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THE COMPLEX IMPLICATIONS OF FINTECH FOR FINANCIAL INCLUSION

HEATHER HUGHES*

I

INTRODUCTION

Emerging financial technologies, or “fintech,” such as cryptocurrencies, online mobile banking, crowd funding, blockchain-based transaction platforms, and the like, have potential to expand financial inclusion.¹ They can create access to banking services, investment possibilities, and capital for those currently underserved in these regards.² At the same time, new technologies have the

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1. In keeping with the definitional guidelines of this symposium, “financial inclusion” means widespread deposit-account ownership and access to payments services. Steven L. Schwarcz & Theodore L. Leonhardt, *Scoping and Defining Financial Inclusion, Access to Credit, and Sustainable Finance*, 84 LAW & CONTEMP. PROBS., no. 1, 2021, at 1, 5. Relatedly, “access to credit” means availability of adequate loan funding on reasonable terms, especially for aspiring entrepreneurs from underserved groups. *Id.* at 9. “Sustainable finance” means continuously providing financial inclusion and access to credit. *Id.* at 10.

2. Recent scholarship discusses the potential, but also concerns, for financial inclusion that fintech platforms present, including concerns about biased algorithms that produce discriminatory results and about data privacy. See generally Matthew Aaron Chou, Note: *What’s in the “Black Box”? Balancing Financial Inclusion and Privacy in Digital Consumer Lending*, 69 DUKE L.J. 1183 (2020); Adam Bruckner, *The Promise and Perils of Algorithmic Lenders’ Use of Big Data*, 93 CHI.-KENT L. REV. 3 (2018); Sonia K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 UCLA L. REV. 54 (2019) (noting the tension between Artificial Intelligence and civil rights); Lauren Kirchner, *When Discrimination Is Baked Into Algorithms*, ATLANTIC (Sept. 6, 2015), <https://www.theatlantic.com/business/archive/2015/09/discrimination-algorithms-disparate-impact/403969> [<https://perma.cc/V4JG-3RMW>]; Lizzie R. Hobbs, *Facebook’s Libra: The Social Media Giant’s Pursuit of Global Financial Inclusion*, 24 N.C. BANKING INST. 331 (2020); A. DEMIRGÜÇ-KUNT, LEORA KLAPPER, DOROTHE SINGER, SANIYA ANSAR & JAKE HESS, WORLD BANK GRP., THE GLOBAL FINDEX DATABASE 2017: MEASURING FINANCIAL INCLUSION AND THE FINTECH REVOLUTION 4 (2018), <https://globalindex.worldbank.org> [<https://perma.cc/B49W-7ZYU>]; DOUGLAS W. ARNER, ROSS P. BUCKLEY & DIRK A. ZETTSCHKE, ALL. FOR FIN. INCLUSION, FINTECH FOR FINANCIAL INCLUSION: A FRAMEWORK FOR DIGITAL FINANCIAL TRANSFORMATION (2018), https://www.afi-global.org/sites/default/files/publications/2018-09/AFI_FinTech_Special%20Report_AW_digital.pdf [<https://perma.cc/Z3X3-2UG5>]; Julapa Jagtiani & Catharine Lemieux, *Fintech Lending: Financial Inclusion, Risk Pricing, and Alternative Information* 1, 7-17 (Fed. Rsrv. Bank of Phila., Working Paper No. 17-17, 2017) <https://www.philadelphiafed.org/-/media/research-anddata/publications/working-papers/2017/wp17-17.pdf> [<https://perma.cc/Q77H-QLKT>] (noting the potential for alternative data to improve financial inclusion); *Beyond Silk Road: Potential Risks, Threats, and Promises of Virtual Currency: Hearing Before the S. Comm. on Homeland Sec. & Governmental Affairs*, 113th Cong. 5 (2013) (statement of Patrick Murck, General Counsel, Bitcoin Foundation), <http://www.hsgac.senate.gov/download/?id=4cd1ff12-312d-429f-aa41-1d77034ec5a8> [<https://perma.cc/K28L-WPQ8>] (“We believe Bitcoin holds out a number

potential to aggravate systemic risk.³ For individuals and small businesses, the possibilities that emerging fintech platforms create are exciting.⁴ But, from a macro perspective, what are the implications for financial inclusion and sustainability of systemic risks that fintech may compound?

