.S. CBDC could also help preserve U.S. global financial leadership, and support the effectiveness of

77. MacKenzie Sigalos, *Biden White House Just Put Out a Framework on Regulating Crypto—Here’s What’s in It*, CNBC (Sep. 17, 2022, 3:36 AM), <https://www.cnbc.com/2022/09/16/heres-whats-in-biden-framework-to-regulate-crypto.html> [<https://perma.cc/8JA5-MCUX>] (quoting Ronit Ghose, head of fintech and digital assets at Citi Global Insights).

78. *Id.* (quoting Jerome Powell, Chairman of the Board of Governors of the Federal Reserve System).

sanctions. But a CBDC could also have unintended consequences, including runs to CBDC in times of stress.⁷⁹

This somewhat rosy version of a CBDC interestingly pairs up “safeguard[ing] the privacy of sensitive data, and minimiz[ing] risks of illicit financial transactions.”⁸⁰ Success in the latter of these goals seemingly runs the risk of undermining the former. The summary fact sheet also lists a potpourri of policy goals, some more nebulous than others, such as to “protect consumers, promote economic growth, improve payment systems, provide interoperability with other platforms, advance financial inclusion, protect national security, respect human rights, and align with democratic values.”⁸¹ The list does not extend to rainbows and unicorns, but it arguably comes close.

Critics of a potential U.S. digital dollar or other large scale CBDC point, quite understandably, to privacy concerns. “[I]t is precarious to equate CBDCs to other forms of virtual currencies because CBDCs face the unique threat of mass centralization and data collection Because CBDCs are issued by central banks and require reliance on the central bank for full functionality, large amounts of sensitive information will accumulate.”⁸² The fundamental privacy concern with digital currency issued by a central bank is that “all transactions of citizens will be visible to the central bank.”⁸³ To be sure, this transactional information already exists, but it currently is in the hands of disparate financial actors, such as depository banks and credit-card issuers. And, in the United States legal system—unlike, say, in China—such information is typically at least a judge-and-a-subpoena away from the government. With a CBDC run through a central bank, the government has all the data, all the time, and is far more than theoretically in the position of being able to perform unlimited data analytics on all people who access the system. Law enforcement’s dream is privacy’s nightmare. In this regard, a CBDC shares blockchain structure and transferability with Bitcoin, but little else

79. *Fact Sheet: White House Releases First-Ever Comprehensive Framework for Responsible Development of Digital Assets*, THE WHITE HOUSE (Sep. 16, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/16/fact-sheet-white-house-releases-first-ever-comprehensive-framework-for-responsible-development-of-digital-assets/> [<https://perma.cc/3UWM-8XZR>].

80. *Id.*

81. *Id.*

82. Karin Thrasher, Note, *The Privacy Cost of Currency*, 42 MICH. J. INT’L L. 403, 407 (2021).

83. *Id.* at 407–08.

from the original bank-and-government skeptical ethos that gave birth to the original cryptocurrency.

Decentralized cryptocurrency on the Bitcoin model thus faces the prospect of being squeezed out of its envisioned-but-not-realized vision of serving as a mainstream payment system. Its sporadic “official” breakthrough as a payment method for state tax debts is little more than an interesting curiosity for true-believer enthusiasts. National adoptions like those of Bitcoin in El Salvador and in the Central African Republic are somewhat consequential, but in many respects, they subvert the cryptocurrency ethos by ultimately being top-down adoptions. The market in El Salvador did not decide that Bitcoin was beneficial; rather, the government dictated that it was so. While the adoption of Bitcoin as legal tender in smaller nations with histories of economic instability is consistent with saving a populace from being at the mercy of large financiers, it in some sense replaced one instability with another, as demonstrated by the cryptocurrency crashes of 2022.

The far more substantial threat to decentralized cryptocurrency is presented by the Chinese model, with payments data centralized in the People’s Bank of China. “Widespread deployment of E-CNY would potentially offer the PBOC, and the Chinese government by extension, unprecedented, real-time influence over the economic rights and capabilities of individuals.”⁸⁴ Thus does a CBDC serve prospectively as the ultimate subversion of the decentralized and libertarian ethos of Bitcoin, despite the fact that both share blockchain programming.

In 2023, fifteen years after the financial crisis that spurred Satoshi Nakamoto to create a non-banking means of payment, cryptocurrency’s mainstream use is as a speculative investment, not as a payment system. Movement toward mainstreaming cryptocurrency into being a safe and stable payment system in accordance with the originally-envisioned use case for Bitcoin has been marginal. The specter of CBDCs raises the possibility that decentralized cryptocurrency could be driven out from any potential mainstream breakthrough in the U.S. by market acceptance of its centralized second cousin—the digital dollar. As this article asks in its title, can the original use case for Bitcoin—and for decentralized cryptocurrency as a whole—be saved? Part of the answer rests in past legal experience with other payment systems that had no market

84. Jiaying Jiang & Karman Lucero, *Background and Implications of China’s E-CNY*, 33 U. FLA. J.L. & PUB. POL’Y 237, 264 (2023).

penetration but have gone on to become ubiquitous. Card-based payment systems hold some important clues on what cryptocurrency is missing as a legal framework.

III. THE PARADIGMATIC BREAKTHROUGH OF CARD NETWORKS

If decentralized cryptocurrency is a substantially underachieving payment system, then card-based systems—those built around physical debit and credit cards—are its opposite. Starting in the latter half of the twentieth century, card networks went from unknown to ever present, and from a specialized niche to the most mainstream of all noncash systems. The means by which card-network systems made their jump into the mainstream of everyday payments is instructive for Bitcoin and other decentralized cryptocurrency. The hurdles that the underachieving system of today would need to overcome to achieve mainstream acceptance are nothing new. The card networks have already overcome the obstacles and thereby provide analogies for what decentralized cryptocurrency would need to do to become one of the everyday payment systems of choice.

The two major lessons from the card networks are both user focused, but they are matters requiring assistance from outside of the users. First, card networks developed means by which payments were, from the user perspective, frictionless. This convenience infrastructure transformed the user payment experience into something that would be desirable outside of niche and specialized uses. Second, although not particularly sought by the card-issuing banks, Congress facilitated the expansion and broad acceptance of card-network products by mandating consumer protections against liability for unauthorized use. The fact that consumer-protection law added market value was counterintuitive, but it was nonetheless crucial. By establishing an unavoidable protective floor (and its attendant costs for card issuers), the law eliminated many of the most powerful objections to card-based products by skeptical consumers, and the issuers could not engage in a destructive race to the bottom in pursuit of market share. For a variety of reasons, these lessons defy direct application to cryptocurrency payments, but their analogues are enormously useful for understanding how cryptocurrency could reach a breakthrough moment.

A. The Specter of Centralization

The most important hurdle for a system of payment to overcome on its path to mainstream acceptance is convenience.⁸⁵ Since new payment systems find acceptance by taking market shares from existing systems, a new system should ideally solve a problem existing within the old system or else provide a benefit that the old system lacks. The persistence of the maxim, “If it ain’t broke, don’t fix it,”⁸⁶ is particularly strong in the realm of payment systems. The most compelling feature that facilitates adoption of a new form of payment is convenience. Where a system is difficult to use as compared to existing practices, the system will not be used, so system developers seek to reduce all sorts of friction in the payments process.⁸⁷ A major component of the success of card-based payments was its ease of use, both on the consumer side and on the merchant side.

The growth of card-based payment systems since their inception is a powerful case study in the rise and mass acceptance of a new payment system.⁸⁸ Private-issue credit cards—a mechanism by which retailers extended credit to their own customers—date back to the early twentieth century, as the cards were issued by hotels, large department stores, and gas-station chains.⁸⁹ Most trace the creation of the third-party universal credit card to Diners Club in 1949, which developed a network of travel and entertainment retailers who accepted the card for payment.⁹⁰ The

85. See Yunsieg P. Kim, *Does the Anti-Google Law Actually Help Google and Hurt Startups?*, 110 GEO. L.J. ONLINE 120, 122 (2021) (asserting that consumers value convenience, and that Google and Apple take advantage of that fact in promoting their respective mobile payment systems).

86. The phrase, “If it ain’t broke don’t fix it,” is widely attributed to Bert Lance, the Director of the Office of Management and Budget under President Jimmy Carter. See Matt Schudel, *Bert Lance, Banker and Carter Budget Director*, WASH. POST (Aug. 16, 2013, 7:36 PM), https://www.washingtonpost.com/politics/bert-lance-banker-and-carter-budget-director/2013/08/16/a200f4f8-0689-11e3-9259-e2aaf5a5f84_story.html [https://perma.cc/3V5U-MNPC].

87. See, e.g., James Cooper & Todd Zywicki, *A Chip Off the Old Block or a New Direction for Payment Card Security? The Law and Economics of the U.S. Transition to EMV*, 2018 MICH. ST. L. REV. 869, 886 (2018) (“[C]onsumer and merchant demand for faster payment times has dramatically reduced the friction associated with the consumer payments system.”).