This Article builds upon recent scholarship on fintech, systemic risk, and financial regulation by (i) discussing two ways in which blockchain-based market activity may elevate systemic risk; (ii) contending that increased systemic risk threatens financial inclusion and sustainability; and (iii) arguing that, as blockchain-based financial activity evolves, we should not overlook the regulatory potential of private-law doctrines and concepts. Other scholars have articulated how fintech is poised to undermine the power dynamic between public and private actors that originated with the New Deal, presenting a grave public policy challenge.⁵ In engaging this public policy challenge, along with considering top-down regulatory options, lawmakers should articulate how blockchain-based transactions comport with contract, property, and entity laws. Failure to do so could aggravate fintech's effects on systemic risk. Market practices could proliferate despite incoherent or inconsistent legal grounding, making it difficult for regulators to enforce longstanding norms that private-law rules embody.

Commentators speculate that extensive market activity will transpire on blockchain-enabled platforms. This Article does not take a position on whether this is true or how soon developments will materialize. The purpose, here, is to consider implications of fintech, given possibilities that technology presents.

Blockchain-based financial activity has the potential to compound risks to market stability. First, it facilitates synthesizing financial assets into obtuse financial products, the trading of which can escalate in volume and speed seemingly without limit.⁶ Second, it enables self-executing transactions that may

of powerfully beneficial social and economic outcomes, including global financial inclusion, enhanced personal liberty and dignity, improved financial privacy, and a stable money supply for people in countries where monetary instability may threaten prosperity and even peace.”); EVA WOLKOWITZ & SARAH PARKER, CTR. FOR FIN. SERVS. INNOVATION, *BIG DATA, BIG POTENTIAL: HARNESSING DATA TECHNOLOGY FOR THE UNDERSERVED MARKET* (2015), <https://s3.amazonaws.com/cfsi-innovation-files/wp-content/uploads/2017/02/13062352/Big-Data-Big-Potential-Harnessing-Data-Technology-for-the-Underserved-Market.pdf> [<https://perma.cc/3PHS-Z39Y>]; Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CALIF. L. REV. 671 (2016).

3. See generally Saule T. Omarova, *New Tech v. New Deal: FinTech as a Systemic Phenomenon*, 36 YALE J. ON REG. 735, 790–91 (2019) (arguing that fintech applications may shift the fundamental balance of the public and private roles in the financial sector, thus increasing systemic risk); Angela Walch, *The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk*, 18 N.Y.U. J. LEGIS. & PUB. POL'Y 837, 855–82 (2015); Heather Hughes, *Blockchain and the Future of Secured Transactions Law*, 3 STAN. J. BLOCKCHAIN L. & POL'Y 21 (2020); Hilary J. Allen, *Driverless Finance*, 10 HARV. BUS. L. REV. 157 (2020); William Magnuson, *Regulating Fintech*, 71 VAND. L. REV. 1167 (2018).

4. For example, fintech platforms can provide credit by using artificial intelligence underwriting and alternative data. See Christopher K. Odinet, *Securitizing Digital Debts*, 52 ARIZ. ST. L.J. 477, 490–94 (2020).

5. Omarova, *supra* note 3; see *infra* notes 30–36 and accompanying text.

6. Omarova, *supra* note 3.

defy private law doctrines and regulatory requirements in ways that are difficult to undo.⁷ Each of these attributes of blockchain-based financial markets aggravates systemic risk.⁸

Macro-level regulatory concerns presented by emerging platforms for financial activity implicate financial inclusion and sustainability. If the financial crisis of 2007–2008 is any guide, systemic financial instability can exacerbate the wealth gap and ultimately set back groups that, in theory, might have benefitted from the greater access to credit associated with market expansion. Financial crises hit those who are struggling harder than those who are wealthy, resulting in diminished financial inclusion and sustainability.

With respect to some market practices, we can trace a relationship between systemic risk concerns and efforts at financial inclusion for individual investors. For example, the expansion of sub-prime mortgage products in the early 2000s was intended, at least in theory and in part, to create access to credit to purchase homes for people who could not access this market using more traditional mortgage products.⁹ But the secondary market appetite for mortgage-backed securities and the rapid origination of higher-risk mortgage products had the effect, when markets failed, of further excluding many homeowners whose attempts at financial inclusion resulted in foreclosure.

While individual investor-orientated transactions enabled by blockchain that rely on secondary market capital do exist, this Article is not about the connection between products designed to increase inclusion but that also contribute to systemic risk. Rather, it is about how blockchain-based transactions can aggravate systemic risk, and the phenomenon that economic downturns caused by excessive systemic risk erode financial inclusion and sustainability. For example, Christopher Odinet has observed that consumer and small business-oriented fintech lending services rely on securitization of these loans (that are underwritten with algorithms) to access capital.¹⁰ This market activity directly links the creation of complex, fintech-based financial products to financial services associated with inclusion. But other fintech market practices are not

7. See Hughes, *supra* note 3 (discussing self-executing transactions and private-law norms); Allen, *supra* note 3 (discussing self-executing transactions, algorithmic complexity, and regulatory requirements). Blockchain-based market activity also brings operational risk inherent in software and decentralization (depending on whether the blockchain is permissioned and how it is administered). See Walch, *supra* note 3.

8. See *infra* Part II.

9. For example, the George W. Bush administration made explicit the policy objective of increasing rates of home ownership among minorities. Subprime mortgage lending enables access to credit and is superior in most instances to sale-leaseback or installment sale alternatives to traditional mortgage lending. Subprime lending did not necessitate increased predatory lending, the development of excessively complex financial products, or sloppy underwriting practices. Yet many home buyers ended up in foreclosure for a mix of reasons including misleading lending practices, loss of value to their homes due to overall market decline, lack of understanding of loan terms, or changed circumstances. See generally, FIN. CRISIS INQUIRY COMM'N, THE FINANCIAL CRISIS INQUIRY REPORT 83–213 (2011), [govinfo.gov/content/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf](https://www.govinfo.gov/content/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf) [<https://perma.cc/XE52-NPNX>].

10. Odinet, *supra* note 4.

necessarily linked directly to expanding retail products or individual investing. Regardless, the consequences of a failure of a systemically significant financial institution, or of widespread market failure, do affect individuals and can undermine financial inclusion and sustainability.

Policy makers have been considering for some years now how regulation can provide adequate consumer and investor protection in the context of emerging fintech platforms without stifling the potential for innovation and financial inclusion. Financial regulation to address systemic risk—the soundness of systemically significant financial institutions and the like—is often thought of as a field apart from investor protection regulation to mitigate risks to consumers and small businesses using emerging platforms. But both implicate the question of whether and how emerging financial technologies will affect financial inclusion and financial sustainability.¹¹

Part II of this Article describes a specific fintech development: blockchain-based financial transactions, or smart contracts for trade transactions executed on a distributed ledger. This Part describes what is new about this emerging financial technology that warrants heightened vigilance from a regulatory perspective and how this technology aggravates systemic risk. Part III assesses the relationship between systemic risk and financial inclusion. The potential for blockchain technology to expand financial inclusion is tremendous, but the macro-level financial concerns that this technology presents have complex implications for financial inclusion and sustainability. Part IV discusses regulation of market activity on emerging platforms, focusing on the importance of private-law rules. Private-law doctrines and concepts contribute to systemic stability in important ways that policymakers sometimes overlook.¹² For example, the limitations on freedom of contract imposed by the property concept of *numerus clausus*¹³ prevent market actors from circumventing various regulatory requirements.¹⁴ Blockchain-based smart contracts can conflate contract and property-law functions and can make security interests and entities indistinguishable.¹⁵ How do we ensure that private-law norms that contribute to

11. In addition, these fields are linked in contexts where practices like securitization involve consumer or small business loans. See Odinet, *supra* note 4 at 485 (showing “how fintech is causing a major convergence between policies associated with consumer protection (licensing, disclosures, fairness, etc.) on the one hand and those dealing with commercial and corporate finance (i.e., the capital markets, risk, and failure) on the other”); Erik F. Gerding, *The Subprime Crisis and the Link Between Consumer Financial Protection and Systemic Risk*, 4 FLA. INT’L U.L. REV., 435, 436 (2009) (observing the often-overlooked connection between “regulations designed to protect consumers and regulations intended to protect financial markets from the collapse of financial institutions”).

12. See Heather Hughes, *Financial Product Complexity, Moral Hazard, and the Private Law*, 20 STAN. J. L. BUS. & FIN. 179, 210–19 (2015) [hereinafter *Financial Product Complexity, Moral Hazard, and the Private Law*].

13. *Numerus clausus* is the principle that the law will only enforce an interest as a property right—rather than a contract right—if it conforms to a limited number of generally accepted and standardized forms. Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1, 3–4 (2000); see also *infra* text accompanying notes 64–67.