88. For my own more extended treatment of payment card system history from which much of the synopsis in this section is drawn, see generally Mark Edwin Burge, *Apple Pay, Bitcoin, and Consumers: The ABCs of Future Public Payments Law*, 67 HASTINGS L.J. 1493, 1504–12 (2016).

89. Gillian Garcia, *Credit Cards: An Interdisciplinary Survey*, 6 J. CONSUM. RES. 327, 327 (1980).

90. LEWIS MANDEL, *THE CREDIT CARD INDUSTRY: A HISTORY*, at xiii (1990); see also Christopher L. Peterson, *Truth, Understanding, and High-Cost Consumer Credit: The Historical*

typical end user was “the salesman who could charge meals at restaurants while entertaining clients on the road.”⁹¹ American Express, then primarily known for its traveler’s checks, entered the universal card market in 1958, as did a number of large banks, including the (then) California-based Bank of America.⁹² The latter’s “BankAmericard” expanded greatly outside of its California home in the mid-1960s with a licensing structure allowing other banks to issue the branded card.⁹³ Following up on Bank of America’s success with a licensing structure, a group of large banks—generally centered more in the eastern half of the country—formed the Interbank Card Association, creating a second large multibank card network built around the “Master Charge” branded card.⁹⁴ Bank Americard changed its name to Visa in 1976 “to develop a more international image” that was also not tied to the name of a particular bank.⁹⁵ Master Charge followed suit with its own rebranding in 1980, changing its name to MasterCard.⁹⁶

A one-time separation between corporate travel-and-entertainment charge cards (like American Express) and general-purpose credit cards (like MasterCard and Visa) has blurred, with American Express crossing over into the general-use and credit markets while MasterCard and Visa have cultivated corporate accounts.⁹⁷ A fourth major American payment-card brand—Discover—was launched by Sears in 1986.⁹⁸ Discover sought a general-use customer base like MasterCard and Visa, but, like American Express, began as a direct-issue card rather than a brand

Context of the Truth in Lending Act, 55 FLA. L. REV. 807, 865 (2003) (“The first ‘third-party universal’ card which has become the contemporary norm was issued by Diner’s Club in 1949. The credit issuer acted as broker between customers and firms (usually restaurants). Customers gained the convenience of not carrying cash, and the ability to borrow money over a short term. Sellers gained access to market share by catering to a card carrying clientele.”).

91. MANDEL, *supra* note 90, at xiv.

92. Eric E. Bergstein, *Credit Cards—A Prelude to the Cashless Society*, 8 B.C. INDUS. & COM. L. REV. 485, 486 n.3 (1967).

93. *Id.* at 485.

94. *See* MANDEL, *supra* note 90, at xiv.

95. *Id.* at xv.

96. *Id.*

97. *See* Adam J. Levitin, *Payment Wars: The Merchant-Bank Struggle for Control of Payment Systems*, 12 STAN. J.L. BUS. & FIN. 425, 430 (2007) (“American Express and Discover are independent financial institutions, which both traditionally performed all three roles: issuer, acquirer, and network itself. Recently, these networks began to allow other banks to issue cards with their brands, and Discover has also begun to outsource its acquirer functions.”).

98. MANDEL, *supra* note 90, at xxii.

licensed through banks, albeit one with a consumer-user focus rather than the business orientation of American Express.⁹⁹

General-purpose transactions employing payment cards are thus most frequently conducted through one of the four major card networks: MasterCard, Visa, American Express, and Discover.¹⁰⁰ The networks are functionally either open or closed. MasterCard and Visa were (and still are) the prototypical open networks, allowing many banks to participate as card issuers if they contract to license the brand.¹⁰¹ American Express and Discover, in contrast, began life as closed card networks, cutting out the licensing banks, though today they also operate open networks with licensees on the MasterCard and Visa model.¹⁰²

The same networks built to handle credit-card transactions have also had great success in coming to dominate debit-card transactions. The original debit cards were issued by regional automated teller machine networks in the late 1970s, adding point-of-sale functionality to the original debit card's initial ability to withdraw cash at ATMs.¹⁰³ The main distinction between debit and credit from the end-user's perspective is the source of payment, with the former directly withdrawing from the user's bank account instead of extending credit on an open account.

How successful have these card-based systems been? Amazingly so, given the fact that they were not initially profitable endeavors in the

99. See generally *Our History*, DISCOVER FIN. SERVS., <https://www.discover.com/company/our-company/our-history/> [<https://perma.cc/3V7G-A49C>] (last visited Sept. 25, 2023) (providing a timeline of major developments since the first issuance of a Discover card in the mid-1980s).

100. Adam J. Levitin, *The Antitrust Super Bowl: America's Payment Systems, No-Surcharge Rules, and the Hidden Costs of Credit*, 3 BERKELEY BUS. L.J. 265, 275 (2005). Another branch of growth in the card-payments business getting short-shrift in this account is the establishment gas station credit cards that frequently morphed over time into general-purpose credit cards run through the major card networks. See generally Laurie A. Burlingame, *Getting to the Truth of the Matter: Revising the TILA Credit Card Disclosure Scheme to Better Protect Consumers*, 61 CONSUMER FIN. L.Q. REP. 308, 312–13 (2007).

101. Andrew P. Morriss & Jason Korosec, *Private Dispute Resolution in the Card Context: Structure, Reputation, and Incentives*, 1 J.L. ECON. & POL'Y 393, 424 (2005) (“An open system is a payment system where an association or third-party company maintains a contractual relationship with both the card issuer and the merchant acquirer Open systems include associations such as VISA and MasterCard.”).

102. *Id.* at 424–25 (“Closed systems include programs such as department store cards, American Express, and Discover.”).

103. David A. Balto, *Creating a Payment System Network: The Tie That Binds or an Honorable Peace?*, 55 BUS. LAW. 1391, 1392 (2000).

earliest decades of the system.¹⁰⁴ On the eve of the twenty-first century, however, card systems had come from nonexistence to contending for a majority position. In 2000, 41.9 billion checks were paid in the United States, accounting for a solid 58% of all noncash payments.¹⁰⁵ By 2012, the number of paid checks had declined to 18.3 billion, representing only 15% of noncash payments.¹⁰⁶ The overwhelming majority of the lost-check volume in that twelve-year period is attributable to increased use of credit cards and debit cards. Back in 2000, these two types of payment cards accounted for 21.7 billion payments—roughly one-third of all noncash payments in the United States.¹⁰⁷ For 2012, credit- and debit-card use (the latter including use of prepaid cards for debit-style transactions) collectively had ballooned to 73.9 billion payments that constituted 59% of all noncash payments in the country.¹⁰⁸ The Initial Data Release for the 2022 Federal Reserve Payments Study shows that the convenience of card systems has established them as the dominant method for small, noncash commercial payments: “Despite a temporary drop in 2020 [coinciding with the COVID-19 pandemic], the number of card payments grew by 25.9 billion from 2018 to 2021 With 157.0 billion payments in 2021, *card payments accounted for approximately 77 percent of noncash payments by number.*”¹⁰⁹

Within the massive rise of the card-based payment system, a clear driving force behind its successes is end-user ease of use, the very quality that—to date—cryptocurrency is lacking. “Most consumers worldwide use payment cards for convenience rather than as a source of long-term

104. Ronald J. Mann, *Credit Cards and Debit Cards in the United States and Japan*, 55 VAND. L. REV. 1055, 1067–68 (2002) (“[T]he credit card began not as a profitable line of business, but rather as a costly service that banks provided as a convenience to attract customers. Given the limited ability of banks in the 1960s and 1970s to compete on price, it would have been rational for banks to attempt to distinguish themselves from one another by offering credit card services even if they were unable to provide those services in a profitable manner.”).

105. *The 2013 Federal Reserve Payments Study: Recent and Long-Term Trends in the United States: 2000–2012*, FED. RSRV. SYS. (2014), <https://www.frbservices.org/binaries/content/assets/crsooms/news/research/2013-fed-res-paymt-study-detailed-rpt.pdf> [<https://perma.cc/23S4-KRLU>].

106. *Id.*

107. *Id.*

108. *Id.*

109. *The Federal Reserve Payments Study: 2022 Triennial Initial Data Release*, FED. RSRV. SYS. (2022) [hereinafter 2022 PAYMENTS STUDY] (emphasis added), <https://www.federalreserve.gov/paymentsystems/fr-payments-study.htm> [<https://perma.cc/S33X-VLL6>].

credit, and this is why debit cards have become popular so quickly” despite their lack of a credit-borrowing function.¹¹⁰ Ronald Mann’s point, made over fifteen years ago, regarding the role of convenience in connection with credit cards remains true of today’s card systems:

In the modern era . . . the credit aspect of the purchase transaction is increasingly obscure. For many of us, the credit card is used much more for convenience than for any purpose related to borrowing. To put it another way, we often pull a credit card from our wallet not because we lack the present wealth to pay the purchase price for the item in question, but for some other reason unrelated to a credit decision. If there is anything that proves that point, it is the rise of the “convenience” credit card user, who charges purchases on the card but pays off the bill in full each month.¹¹¹

The convenience benefit of card-based accounts is even greater today, exacerbated by the COVID-19 pandemic move away from cash in 2020–2021.¹¹²

Cards have succeeded because of an infrastructure of convenience that has developed around them. The system limits the risk of loss from fraud or theft, to be sure, but most importantly it satisfies the retail customer’s “desire to close the transaction rapidly,”¹¹³ certainly exceeding the capacities of cash or checks in this era of the unstaffed automated checkout line. In the twenty-first century, there can be little doubt of Adam Levitin’s observation that “the major factor driving the switch from paper to electronic payment systems is convenience. Electronic payment cards serve as a substitute for checks (and cash) for most point-of-sale transactions for consumers.”¹¹⁴

This necessary convenience infrastructure exists for merchants as well as for the end users of payment cards. Of particular importance is the ability to handle a noncash payment without taking on massive administrative or credit overhead for private-issue retail cards of the sort offered by department stores and gas stations. “Historically, only large

110. Arnold S. Rosenberg, *Better Than Cash? Global Proliferation of Payment Cards and Consumer Protection Policy*, 44 *COLUM. J. TRANSNAT’L L.* 520, 523 (2006).

111. Ronald J. Mann, *Making Sense of Payments Policy in the Information Age*, 93 *GEO. L.J.* 633, 656 (2005).

112. *See generally* 2022 *PAYMENTS STUDY*, *supra* note 109.

113. Mann, *supra* note 111, at 657.

114. Levitin, *supra* note 97, at 325.

companies and department stores could afford the administrative expense and risk of providing in-house consumer credit. Even if credit was not particularly profitable, businesses such as department stores used their credit cards to build customer loyalty, enhance customer convenience, and track customer purchase patterns.”¹¹⁵ Of particular importance to merchants is the legal ability of “shifting the risk and most of the fixed costs to third parties” that is available in a card-network system backed up by consumer-protection law.¹¹⁶ That latter part—consumer protection—is the next missing puzzle piece for cryptocurrency as a mainstream payment system.

B. The Legal Safety Net

Once a system of noncash payment surmounts the hurdle of being convenient enough, it must also be reasonably safe for the conduct of regular transactions. That is to say, it must persistently accomplish what it purports to accomplish, and that generally requires a legal framework that ensures transactional safety. The Anglo-American system of negotiable instruments, currently memorialized in Articles 3 and 4 of the Uniform Commercial Code, is the longest-standing extant and successful noncash system of payment. The negotiable-instruments system provides rules contributing to certainty of liability, the effect of payment, and the rights of a qualified transferee of a negotiable instrument.¹¹⁷ From the U.S. perspective, these expectations of the relative commercial safety of checks and bank notes even predate the promulgation of the Uniform Negotiable Instruments Law in 1896,¹¹⁸ being grounded in Lord Mansfield’s English commercial law jurisprudence of the 1760s.¹¹⁹ By the twentieth century, in other words, the system of negotiable instruments and its commercial law was in place, accepted, and well understood by anyone who cared to

115. Timothy J. Muris, *Payment Card Regulation and the (Mis)application of the Economics of Two-Sided Markets*, 2005 COLUM. BUS. L. REV. 515, 530 (2005).

116. *Id.*

117. *See, e.g.*, U.C.C. § 3-301 (AM. L. INST. & UNIF. L. COMM’N 2021); *id.* § 3-601.

118. *See* Frederick K. Beutel, *The Development of State Statutes on Negotiable Paper Prior to the Negotiable Instruments Law*, 40 COLUM. L. REV. 836, 852 (1940).

119. *See, e.g.*, *Grant v. Vaughan*, (1764) 96 Eng. Rep. 281 (KB); *see also* M.B.W. Sinclair, *Codification of Negotiable Instruments Law: A Tale of Reiterated Anachronism*, 21 U. TOL. L. REV. 625, 632–33 (1990) (describing Lord Mansfield’s application of the 1704 Statute of Anne in the *Grant* case); *see generally* Frederick K. Beutel, *The Development of Negotiable Instruments in Early English Law*, 51 HARV. L. REV. 813, 844 (1938).

understand. For those who had to need to understand the mechanics, the salient feature of negotiable instruments was that they worked—consistently.

For the very reason of its longevity, which predates the late-twentieth century world of electronic payments, the successful path of negotiable instruments is not a suitable example for how an upstart payment system like cryptocurrency might succeed. Negotiable instruments, particularly bank checks, are simply too intertwined with other historical and commercial developments of the pre-electronic era to serve as a robust example of mass-market entry for the present day.

The system of card networks is another matter entirely, arising in the formative growth era of electronic-payment technology.¹²⁰ While that technology is responsible for the convenience infrastructure described above, growth in the use of credit cards eventually attracted the interest of Congress, resulting in federal public law on point, albeit in a manner far short of a comprehensive regulatory scheme. The foundation was laid for exponential growth of the industry when Congress passed the Truth in Lending Act (TILA) in 1968,¹²¹ though it was the 1970 amendments to TILA¹²² that dramatically—and fortuitously for the industry—shifted liability for fraud losses from the cardholder to the card issuer.¹²³ The amended TILA, which is still the law today and has long been internalized as an operational expense by issuers of credit cards, limited the liability of a cardholder for unauthorized use to \$50.¹²⁴ A protective definition of “unauthorized use” covers “use of a credit card by a person other than the cardholder who does not have actual, implied, or apparent authority for such use and from which the cardholder receives no benefit.”¹²⁵ The

120. Much of this background description of the consumer protection that developed around the card-based network systems is drawn from my longer treatment of the subject in Mark Edwin Burge, *Apple Pay, Bitcoin, and Consumers: The ABCs of Future Public Payments Law*, 67 HASTINGS L.J. 1493, 1507–12 (2016).

121. Consumer Credit Protection Act, Pub. L. No. 90-321, 82 Stat. 146 (1968) (codified in 15 U.S.C. §§ 1601–1667e). The complete 1968 Act is entitled the Consumer Credit Protection Act, but the provisions relevant to the present discussion are most commonly referred to today as the Truth in Lending Act. *See generally* Peterson, *supra* note 90, at 903.

122. Act of Oct. 26, 1970, Pub. L. No. 91-508, secs. 501–503, §§ 103, 132–134, 84 Stat. 1114, 1126 (codified as amended in scattered sections of 15 U.S.C.).

123. Mary Elizabeth Matthews, *Credit Cards—Authorized and Unauthorized Use*, 13 ANN. REV. BANKING L. 233, 249–50 (1994).

124. 15 U.S.C. § 1643(a)(1)(B).

125. *Id.* § 1602(p).

significance of these changes was profound, even if not immediately apparent. Many uses of credit cards simply ceased to be risky propositions.

TILA additionally requires an issuer of credit cards to notify the cardholder of potential liability,¹²⁶ to provide the cardholder a means of notifying the issuer of the loss or theft of the card,¹²⁷ and to provide the cardholder a security method for identifying the user as the person authorized to use the card.¹²⁸ The amended Act also imposed procedural protections on card issuance, such as by prohibiting the mailing of unsolicited credit cards.¹²⁹ These changes, while significant in their own right, also represented a new trend in payments law—consumer protection absent a comprehensive regulatory regime. TILA is largely a consumer-protection statute, as it generally does not apply to “[c]redit transactions involving extensions of credit primarily for business, commercial, or agricultural purposes, or to government . . . or to organizations.”¹³⁰ Regulation Z, implementing TILA,¹³¹ likewise affirms that this body of law is not all-encompassing governance of the type that UCC Articles 3 and 4 attempt to provide for checks.¹³² The targeted consumer-protection role of TILA and Regulation Z has existed for decades, but the focus sharpened with passage of the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act. Among its many other provisions, Dodd-Frank transferred authority over Regulation Z from the Board of Governors of the Federal Reserve System to the newly established Bureau of *Consumer Financial Protection*.¹³³

TILA also creates a right for credit-card holders that, while properly characterized as a consumer-protection right, exists outside of the payment system itself. Within certain limitations, TILA makes a credit-card issuer “subject to all claims (other than tort claims) and defenses arising out of

126. *Id.* § 1643(a)(1)(C).

127. *Id.* § 1643(a)(1)(D).

128. *Id.* § 1643(a)(1)(F); *see also* Matthews, *supra* note 123, at 250.

129. 15 U.S.C. § 1642 (“No credit card shall be issued except in response to a request or application therefor.”).

130. *Id.* § 1603(1).

131. *See* 12 C.F.R. § 1026.1(a) (2023).

132. *See generally id.* § 1026.3 (listing transactions that are exempt from Regulation Z).

133. *See generally* Dodd-Frank Act, Pub. L. No. 111-203, § 1061(b), 124 Stat. 1376 (2010) (codified at 12 U.S.C. § 5581(b)); *see also* 12 C.F.R. § 1026.1(a) (2023).

any transaction in which the credit card is used as a method of payment.”¹³⁴ The consumer user of a credit card thus may legally withhold payment on a charge, forming the basis of an unresolved dispute with a merchant.¹³⁵ TILA effectively uses the payment network for a nonpayment purpose—to shift the general balance of power away from merchants and toward consumers by granting consumers a self-help remedy that would not exist apart from the use of a credit card. The payment card networks have adapted to this requirement by operating chargeback systems by which transactions can be reversed and the price charged back to the seller.¹³⁶ This activity does not resolve the actual merchant–consumer dispute, but it does change who holds the money—and the practical balance of power—pending resolution. In a small-value claim, the consumer may accordingly win by default.