14. Hughes, *supra* note 12, at 211–16.

15. See Hughes, *supra* note 3, at 17–23.

systemic stability persist in fintech-enabled markets? How do we establish a functional relationship between private market activity and collective welfare? How we approach these broad, normative questions will determine whether fintech developments yield greater financial inclusion and sustainability, or the potential for worsening inequality and instability.

II

FINTECH AND REGULATORY CHALLENGES

The term fintech refers generally to technologies for financial services and transactions and includes a variety of platforms and developments. Developments in technology have at numerous junctures impacted financial transactions and services. As legal scholars Chris Brummer and Yesha Yadav state, contemporary fintech departs from past developments in that it “generally (i) relies on the use of big data; (ii) involves complex algorithms and artificial intelligence; and (iii) showcases a tendency to seek out disintermediation in traditional financial services and supply chains by a nontraditional set of firms.”¹⁶

This Article will focus primarily on one emerging financial technology: the use of blockchain-based smart contracts for financial transactions. Blockchain and smart contracts are distinct technologies that can function apart from each other. It is the use of blockchain platforms for the expression and execution of smart contracts that presents wide-ranging possibilities for financial markets. It is this financial technology that promises lower-cost, faster settlements in financial markets—offering the potential for lower costs of capital that can foster financial inclusion but also the potential for aggravated systemic risk.

A blockchain is a distributed ledger that records transactions.¹⁷ When a ledger is distributed, it means that there is no master copy: any participant may maintain a copy of the ledger and yet all participants have confidence that theirs matches all other copies.¹⁸ Participants can trust the accuracy of a ledger without reference to a master copy or central authority; this is the innovation of blockchain

16. Chris Brummer & Yesha Yadav, *Fintech and the Innovation Trilemma*, 107 GEO. L.J. 235 (2019), at n.18.

17. All blockchains are distributed ledgers, but not all distributed ledgers fit neatly into the category “blockchain.” The Corda system for transactions among regulated financial institutions, for example, is a distributed ledger that uses a data structure that is distinct from a blockchain. See Richard Gendal Brown, *Introducing R3 Corda™: A Distributed Ledger Designed for Financial Services*, GENDAL.ME (Apr. 5, 2016), <https://gendal.me/2016/04/05/introducing-r3-corda-a-distributed-ledger-designed-for-financial-services> [https://perma.cc/674Y-D4ZW]. Despite its distinct data structure, commentators call the R3 financial services consortium a “blockchain firm” and include it in the discussions of blockchain technology. Walch notes that some have called expansive uses of the term blockchain “chainwashing”—using the word “blockchain” because of its market hype in contexts where “distributed ledger” would be more accurate. See Angela Walch, *The Path of the Blockchain Lexicon (and the Law)*, 36 REV. BANKING & FIN. L. 713, 727 (2017). A member of the R3 consortium has called out this “chainwashing” in contexts where companies either do not actually use blockchain technology, or do not need to use it to best serve their customers. See *id.*; Tim Swanson, *Chainwashing*, GREAT WALL NUMBERS (Feb. 13, 2017), <https://www.ofnumbers.com/2017/02/13/chainwashing> [https://perma.cc/7CFB-Z9U7].

18. Kevin Werbach, *Trust, but Verify: Why the Blockchain Needs the Law*, 33 BERKLEY TECH. L.J. 488, 500 (2018).

technology. People commonly refer to blockchain technology, blockchains, or the blockchain.¹⁹ Or, they refer to distributed ledger technology (DLT), or shared ledgers or consensus ledgers.²⁰ Some commentators assert that the term blockchain should refer only to public or permissionless ledgers, while others use blockchain to mean any distributed ledger—open access or permissioned.²¹ All blockchains are constituted by (i) a ledger,²² (ii) a network,²³ and (iii) consensus,²⁴ that is (iv) unalterable by feasible means.²⁵ This Article uses the term blockchain to refer to any platform constituted by these essential elements, regardless of whether it is permissioned or fully decentralized.