TILA, however, protects only consumers who use payment cards for extensions of credit—i.e., credit cards.¹³⁷ The defining feature of a debit card, of course, is that it does *not* involve an extension of credit.¹³⁸ A debit card is instead a means by which the end user can spend money out of her own bank account without writing a check. In the wake of growth of consumer ATM transactions and the small-but-growing consumer use of other electronic means to transfer money, Congress in 1978 passed the Electronic Funds Transfer Act.¹³⁹ The EFTA applies where there is “a card, code, or other means of access to a consumer’s account for the purpose of initiating electronic fund transfers,” and thus covers, among other things, ATM cards and general-use debit cards.¹⁴⁰ The regulations implementing the EFTA, known as Regulation E, were first promulgated by the Federal Reserve Board, but—just as occurred with TILA and Regulation Z—authority for implementing the EFTA was transferred to the Bureau of Consumer Financial Protection by the 2010 Dodd-Frank

134. 15 U.S.C. § 1666i(a).

135. See *id.*

136. Rosenberg, *supra* note 110, at 534–35.

137. David Smith & Gregg Stevens, *The Impact of TILA on the Debtor-Creditor Relationship*, 61 CONSUMER FIN. L.Q. REP. 296, 298 n.12 (2007) (“Of course, the TILA applies only to credit transactions entered into primarily for personal, family, or household purposes.”).

138. Rosenberg, *supra* note 110, at 520 (describing debit cards as “payment cards that do not require consumers to qualify for credit”).

139. See *generally* Act of Nov. 10, 1978, Pub. L. No. 95-630, sec. 2001, §§ 901–921, 92 Stat. 3641, 3728 (codified as amended at 15 U.S.C. §§ 1693–1693r).

140. 15 U.S.C. § 1693a(1) (defining “accepted card or other means of access”).

Act.¹⁴¹ The EFTA is, like its older TILA sibling, fundamentally a consumer-protection statute that does not on its face apply to electronic funds transfers by businesses.¹⁴²

The EFTA and Regulation E apply to the issuance and operation of electronic-funds transfer “access devices” like debit cards.¹⁴³ EFTA, in the model established for credit cards under TILA, also limits the liability of consumers for unauthorized electronic funds transfers, thus placing the risk of excess liability on the issuer of the debit card or other access device. Consumers who notify the issuer within two business days of learning of the loss or theft of their device have their liability capped at \$50—thus matching the TILA limit for credit cards.¹⁴⁴ Unlike the credit card limit, however, the EFTA contains two additional tiers of potential consumer liability.¹⁴⁵ A consumer who fails to notify the issuer within two business days faces an increased liability limit of \$500.¹⁴⁶ Beyond that, a consumer faces unlimited liability for use after sixty days from a statement of account showing the original unauthorized use, if such losses would not have occurred “but for” the consumer’s not contacting her financial institution.¹⁴⁷

In many circumstances, notably, the \$500 and unlimited tiers of liability cannot occur because of greater customer protections in the card user’s contract with the bank. As banks have sought to promote the use of debit cards in lieu of paper checks, many contractually capped customer liability at \$50.¹⁴⁸ Contractually providing for zero liability for unauthorized use is also a practice that evens the legal playing field

141. Dodd-Frank Act, Pub. L. No. 111-203, §§ 1011–1012, 124 Stat. 1376, 1964–66 (2010) (codified at 12 U.S.C. § 5491).

142. See C. Bradford Biddle, *Misplaced Priorities: The Utah Digital Signature Act and Liability Allocation in a Public Key Infrastructure*, 33 SAN DIEGO L. REV. 1143, 1170 (1996) (describing both the EFTA and TILA as “consumer-protection statutes”).

143. 12 C.F.R. § 1005.4–8 (2023).

144. *Id.* § 1005.6(b)(1).

145. See generally Jane Kaufman Winn, *Clash of the Titans: Regulating the Competition Between Established and Emerging Electronic Payment Systems*, 14 BERKELEY TECH. L.J. 675, 688 (1999) (“In marked contrast to the flat \$50 limit on consumer liability under Regulation Z, Regulation E contemplates that a consumer who completely fails to notify a financial institution after losing the card may be exposed to losses without any statutory cap.”).

146. 12 C.F.R. § 1005.6(b)(2) (2023).

147. *Id.* § 1005.6(b)(3).

148. See RONALD J. MANN, *PAYMENT SYSTEMS AND OTHER FINANCIAL TRANSACTIONS* 209–10 (5th ed. 2011).

between debit and credit cards.¹⁴⁹ This expanded contractual limitation of liability allows banks issuing debit cards to state, relatively truthfully, that customers' accounts are no more at risk with use of a debit card with direct access to their bank accounts than they would be with a completely unconnected credit card.¹⁵⁰

Accordingly, the rise of the card-based systems arguably—and in my view, convincingly—establishes two predicates to mainstream success for an upstart payment system. First, an emergent payment system needs basic commercial law, particularly law that determines the certainty and finality of payments among private parties.¹⁵¹ A payments user in 2024, whether a consumer or a merchant, does not wish to devolve toward the uncertainty and cumbersome nature of a high-tech barter system. For the persuadable but noncommitted potential user, however, that is precisely what cryptocurrency is offering *as a payment system*. Second, an emergent mainstream payment system needs a critical mass of reliable user protection against fraud and unauthorized use. The nature of that protection may vary, but something meaningful need be present to establish confidence on both ends of the transaction—a confidence that now broadly exists with credit and debit cards, but not with cryptocurrency. Related to both of these predicates is an ease of use that does not undermine the general systemic confidence. As the next section will demonstrate, legal tools are now available to advance the case for cryptocurrency on both of these fronts.

IV. SAVING THE MAINSTREAM PAYMENT USE CASE?

Cryptocurrency certainly *can* work as a system of payment in the same sense that barter *can* also be a payment method. Cryptocurrency payments

149. See, e.g., *Zero Liability: Overview*, VISA, <https://usa.visa.com/pay-with-visa/visa-chip-technology-consumers/zero-liability-policy.html#1> [<https://perma.cc/MXM9-8XTF>] (last visited Sept. 26, 2023) (“Visa’s Zero Liability Policy is our guarantee that you won’t be held responsible for unauthorized charges made with your account or account information. You’re protected if your Visa credit or debit card is lost, stolen or fraudulently used, online or offline.” (footnote omitted)).

150. See, e.g., *Zero Liability Protection*, MASTERCARD, <https://www.mastercard.us/en-us/personal/get-support/zero-liability-terms-conditions.html> [<https://perma.cc/H4WQ-Y42Y>] (last visited Sept. 26, 2023) (“As a Mastercard cardholder, Zero Liability applies to your purchases made in the store, over the telephone, online, or via a mobile device and ATM transactions. As a cardholder, you will not be held responsible for unauthorized transactions.”).

151. See Linda J. Rusch, *Reimagining Payment Systems: Allocation of Risk for Unauthorized Payment Inception*, 83 CHI.-KENT L. REV. 561, 594 (2008) (noting that “certainty of result and finality of payment” are key objectives of a payment system, though they “cannot be the only objectives”).

are by no means impossible, and committed parties can make these transactions happen if they are willing to put in the work. But cryptocurrency is far from penetrating the mainstream for two reasons. First, it lacks the robust convenience infrastructure of card-network systems. Bitcoin and the like are usable for payments, but they are substantially harder to use than the payment alternatives they would displace.¹⁵² Without the commitment matching that of at least a hobbyist or a mild ideologue, cryptocurrency for payment is not sufficiently compelling. Second, cryptocurrency lacks a legal safety net akin to those surrounding the card-network systems. How should payment disputes be resolved? What happens if something goes awry with a cryptocurrency wallet? The fact that these kinds of questions lack consistent and assuring answers does not bode well for decentralized cryptocurrency to succeed in its original use case—as a payment system. Broad public adoption is a voluntary matter, and the lack of a legal safety net and a convenience infrastructure suggests that the future of blockchain lies in innovative applications and investment speculation, but not in payments.

Or is that view too pessimistic? Clearing the hurdles of convenience and legal certainty is possible, but not inevitable. Two thoughtfully drafted uniform acts could clear a path forward on the payments front in both areas. Their widespread adoption would rescue the payment system use case for decentralized cryptocurrency. The first and most noteworthy of these statutes is the recently approved (2022) new Article 12 of the Uniform Commercial Code, entitled “Controllable Electronic Records.” As described below, Article 12 provides some much-needed bounds of legal certainty for payments made in Bitcoin and other cryptocurrency. The second uniform act has less of a public-relations footprint than the UCC, but it would play a crucial role in shoring up both the convenience and safety-net elements. That statute is the Uniform Regulation of Virtual Currency Businesses Act. The URVCBA serves to create a safe space conducive to consumer confidence in the cryptocurrency payment product—a space that is most crucial to building a convenience infrastructure around cryptocurrency.

152. Nicole D. Swartz, *Bursting the Bitcoin Bubble: The Case to Regulate Digital Currency as a Security or Commodity*, 17 TUL. J. TECH. & INTELL. PROP. 319, 329 (2014) (“[T]he process of acquiring and spending bitcoins makes [them] difficult to use as a source of payment.”); accord Elizabeth E. Lambert, *The Internal Revenue Service and Bitcoin: A Taxing Relationship*, 35 VA. TAX REV. 88, 107 (2015) (“[T]he valuation difficulties with bitcoin make it difficult to use bitcoins as capital assets.”).

Even if these new additions to commercial law are not adopted verbatim, decentralized cryptocurrency needs *some* version of both acts. The concepts they embody are crucial to the potential for Bitcoin and other cryptocurrencies to achieve a mainstream-payments breakthrough.

A. *Uniform Commercial Code Article 12*

Bitcoin has suffered from a void at its outset: a lack of clear and certain commercial law that would, as settled law, bless Bitcoin payments as a legally valid and enforceable means to extinguish debts. Up to this point, Bitcoin's operation has been most like a barter system where the parties might agree what their transfer will be but with no assurance that the law will recognize the transfer if one of the parties tries to renege on the transaction.¹⁵³ Marek Dubovec concisely describes the problem represented by this gap in commercial law:

A transfer of a digital asset that purports to be valid and irreversible according to the rules of the system may not be valid if the applicable commercial law does not contemplate that the asset may be issued and transferred in such a form. Commercial law does not give the same legal effect to a transfer of virtual currency into a wallet [that] it does to a credit of funds to a bank account.¹⁵⁴

The problem of lacking a legally effective means of payment goes far beyond the immediate parties to the transaction. Third parties have a potential interest that, in the right setting, can make or break the viability of a transaction:

A related issue is the quality of the rights that may be acquired by the transferee as against competing claims of third parties. Should a transfer of virtual currency cause the same legal effect as a transfer of funds between bank accounts that extinguishes all competing claims?¹⁵⁵

Cryptocurrency accordingly needs legal certainty to facilitate its use as collateral.

153. See José Andre Roman, *Bitcoin: Assessing the Tax Implications Associated with the IRS's Notice Deeming Virtual Currencies Property*, 34 REV. BANKING & FIN. L. 451, 454 (2015) ("Bitcoin can function like property, as its holders often trade and barter with it.").

154. Marek Dubovec, *Toward Decentralized Commercial Law for Digital Assets*, 19 NW. J. TECH. & INTELL. PROP. 239, 272 (2022).

155. *Id.*

Commercial law in the United States is on the cusp of having a clear resolution for these issues, thanks to the 2022 Amendments to the Uniform Commercial Code. These amendments, particularly the new UCC Article 12, exemplify one of two parts of the legal framework needed to save the original use case for Bitcoin—a clear and robust delineation of parties’ rights in a transaction involving decentralized cryptocurrency. The 2022 Amendments have, as of this writing, already been enacted in eleven states.¹⁵⁶ The amendments have also at least been introduced in sixteen other states and the District of Columbia, so further enactments are likely in the foreseeable future.¹⁵⁷

The American Law Institute and the Uniform Law Commission¹⁵⁸ have been joint sponsors of the Uniform Commercial Code since its inception, and the UCC is widely considered one of the great successes in the effort to harmonize state law in the United States.¹⁵⁹ In the decades since the widespread enactment of the UCC in the 1960s,¹⁶⁰ the code has been the subject of numerous major updates, most of which—but by no means all—have been successful in achieving widespread adoption.¹⁶¹

156. 2022 Amendments to the UCC, UNIF. L. COMM’N, <https://www.uniformlaws.org/committees/community-home?communitykey=1457c422-ddb7-40b0-8c76-39a1991651ac> [<https://perma.cc/F4NA-AXX8>] (providing map showing enactment by Alabama, California, Colorado, Delaware, Hawaii, Indiana, New Hampshire, New Mexico, Nevada, North Dakota, and Washington).

157. *Id.*

158. In 2007, the National Conference of Commissioners on Uniform State Laws (NCCUSL) adopted “Uniform Law Commission” (ULC) as its descriptive name, while retaining NCCUSL as its formal name. For convenience and consistency, this Article will refer to this organization as the Uniform Law Commission, or ULC. *See About Us*, UNIF. L. COMM’N, <https://www.uniformlaws.org/aboutulc/overview> [<https://perma.cc/65G9-URCN>].

159. *See, e.g.*, Henry Gabriel, *The Revision of the Uniform Commercial Code: How Successful Has It Been?*, 52 HASTINGS L.J. 653, 654–55 (2001) (observing in 2001 that “the UCC is now fifty years old, and it has been showing its age Much of the Code has been revised to reflect contemporary business practices and it continues to guide commercial law and practice in America. Success is success.”).

160. Pennsylvania adopted the Uniform Commercial Code in 1953, followed by Massachusetts in 1957 and Connecticut in 1959. The vast majority of enactments occurred in the 1960s, however, and by 1967, the UCC had been substantially enacted by every state except Louisiana. *See* William A. Schnader, *A Short History of the Preparation and Enactment of the Uniform Commercial Code*, 22 U. MIAMI L. REV. 1, 8–10 (1967).

161. *Compare* Steven L. Harris & Charles W. Mooney, Jr., *How Successful Was the Revision of UCC Article 9?: Reflections of the Reporters*, 74 CHI.-KENT L. REV. 1357, 1357–58 (1999) (discussing the successful major revisions of Article 9 in 1999), *and* Kathleen Patchel & Boris Auerbach, *The Article 1 Revision Process*, 54 SMU L. REV. 603, 615 (2001) (describing the successful 2001 revision of Article 1), *with* Fred H. Miller, *Report on the New Payments Code*, 41 BUS. LAW. 1007, 1008 (1986) (recounting the 1980s attempt to replace Articles 3 and 4 with a “New Payments Code”), *and* William

Law tends to lag behind technological developments, however, so it is no surprise that major innovations are often inadequately accounted for in law during their earliest days. The lag was especially acute in provisions of the Uniform Commercial Code that either rely upon or assume that commerce is being conducted with physical pieces of paper. To be sure, the 2001 amendments to UCC Article 1 had incorporated into the code the concept of a “record”¹⁶² as the broader and electronic-inclusive sibling of the venerable definition of a “writing.”¹⁶³ The availability of “record” as a replacement term in much of the code prevented technology from sweeping the UCC into irrelevance, though payments under Article 3 (“Negotiable Instruments”) and Article 4 (“Bank Deposits and Collection”) remained firmly bound to tangible writing.

With payment technology largely unaddressed apart from this 2002-era bandage, many commercial players developed contractual workarounds and services to deal with the loss of the favored status of paper in business dealings. Non-UCC statutes, like the state-law Uniform Electronic Transactions Act (UETA)¹⁶⁴ and the federal Electronic Signatures in Global and National Commerce Act (ESIGN),¹⁶⁵ provided broad-based workarounds to displace physical writings from their preferred or required positions.¹⁶⁶

Despite these workarounds, it was clear by 2019 that the Uniform Commercial Code needed an update to account for recent and rapid technological changes. To that end, the American Law Institute and Uniform Law Commission appointed a joint committee for “considering

H. Henning, *Amended Article 2: What Went Wrong?*, 11 DUQ. BUS. L.J. 131, 131–32 (2009) (conducting an after-the-fact analysis of the forces leading up to the rejection of a 2003 rewrite of Article 2).

162. U.C.C. § 1-201(b)(31) (AM. L. INST. & UNIF. L. COMM’N 2021) (defining a “record” as “information that is inscribed on a tangible medium *or* that is stored in an *electronic* or other medium and is retrievable in perceivable form”) (emphasis added). Unless otherwise indicated, all references in this article to the Uniform Commercial Code prior to 2022 will be to the 2021 edition, regardless of when a particular provision was promulgated.

163. *Id.* § 1-201(b)(43) (defining a “writing” to include “printing, typewriting, or any other intentional reduction to *tangible form*”) (emphasis added).

164. Unif. Elec. Transactions Act (Unif. L. Comm’n 1999).

165. 15 U.S.C. §§ 7001–7031.

166. *See, e.g.*, UNIF. ELEC. TRANSACTIONS ACT § 7(a) (“A record or signature may not be denied legal effect or enforceability solely because it is in electronic form.”); 15 U.S.C. § 7001(c)(1) (“[I]f a statute, regulation, or other rule of law requires that information relating to a transaction or transactions . . . be provided or available to a consumer in writing, the use of an electronic record . . . satisfies the requirement that such information be in writing [under listed conditions].”).

and formulating amendments to the UCC to address emerging technological developments.”¹⁶⁷ This joint study committee ultimately became the drafting committee for a project entitled “Uniform Commercial Code and Emerging Technologies.” The final product of the drafting committee was, with minor variations, approved by both the ALI and ULC, and ultimately approved in its final form by the ULC at its 2022 annual meeting on July 13, 2022.¹⁶⁸

The product is, in the drafting committee’s own words, “broad, and the resulting revisions are expansive.”¹⁶⁹ The revisions touched every one of the active articles of the UCC, with particularly extensive amendments to Article 9 on secured transactions. These provisions are important in their own right for facilitating a new generation of asset-based lending, but they are beyond the scope of this article’s focus on payments.