Smart contracts are agreements that are self-executing and self-enforcing, expressed in code.²⁶ Different forms of blockchain-based smart contract

19. While currently there are numerous blockchains in operation, it is possible that in the future there will be only one blockchain of consequence. *Id.*, at 501. When commentators use “the blockchain,” in some contexts it seems they are assuming such an outcome and referring to “the blockchain” as we refer to “the Internet.” In other contexts, “the blockchain” means the Bitcoin blockchain specifically, since Bitcoin is the dominant platform. Werbach notes: “Bitcoin today remains the biggest platform in terms of market capitalization of tokens, but its dominance appears to be waning. In twenty years, it could be worth several trillion dollars, or zero.” *Id.*

20. People use the word “blockchain” inconsistently, making the terminology surrounding this technology highly confusing. *See* Walch, *supra* note 17, at 718 (describing the inconsistent and misleading vocabulary surrounding blockchain and how the resulting confusion can affect regulation). The terms blockchain and distributed ledger are not necessarily interchangeable. Commentators refer to a “consensus ledger” as a ledger that does not keep track of a history of transactions but rather operates according to a consensus generated on a ledger of accounts that is updated with new transactions at each validation round. *See id.* at 719–20; Andrea Pinna & Wiebe Ruttenberg, *Distributed Ledger Technology in Securities post-Trading*, 9 (European Cent. Bank, Occasional Paper No. 172, Apr. 2016), <https://www.ecb.europa.eu/pub/pdf/scpops/ecbop172.en.pdf>; Sebastien Meunier, *Blockchain Technology—a Very Special Kind of Distributed Database*, MEDIUM (Dec. 29, 2016), <https://medium.com/@sbmeunier/blockchain-technology-a-very-special-kind-of-distributed-database-e63d00781118> [<https://perma.cc/AN44-3KBU>] (describing the iterations of distributed ledger technology, including blockchain).

21. Walch, *supra* note 17, at 725.

22. “The ledger is the database that expands as it incorporates approved transactions. Transactions are added to the ledger using cryptographic signatures and keys, and they are grouped into blocks. Each block contains a cryptographic hash to the previous block, keeping the blocks in order.” Hughes, *supra* note 3, at 31.

23. “The network is the computer nodes running the software for the application—for example, the nodes running the Bitcoin software, connected in a peer-to-peer network—where each node maintains a complete copy of the blockchain. Each new transaction is broadcast to all nodes in the network. The nodes add new blocks to the blockchain as transactions are validated.” *Id.* at 32.

24. Consensus is how blockchains establish trust among untrustworthy participants in the absence of a centralized authority or enforcement mechanism. On the Bitcoin network, for example, consensus is generated with a process called mining. This consensus mechanism first executed by the Bitcoin blockchain is commonly called “proof-of-work,” or creating consensus with a “proof-of-work algorithm.” Many permissionless and some permissioned blockchains rely on proof-of-work algorithms. These require considerable computing power (and energy) for their administration. Permissioned blockchains may use a consensus mechanism other than proof-of-work. Hyperledger Fabric, for example, provides a number of consensus algorithms available to participants who use a Hyperledger platform. The difficulty of these algorithms, and the computational power they demand, varies. *See id.* at 32–33.

25. No one can alter a transaction once it is approved because the blocks are linked in a sequence that cannot be feasibly altered. *See id.* at 31.

26. *See* Kevin Werbach & Nicolas Cornell, *Contracts ex Machina*, 67 Duke L.J. 313, 313 n.2, 319–20 (2017). There are other definitions of smart contracts. Max Raskin defines them as “agreements wherein

accomplish different ends. The smart contracts that this Article focuses on are single smart contracts for trade transactions, executed on a decentralized ledger. They reflect a “decentralized bond between two or more parties on the blockchain,” that operates in response to financial incentives.²⁷

Blockchain-based smart contracts, as a platform for financial markets, can compound risks to market stability. In recent scholarship Saule Omarova identifies a prevailing narrative around fintech: that it makes transactions easier and cheaper, through applied information science, in a normatively neutral way.²⁸ She challenges this narrative, asserting that fintech is a macro-level phenomenon with normative and political implications. In a similar vein, Hilary Allen identifies macro-level regulatory concerns surrounding fintech and discusses the importance of ethics in the administration of tech-driven markets.²⁹

Omarova states that fintech is poised to be “the catalyst for a potentially decisive shift in the underlying public-private balance of powers, competencies, and roles in the financial system.”³⁰ This underlying balance of powers in the U.S. financial system has been formed, over time, in terms of what Omarova calls the “New Deal settlement”: a system of financial sector regulation that took shape during the New Deal era and the essential premises of which have been replicated and perpetuated in sophisticated regulatory infrastructure for systematic oversight of financial markets.³¹ The New Deal settlement embodies normative judgments about the correct balance between private freedom and public control in financial markets:

[P]rivate market actors retain control over substantive decisions on how to allocate financial capital to various productive uses—and thus the power to determine the overall volume and structure of financial claims in the system. The public . . . bears the primary responsibility for maintaining the overall stability of the financial system . . .

execution is automated, usually by computers.” Max Raskin, *The Law and Legality of Smart Contracts*, 1 Geo. L. Tech. Rev. 305, 306 (2017). Jeremy Sklaroff states that “[s]mart contracts are decentralized agreements built in computer code and stored on a blockchain.” Jeremy M. Sklaroff, Comment, *Smart Contracts and The Cost of Inflexibility*, 166 U. PA. L. REV. 263, 263 (2017). See also Ai Deng, *Smart Contracts and Blockchains: Steroid for Collusion?* 1 (Sept. 11, 2018), <https://ssrn.com/abstract=3187010> [<https://perma.cc/4T44-7VSP>]; Christopher D. Clack Vikram A. Bakshi & Lee Braine, *Smart Contract Templates: Foundations, Design Landscape and Research Directions* 2 (Aug. 4, 2016) (unpublished manuscript), <https://arxiv.org/pdf/1608.00771.pdf> (“A smart contract is an automatable and enforceable agreement. Automatable by computer, although some parts may require human input and control. Enforceable by either legal enforcement of rights and obligations or tamper-proof execution.”); Alexander Savelyev, *Contract Law 2.0: “Smart” Contracts as the Beginning of the End of Classic Contract Law* 7 (Nat’l Res. U. Higher Sch. of Econs., Paper No. WP BRP 71/LAW/2016, 2016), <https://ssrn.com/abstract=2885241> [<https://perma.cc/M84X-UD42>] (“Smart contract is an agreement whose execution is automated.”).

27. JP Buntinx, *What is a DApp?*, MERKLE, <https://themerke.com/what-is-a-dapp> [<https://perma.cc/DV9G-P8GJ>] (last updated Jan. 19, 2017).

28. Omarova, *supra* note 3.

29. See generally Allen, *supra* note 3, at 174–95, 202 (discussing various “potential threats to financial stability” from algorithmic finance, including ethical concerns surrounding artificial intelligence and machine learning).

30. Omarova, *supra* note 3 at 735.

31. See *id.* at 746–54.

[R]egulation constrains market participants' ability to generate excessive system-wide risks in pursuit of private profits.³²

This New Deal settlement embodies a contestable, unstable boundary between public and private that has been continuously renegotiated as market actors press for expanded freedoms to create and trade financial claims.

The fact that the financial system's center of gravity has shifted from primary to secondary markets, coupled with excessive risk generation and untethered growth within secondary markets, has undermined the New Deal settlement.³³ The advent of blockchain-based platforms for financial markets threatens to further diminish it, leaving no sense of how, in the future, we will achieve a functional balance of private risk-taking and public welfare.³⁴ This is because blockchain-based platforms enable increasingly complex "pooling and layering of claims, and acceleration and compression of trades"—the mechanisms with which market actors achieve continuous synthesizing of tradable financial assets and increasing volume and speed of trading activity.³⁵ In the face of proliferating private market activity of this nature, the public side of the New Deal settlement is increasingly challenged to accommodate privately created claims while managing systemic risks. Given this dynamic, Omarova argues, fintech—with its macro-level financial implications—presents a "public policy challenge of the highest order."³⁶

In addition to risk associated with increased synthesizing of claims and scaling up of trading activity, blockchain-based smart contracts aggravate systemic risk by detaching financial transactions from private law rules and norms that integrate important policy choices into market activity.³⁷ Blockchain-based transactions may defy private law doctrines in ways that are difficult to undo.³⁸

Blockchain-based smart contracts are a device for transacting, not a type of transaction. But this device has a legal effect in that it dedicates assets to specific transactional counterparties—it accomplishes asset partitioning.³⁹ Regulators and policymakers tend to treat this technology as a new platform for executing established forms of transactions. But blockchain-based smart contracts can be difficult to fit into existing legal frameworks because their functionality conflates contract and property law devices, and mimics both security interests and entities.⁴⁰ As such, emerging platforms enable market actors to exploit the difficulty of challenging a transaction's characterization, enabling them to side-step statutory boundaries that reflect longstanding political choices.

32. *Id.* at 740.

33. *See id.* at 756–59.

34. *See id.* at 790–92.

35. *Id.* at 741; *see generally* Allen, *supra* note 3.

36. Omarova, *supra* note 3 at 743.

37. *See* Hughes, *supra* note at 3, at 3.

38. *See id.*

39. *See id.*

40. *See id.*

For example, it may be possible for a fintech-enabled transaction to assign assets to a special purpose entity for purposes of securitization with a high degree of recourse that, if subject to a characterization challenge, would make the assets reachable by the originator's creditors. In the traditional or low-tech world, creditors—potentially employees, suppliers, or tort claimants—would have, through the bankruptcy process, a legal point of intervention at which to challenge the true-sale status of an assignment for the issuance of asset-backed securities. In a fintech-enabled transaction, however, there may be no such legal intervention point. The code expressing the transaction may be written to automatically transfer assets to the investors in asset-backed securities upon the occurrence of an originator bankruptcy. The originator may try to contest and eventually undo the disposition, but there is no possibility of an order permitting access to the assets pending the determination of their status in private-law terms.⁴¹

The narrative around legal treatment of blockchain-based smart contracts implies that existing legal infrastructure can accommodate this market activity so long as laws are sufficiently technology neutral. As Omarova observes, the fintech narrative focuses on concrete, transactional aspects of finance and how fintech can provide micro-level “win-wins” within the financial system.⁴² But fintech is introducing new mechanisms for executing transactions—more quickly and securely—that the law will recognize and interpret. This narrative obscures the complexity of applying established legal doctrines to transactions which can (i) defy straightforward legal characterization, and (ii) force transacting parties to contest outcomes only after execution, in a remedial posture.⁴³ The cumulative effect of this complexity could be markets that expand despite inconsistent or incoherent legal status, undermining the capacity to administer, in the future, rules designed to curtail problematic risks and externalities.⁴⁴

In other words, disregard of private-law rules invites systemic risk. Investors in mortgage-backed securities suffered, surrounding the 2007-2008 crisis, from uncertainty regarding the legal status of assets collateralizing issuances.⁴⁵ For another example, the market prominence of securities repurchase agreements or “repos” led lawmakers to define these agreements as sales despite the fact that they function as extensions of credit.⁴⁶ This sale treatment, based on form and regardless of economic substance, helped to catalyze a repo run on banks that

41. *Cf. In re LTV Steel Co., Inc.*, 274 B.R. 278, 285–86 (Bankr. N.D. Ohio 2001) (rejecting a creditor's motion for relief from an interim order permitting originator access to securitized accounts receivable).

42. Omarova, *supra* note 3.

43. *See Hughes, supra* note 3.

44. *See id.*

45. *See id.* at 57.

46. *See id.* at 58.

scholars identify as a central cause of the financial crisis.⁴⁷ If lawmakers decline to articulate how blockchain-based transactions implicate contract, property, and entity laws before these transactions become dominant and entrenched, markets could defy regulators' ability to enforce well-established legal norms.

III

FINANCIAL INCLUSION AND SYSTEMIC RISK

The relationship between systemic risk, fintech, and financial inclusion is complex. The very real prospects for increasing access to financial services and credit for individuals, and access to capital for small businesses, are exciting.⁴⁸ This is especially true from a global perspective. But fintech may have ominous repercussions⁴⁹ for financial inclusion if lawmakers do not take seriously the macro-level policy questions surrounding financial regulation, and the questions surrounding legal treatment of technology-enabled transactions, that emerging platforms for financial markets present. If the last financial crisis is any guide, excessive systemic risk and resulting market failures undermine financial inclusion and sustainability. They most hurt those striving for financial stability and upward mobility.

Older fintech developments—like the software that enables securitization, tranches, et cetera—were applied in contexts involving policy choices made expressly with financial inclusion in mind (that is, the sub-prime mortgage market).⁵⁰ But the systemic risk and market failure that resulted had the effect of exacerbating the wealth gap and undermining financial inclusion and sustainability.