Most importantly for payment-law purposes, the 2022 UCC revisions add a new Article 12 at the end of the code, entitled “Controllable Electronic Records.”¹⁷⁰ Article 12 creates rules for a broad class of intangible digital assets captured by the new term. “These assets include, for example, certain types of virtual currency and non-fungible tokens (NFTs).”¹⁷¹ Virtual currency, of course, is largely synonymous with the payment system application for cryptocurrency. NFTs, in contrast, use blockchain technology to create a collectable or investment that—akin to sports trading cards—may well have market value but has no expected currency functionality. Thus, Article 12 touches both the payment and investment prongs of blockchain and, indeed, is designed to account for qualifying technology or programming methods that do not yet exist.

167. See Edwin E. Smith & Steven O. Weise, *The Proposed 2022 Amendments to the Uniform Commercial Code: Digital Assets*, ABA BUS. L. TODAY (Mar. 25, 2022), <https://businesslawtoday.org/2022/03/proposed-2022-amendments-uniform-commercial-code-digital-assets/> [<https://perma.cc/7V6R-ATYC>]. Smith and Weise were both members of the drafting committee, with Smith serving as its chair.

168. See Katie Robinson, *ULC Wraps Up 131st Annual Meeting: Five New Acts Approved*, UNIF. L. COMM’N (July 13, 2022, 4:47 PM), <https://www.uniformlaws.org/discussion/ulc-wraps#bm612b6597-280a-4d9e-aa31-5fbb67f8e5ba> [<https://perma.cc/5J2M-X6YK>] (announcing approval of the 2022 U.C.C. amendments).

169. Uniform Commercial Code and Emerging Technologies prefatory note 2 (Unif. L. Comm’n, Annual Meeting Draft 2022).

170. U.C.C. § 12-101 (AM. L. INST. & UNIF. L. COMM’N 2022) (prescribing the title of new Article 12). In this Article, all references to the “2022” Uniform Commercial Code are to the version approved by the Uniform Law Commission on July 13, 2022.

171. Uniform Commercial Code and Emerging Technologies prefatory note 2 (Unif. L. Comm’n, Annual Meeting Draft 2022).

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While the term “controllable electronic record” may not conjure images of Bitcoin, the original cryptocurrency is in fact the prototype of the noncounterfeitable electronic assets anticipated by the term.¹⁷²

According to the new section 12-102(a)(1), a controllable electronic record (“CER”) is “a record stored in an electronic medium that can be subjected to control under Section 12-105.”¹⁷³ Any “record” under the existing Article 1 definition can be electronic and susceptible to duplication.¹⁷⁴ The lynchpin of a CER is not that it is electronic, but that, unlike other such records, it is subject to statutory “control.” The core definition of control is in section 12-105(a), and is worth setting out here in full:

UCC § 12-105. Control of Controllable Electronic Record.

(a) **[General rule: control of controllable electronic record.]** A person has control of a controllable electronic record if the electronic record, a record attached to or logically associated with the electronic record, or a system in which the electronic record is recorded:

(1) gives the person:

(A) power to avail itself of substantially all the benefit from the electronic record; and

(B) exclusive power, subject to subsection (b), to:

(i) prevent others from availing themselves of substantially all the benefit from the electronic record; and

(ii) transfer control of the electronic record to another person or cause another person to obtain control of another controllable electronic record as a result of the transfer of the electronic record; and

(2) enables the person readily to identify itself in any way, including by name, identifying number, cryptographic key, office, or account number, as having the powers specified in paragraph (1).¹⁷⁵

172. See generally Smith & Weise, *supra* note 167 (“The proposed amendments concern a class of digital assets—defined as ‘controllable electronic records’ (‘CERs’)—which would include certain virtual (non-fiat) currencies, non-fungible tokens, and digital assets in which specified payment rights are embedded.”).

173. U.C.C. § 12-102(a)(1) (AM. L. INST. & UNIF. L. COMM’N 2022).

174. See *id.* § 1-201(b)(31).

175. *Id.* § 12-105(a).

In a nutshell, when an electronic record mimics the exclusive rights to use or exclude that are more commonly associated with tangible forms of property, the record is controllable. Section 12-105(a) was drafted with acute awareness of the essential blockchain innovation pioneered with Bitcoin—the noncounterfeitability of the electronic file. Nonetheless, the provision is scrupulously technology-neutral. A future technology or programming technique might displace blockchain, and Article 12 would still apply so long as statutory “control” of the electronic record is possible.

A second key provision in Article 12 addresses the “lack of definitive commercial law rules” for situations where transactions involve digital assets, including cryptocurrency payments.¹⁷⁶ New section 12-104 provides crucial core transaction-facilitation provisions in subsections (d) and (e):

UCC § 12-104 Rights in Controllable Account, Controllable Electronic Record, and Controllable Payment Intangible.

[* * *]

(d) **[Shelter principle and purchase of limited interest.]** A purchaser of a controllable electronic record acquires all rights in the controllable electronic record that the transferor had or had power to transfer, except that a purchaser of a limited interest in a controllable electronic record acquires rights only to the extent of the interest purchased.

(e) **[Rights of qualifying purchaser.]** A qualifying purchaser acquires its rights in the controllable electronic record free of a claim of a property right in the controllable electronic record.¹⁷⁷

Notice that the take-free rule of subsection (e) applies only to a “qualifying purchaser.” Accordingly, that definition is crucial for understanding the impact of Article 12 on cryptocurrency transactions. Imagine a simple sales transaction: A merchant sells goods in exchange for Bitcoin. The merchant seller in this transaction is (perhaps a bit confusingly) the “purchaser” of Bitcoin, acquiring the token in exchange for its goods. So long as the merchant is a “qualifying purchaser” (described below), it would take the Bitcoin from the buyer free of any other person’s claim. No liens or claims could spring up to claw back the Bitcoin any more than they could for a cash sale in dollars. So how does

176. Smith & Weise, *supra* note 167.

177. U.C.C. § 12-104(d)–(e) (AM. L. INST. & UNIF. L. COMM’N 2022).

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one become this all-important “qualifying purchaser” who benefits from this transactional certainty? That is the ingenious part because Article 12 provides an answer backed up by hundreds of years of well-established commercial law:

UCC § 12-102. Definitions.

(a) [Article 12 definitions.] In this article:

[* * *]

(2) “Qualifying purchaser” means a purchaser of a controllable electronic record or an interest in a controllable electronic record that obtains control of the controllable electronic record *for value, in good faith, and without notice of a claim of a property right* in the controllable electronic record.¹⁷⁸

Scholars and practitioners of the law of negotiable instruments will immediately recognize who a qualifying purchaser effectively is—a holder in due course,¹⁷⁹ a person who acquires the Bitcoin in exchange for value (here, the goods themselves), in good faith (already defined in the UCC as “honesty in fact and the observance of reasonable commercial standards of fair dealing”¹⁸⁰), and without notice of a competing claim. This well-established standard would assure the final consummation of almost all day-to-day sales transactions that do not involve some type of fraud. The same law that has successfully set the boundaries for the exchange of commercial paper for the entire modern era would now protect a Bitcoin transaction as well. Cryptocurrency and other controllable electronic records can be metaphorically “held” and legally protected against competing claims, yet without all of the historical baggage of tangibility traditionally associated with being an Article 3 “holder.”¹⁸¹

178. *Id.* § 12-102(a)(2) (emphasis added).

179. *Cf.* Scott L. Schmookler & Katherine Musbach, *Modernizing Loan Fraud: The Proliferation and Evolution of Digital Loan Transactions*, 24 FIDELITY L.J. 85, 123 (2018) (describing the pre-2022 commercial law problem that “[a]n electronic promissory note intended to have the benefits of being a transferable record (carrying with it many of the rights granted a holder in due course under UCC Article 3) can only be created if the maker expressly agrees within the terms of such ‘electronic promissory note’ that the same is issued as a transferable record”).

180. U.C.C. § 1-201(b)(20) (AM. L. INST. & UNIF. L. COMM’N 2021).

181. *See* U.C.C. § 1-201(b)(21)(A) (AM. L. INST. & UNIF. L. COMM’N 2021) (defining “holder”

Reading together section 12-104(e) and section 12-102's definition of "qualifying purchaser" shows precisely why Article 12 would be highly beneficial for Bitcoin and other cryptocurrencies seeking a place as a mainstream payment system: buyers and sellers can accept cryptocurrency without fear of the entire transaction being legally clawed back. A sale in exchange for cryptocurrency is every bit as final as a payment by cash, check, or payment cards. Just as one can make a purchase with a twenty-dollar bill without fear that someone can lay claim to that particular piece of paper because it might have been stolen five generations ago, neither can an outsider invade and cloud a Bitcoin transaction. The presence of commercial law and a real take-free rule is a seismic change in the landscape for cryptocurrency.

Yet transactional certainty is only one piece of the legal puzzle for saving the original Bitcoin use case. Cryptocurrency also needs ease of use that does not put the end users at the mercy of bank-like digital wallets that have none of the depositor protections required for actual banks. After all, does anyone really want for their digital assets to be held, controlled, and lost by the next FTX?

B. Regulating Third-Party Digital Wallets

For those not intentionally educated and committed to the effort, using cryptocurrency for payment is not, in payments-industry parlance, "frictionless."¹⁸² Neither the almost absent-minded experience of using a credit or debit card nor the easy regularity of a bank's online bill-payment systems using the ACH network is comfortably present for making payments in cryptocurrency. For those persistent enough to seek ease of use by outsourcing the technical process of spending and being paid in cryptocurrency, the solution has been to employ a third-party digital-wallet company to facilitate cryptocurrency transactions much in the way that banks have for years facilitated (and profited from) check and card-based transactions.

Anyone certainly *can* use Bitcoin and its progeny to make payments

for purposes of negotiable instruments law); *see also id.* § 3-302 (defining "holder in due course" and setting out a take-free rule similar to that in new Article 12).

182. *See, e.g.,* Jules Polonetsky & Omer Tene, *Privacy and Big Data: Making Ends Meet*, 66 STAN. L. REV. ONLINE 25, 30 (2013) (observing that "data usage for fraud detection in the payment card industry helps facilitate safe, secure, and frictionless transactions").

where a vendor allows. But that does not mean the task is an easy one. Over the years, a significant number of reporters have crafted stories by documenting the difficulty of living entirely on Bitcoin.¹⁸³ In 2022, for example, Canadian writer Keegan Francis documented his and his wife's experience going "full crypto" for savings and life expenses.¹⁸⁴ The experience was possible, to be sure, but would be daunting for someone not already among the crypto-committed: "Aside from online purchases, and despite us asking merchants if they accept cryptocurrency, no brick and mortar stores accepted cryptocurrency directly. The only exception is when we went to El Salvador,"¹⁸⁵ which, of course, is the country that has most famously mandated acceptance of Bitcoin as legal tender.¹⁸⁶ Francis, though writing from the perspective of an enthusiast, is one of a string of authors to write in the genre:

Seema [Mody, of CNBC, reporting in 2017] is not the first journalist to document the supposed struggle of attempting to live exclusively using Bitcoin as currency. Kashmir Hill produced a similar story for *Forbes* in May 2013, making the same conclusions pertaining to the hassles of obtaining basic staples such as food using Bitcoin. The concept was again dredged up by CNN's Morgan Spurlock in 2015, the year after the release of 'Life on Bitcoin'—a documentary made by a honeymooning couple seeking to travel and live solely on Bitcoin.¹⁸⁷

One could not easily imagine similar adventure stories being written about intrepid reporters or cash-free enthusiasts living solely on credit cards and debit cards. In large part, that inapposite comparison arises from the extent to which payment cards have fully penetrated the marketplace and become—from the user's perspective—boringly frictionless at the

183. See, e.g., Seema Mody, *It's Still Really Hard to Use Bitcoin as a Regular Currency*, CNBC (Jun. 14, 2017, 1:39 PM), <https://www.cnbc.com/2017/06/14/despite-its-record-setting-surge-this-year-its-still-really-hard-use-bitcoin-as-a-regular-currency.html> [https://perma.cc/KH5X-6T57] ("Clearly, living on Bitcoin is challenging.").

184. See Keegan Francis, *Can You Actually Live Off Crypto? The Pros and Cons of Going 'Full Crypto'*, CRYPTOVANTAGE (Oct. 26, 2022), <https://www.cryptovantage.com/news/can-you-actually-live-off-crypto-the-pros-and-cons-of-going-full-crypto/> [https://perma.cc/V4E6-SR5J].

185. *Id.*

186. See McCall, *supra* note 46, at 314 (describing El Salvador's adoption of Bitcoin as legal tender).

187. Samuel Haig, *Mainstream Journalist Makes Bizarre Attempt at Living On Bitcoin for a Week*, BITCOIN.COM (June 22, 2017), <https://news.Bitcoin.com/mainstream-journalist-makes-bizarre-attempt-at-living-for-a-week-using-Bitcoin/> [https://perma.cc/M98Q-YMPG].

point of sale.¹⁸⁸ A consumer user need not expend additional thought or effort to pay for a transaction with a card. The same could not be said for cryptocurrency. But, as might be said of many technological challenges from over the past decade, “there’s an app for that.”¹⁸⁹

More to the point, there are *multiple* mobile-phone applications offered by businesses more than willing to help manage your cryptocurrency and provide a smoother user experience. These “virtual currency businesses,” to borrow one of many terms describing them, facilitate cryptocurrency payment transactions—and yes, investment transactions, too—in a manner akin to a securities brokerage. In a very loose sense, if you can day-trade in stocks, you can use cryptocurrency as well. Of course, the readily available securities comparison is precisely the problem.¹⁹⁰ Holding companies of any size that trade in a volatile investment can collapse. That, at a minimum, is at least one crucial lesson of the FTX collapse.

After the extended discussion in this article of cryptocurrency, shifting gears on terminology is now necessary. The 2017 Uniform Regulation of Virtual-Currency Businesses Act included the following definition of “virtual currency,” a term that for present purposes includes decentralized cryptocurrency:

URVCBA § 102(23)

“Virtual currency”:

(A) means a digital representation of value that:

(1) is used as a medium of exchange, unit of account, or store of value; and

188. See Yane Svetiev & Giacomo Tagiuri, *The Opportunities and Dislocations of Technological Change: EU Law as a Coping Mechanism?*, 24 COLUM. J. EUR. L. 612, 627 (2018) (observing that payment systems innovations dating back to common cash adoptions have the goal of making transactions frictionless at the point of sale).

189. The now ubiquitous phrase is widely attributed to a 2009 Apple advertising campaign. See Brian X. Chen, *Apple Registers Trademark for ‘There’s an App for That’*, WIRED (Oct. 11, 2010, 2:38 PM), <https://www.wired.com/2010/10/app-for-that/> [<https://perma.cc/9D2X-EYWR>] (“Apple in 2009 started using the phrase ‘There’s an app for that’ in TV ads to show off the multitude of apps available for iOS devices through its popular App Store, which opened July 2008.”).

190. See generally Nathan Reiff, *The Collapse of FTX: What Went Wrong with the Crypto Exchange?*, INVESTOPEDIA (Feb. 27, 2023), <https://www.investopedia.com/what-went-wrong-with-ftx-6828447> [<https://perma.cc/QNT3-V9KP>] (“As the largest collapse in the short history of cryptocurrencies, FTX may further deter investors, who already are cautious because of concerns about stability and security.”).

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(2) is not legal tender, whether or not denominated in legal tender;
and

(B) does not include:

(1) a transaction in which a merchant grants, as part of an affinity or rewards program, value that cannot be taken from or exchanged with the merchant for legal tender, bank credit, or virtual currency; or

(2) a digital representation of value issued by or on behalf of a publisher and used solely within an online game, game platform, or family of games sold by the same publisher or offered on the same game platform.¹⁹¹

This definition of virtual currency is, on its face, more expansive than the concept of decentralized cryptocurrency on the Bitcoin model, but in hindsight, also problematically restrictive. Its 2017 formulation of virtual currency as “not legal tender” is challenging in the wake of El Salvador’s adoption of Bitcoin and would need revision along the lines of the UCC 2022 amendments’ creation of the “controllable electronic records” concept.¹⁹² Accordingly, this article’s advocacy of the URVCBA will assume a UCC-style definition that would include Bitcoin, just as the 2017 drafters clearly intended to do. A “virtual currency business” as described below that did not include Bitcoin would be a most marginal case, even in today’s cryptocurrency marketplace.

Setting that easily resolved problem aside, the trigger for URVCBA regulation occurs when third-party wallets engage in “control” of virtual currency. That concept is certainly quite familiar in light of its later use in UCC Article 12. The URVCBA version of control means, “when used in reference to a transaction or relationship involving virtual currency, power to execute unilaterally or prevent indefinitely a virtual-currency transaction.”¹⁹³ Functionally, URVCBA and the 2022 UCC are describing the same blockchain-enabled legal phenomenon of control.

Control, however, is not enough on its own. The virtual currency–controlling entity must engage in “virtual-currency business activity” akin to banking-adjacent services offered by regulated money-transmission

191. Unif. Regul. of Virtual-Currency Buss. Act § 102(23) (Unif. L. Comm’n 2017) [hereinafter Unif. V.C. Bus. Act].

192. See U.C.C. § 12-102(a)(1) (AM. L. INST. & UNIF. L. COMM’N 2022).

193. UNIF. V.C. BUS. ACT § 102(3)(A).

companies, such as Western Union. The drafters' prefatory note describes the similarity of these two concepts:

“Virtual-currency business activity” covered by this act is similar to services whose providers are already subject to licensure and prudential regulation by “money transmitter” or “money services” statutes in many states. In particular, the act would require licensure of and impose prudential regulations and customer protection requirements on businesses whose products and services include

- (1) the exchange of virtual currencies for cash, bank deposits, or other virtual currencies;
- (2) the transfer from one customer to another person of virtual currencies; or
- (3) certain custodial or fiduciary services in which the property or assets under the custodian's control or under management include property or assets recognized as “virtual currency.”¹⁹⁴

In other words, the drafters bought into the concept that service providers are capable of misappropriating financial assets—just as money transmitters could do. This reality requires some level of soundness and solvency regulation to protect customers.

The official comments accompanying this definition show, importantly, the Act's intent to reach only service providers and not the users of cryptocurrency:

[The term “Virtual-currency Business Activity”] is designed to capture those activities with sufficient similarity to money transmission or other regulated money services activities as to become proper subjects for regulation under this act. The definition restricts the subject activity to that performed with or on behalf of residents of the jurisdiction that seeks to license the provision of such activities in a jurisdiction in the United States.

The term is intended to limit the scope of this act to providers of products and services that are comparable to: (1) money transmission, issuance of virtual currencies from a centralized administration or source, exchange of virtual-currency for other virtual currencies, bank credit or legal tender, and (2) custodianships similar in nature to a securities entitlement subject to Article 8 of the Uniform Commercial Code.¹⁹⁵

194. *Id.* prefatory note.

195. *Id.* § 102 cmt. 2, ¶¶ 1–2.

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Given the goal of a relatively safe consumer experience for those interacting with digital-wallet providers, what does the statute provide on that front? Section 501 of the URVCBA requires licensees and provisional registrants to issue disclosures to potential customers to inform them about fees and any insurance coverage for the product or service, often akin to the disclosures required for banks and payment-card issuers. The businesses regulated by the Act must establish specific policies and compliance programs to guard against fraud, cyberthreats, and terrorist activity, all of which would simultaneously harm the consumer and also destroy confidence in the third-party wallets.¹⁹⁶

Section 204, entitled “Security, Net Worth, and Reserves,” addresses the type of topics most commonly associated with bank solvency, but does so on a smaller, ramping-up scale that recognizes the start-up nature of many digital-wallet companies.¹⁹⁷ Official Comment 3 to the section expressly acknowledges that a digital-wallet startup cannot be regulated precisely like an established bank or money transmitter and accordingly allows regulatory flexibility:

This act allows the [state regulatory] department to accept funds, investment property, surety bonds, letters or credit or other security from the licensee or registrant as evidence of the licensee’s or registrant’s ability to conduct operations and have sufficient funding available to wind up its operations in this state as may occur. The primary reason is that, although virtual-currency business may find it easier to obtain a letter of credit than a surety bond, banks have their own credential requirements for issuing letters of credit. The requirements of this act should not convey a sense that there is something wrong with a virtual-currency business if it cannot obtain a particular form of security, such as a letter of credit or surety bond, because the market is immature.¹⁹⁸

In the end, the purpose and effect of the URVCBA would be to facilitate the integration of cryptocurrency into the commercial mainstream by adding commercial clarity to the base-level transactions:

The point here is not that the transfer of virtual currency is superior in most respects to payment in cash, as indeed is true for most modern payment methods, but why the merchant agrees to receiving cash (ignore the legal rule there is no choice where legal tender is involved). It is not because the paper money has intrinsic value, or can be exchanged for

196. *See id.* §§ 501, 601.

197. *See id.* § 204.

198. *Id.* § 204 cmt. 3.

gold (which also has no intrinsic value), but because people perceive value in dollar bills because of the governments and legal rules that govern them. Likewise for virtual currency—people see value in using payment methods when the legal rules for it are clear and workable, and the act will enhance that perception of value since present “money transmission” rules that could be applied to govern virtual-currency business transactions are at best not designed to do so or are unclear in application.¹⁹⁹

To the extent that the problem for cryptocurrency is opaque and cumbersome processes for usage and acceptance, the solution is the skill and innovation of third-party wallet providers. To the extent that the problem is trust, however, the third-party wallet providers must have consumer confidence. Such confidence may well be challenging to come by in the wake of FTX and other crypto-adjacent business collapses. The Uniform Regulation of Virtual Currency Businesses Act would facilitate confidence in the third-party wallet providers who are necessary for a frictionless mass-market experience. As of this writing, the URVCBA has been enacted in California and Rhode Island and is being considered for adoption in Nevada, and Illinois.²⁰⁰ While this Act does not have the momentum and prestige of amendments to the Uniform Commercial Code, the concepts it embodies are—for Bitcoin-style cryptocurrency—of equal importance.

Financial soundness and consumer-protection regulation of digital wallets as exemplified by the URVCBA is the second critical piece of the puzzle for achieving a legal foundation in which decentralized cryptocurrency can break through to mainstream usage. UCC Article 12 provides the commercial law (and thus legal confidence) needed for the street-level purchase transactions, but URVCBA paves the way for seamless integration into the payment experience by facilitating digital-wallet safety. Both pieces, if widely enacted, lay out a path for Bitcoin and its decentralized cryptocurrency progeny to achieve mainstream acceptance by embodying successful concepts tried and proven with the rise of card-based systems. With broad enactment of both third-party wallet regulation via the URVCBA and the commercial law for digital assets embodied in UCC Article 12, cryptocurrency would actually be in

199. *Id.* prefatory note.

200. *Virtual-Currency Businesses Act, Regulation of*, UNIF. L. COMM’N, <https://www.uniformlaws.org/committees/community-home?CommunityKey=e104aaa8-c10f-45a7-a34a-0423c2106778> [<https://perma.cc/D7SU-VALB>].

a position to succeed in the original use case surrounding its creation. A legal foundation, to be sure, is not a guarantor of success, but a *lack* of legal foundation is a guarantor of failure—or more specifically, relegation to being little more than a speculative investment. The market capitalization of FTX was enormous, but it was premised on speculation without reliance on the utility of the actual underlying product. A robust mainstream payment system, in contrast, is an actual product that demonstrates the core usefulness of blockchain technology.

V. CONCLUSION—APPROACHING A HARD FORK

Can the original use case envisioned for Bitcoin—that of being a widely adopted mainstream payment system—be saved? This article asserts that the answer is yes, but the clock is ticking. Cryptocurrency market development is at an inflection point. It can continue down its existing road of investment volatility and speculative bubbles.²⁰¹ Or, as advocated here, cryptocurrency could follow the path previously trod by credit and debit cards toward becoming a popular and relatively frictionless payment system.²⁰² Legal innovations are now readily available that could reproduce for cryptocurrency many of the key conditions that facilitated the breakthrough successes of the card-network system while still preserving the principal benefits of a decentralized blockchain structure. New Article 12 of the Uniform Commercial Code and a version of the Uniform Regulation of Virtual Currencies Act address the legal gaps that have hobbled cryptocurrency's acceptance in the payments realm.²⁰³ Cryptocurrency advocates, however, now face a hard fork as to how to respond. Some disjunction certainly exists between the libertarian-infused original vision for Bitcoin and the reality of the need for certain regulatory guardrails. Cryptocurrency-as-payment has been hobbled by a lack of foundational commercial law and consumer-protection law. Mainstream payment system sellers need to be able to accept cryptocurrency without fear of the payment being legally clawed back. Buyers, for their part, need to know that a Bitcoin-like transaction

201. See Silverstein, *supra* note 6, at 891 (“‘Volatile’ is a word incessantly used when describing cryptocurrencies.”).

202. See Svetiev & Tagiuri, *supra* note 187, at 627 (observing that payment systems innovations dating back to common cash adoptions have the goal of making transactions frictionless at the point of sale).

203. See U.C.C. § 12 (Am. L. Inst. & Unif. L. Comm’n 2022); Unif. V.C. Bus. Act.

is final such that an outsider cannot invade and place a cloud over their purchases.

New Uniform Commercial Code Article 12 provides transactional certainty by the presence of a genuine take-free rule. This provision is a seismic change in the landscape for cryptocurrency. Bitcoin and its progeny likewise need ease of use that does not put the end users at the mercy of bank-like digital wallets that have none of the depositor protections required for actual banks. No users want their digital assets to be held, controlled, and lost in the next FTX-style collapse. On this front, the Uniform Regulation of Virtual Currency Businesses Act creates crucial consumer protection for users of third-party digital wallets, transforming a technical convenience into a safe interface for mainstream users. In short, cryptocurrency needs the transactional certainty offered by the UCC Article 12 alongside the flexible-but-meaningful regulation of third-party digital wallets that is offered by the URVCBA. That is the hard fork for decentralized cryptocurrency: either be marginalized as a volatile niche investment and squeezed from the mainstream-payments realm by the coming of central-bank digital currencies, or else embrace the payments mainstream facilitated by commercial law and a modicum of consumer protection. The latter approach is far preferable for those seeking a future where Bitcoin and other cryptocurrencies achieve their place among past successful innovations in the realm of electronic payments.