With respect to new fintech developments—such as AI-based underwriting of loans—the promise of expanding access to credit by looking beyond traditional credit score and income information holds promise for financial inclusion. These kinds of loans are funded by capital markets and, because underwriting is accomplished with AI and algorithms, they are obtuse.⁵¹ It is very difficult for a purchaser of securities to assess or have any insight into the underwriting criteria for the loans backing the securities.⁵² In the event that securitization of fintech-

47. Gary Gorton & Andrew Metrick, *Securitized Banking and the Run on Repo*, 104 J. FIN. ECON. 425, 447–48 (2012) (hypothesizing that the bankruptcy safe harbor for repo transactions aggravated the economic downturn).

48. See Odinet, *supra* note 4.

49. Others have focused on the problematic implications of fintech for financial inclusion as a function of discrimination by algorithms coded with or resulting in bias. See *supra* note 2. Here, the concern is distributional effects of market failures due to fintech-based financial activity.

50. See *supra* note 9 and accompanying text.

51. See Odinet, *supra* note 4 at 490.

52. See *id.* at 514 (explaining the difficulty of comprehending the underwriting done with AI because of the complexity of the data).

based loans expands, the risk that the opacity and complexity of these loans present could contribute to systemic risk.⁵³

The systemic risks that can threaten financial inclusion and sustainability are not limited to cases in which financial products derive from access-oriented lending activity. This Article concerns systemic risk generally—as related to any technology-enabled lowering of costs of capital by synthesizing claims or by eliminating characterization challenges. The concern is that the fall-out of excessive systemic risk hits harder people who are struggling for access to credit or capital for small businesses.

The point, here, is not to contemplate a trade-off between access-enabling fintech developments and increased risk to lower income people associated with the possibility of widespread economic downturn. Rather, it is to illustrate the multi-faceted implications of fintech for financial inclusion and sustainability.

IV

LAW, TECHNOLOGY AND MARKETS

At the heart of this inquiry into the implications of fintech for financial inclusion and sustainability is the question of how we conceive of the relationship between law and markets. Omarova speaks of a public and private dynamic in which private market actors generate financial claims and public agencies monitor and control for excessive risks. My own work casts the private law as the legal infrastructure of markets, without which there would be no enforceable claims to trade.⁵⁴

Referring to financial market dynamics surrounding the pooling and layering of financial assets and acceleration and compression of financial transactions, Omarova warns: “If (or when?) fintech delivers on its promise to make these mechanisms virtually frictionless, thus taking their operation to a qualitatively different level, the financial market will completely forsake the frail confines of the New Deal settlement. We need to start thinking seriously about what should replace it.”⁵⁵ Erosion of the New Deal settlement implies a waning capacity of regulatory agencies to monitor and control private market actors. In response,

53. See *id.* at 515 (discussing how acceptance of AI underwriting, without understanding it, will increase risk).

54. See generally Heather Hughes, *Financial Product Complexity, Moral Hazard, and the Private Law*, 20 STAN. J. L. BUS. & FIN. 179 (2015) (articulating a shift from a contract-law to a property-law framework for regulating transactional complexity after the financial crisis); Heather Hughes, *Reforming the True-Sale Doctrine*, 36 YALE J. ON REG. BULLETIN 51, (2018) [hereinafter, *Reforming the True-Sale Doctrine*] (arguing that state lawmakers should reform true-sale rules to include price in the analysis); Heather Hughes, *Property and the True-Sale Doctrine*, 19 U. PA. J. BUS. L. 870 (2017) [hereinafter *Property and the True-Sale Doctrine*] (mapping arguments about the efficiency of securitization to varying formulations of the true-sale doctrine).

55. *New Tech v. New Deal*, *supra* note 3, at 793. She has begun to answer her own call in a series of articles, on her own and with Bob Hockett. The task of thinking seriously about what will replace the public/ private boundaries in a fintech-driven, post New Deal settlement world requires taking up deep normative questions about what kinds of finance there should be, and what finance and financial systems should do in a republic.

Omarova and others tend to focus on fortifying or re-configuring federal regulatory bodies and regulatory strategies.⁵⁶

But in thinking seriously about what should replace the New Deal settlement, we should not overlook the regulatory potential of state laws, especially the common law and commercial laws. Lawmakers should not be afraid to define new technology-enabled market practices and asset classes in private-law terms. While legal concepts will need to evolve to accommodate new practices, leaving technologies of legal import beyond private-law classification altogether invites a lack of clarity and a problematic dissonance between legal infrastructure and market practices. Once certain financial products or practices become too big to fail,⁵⁷ they may defy proper regulatory treatment despite excessive risks.⁵⁸ This Article offers one example of private-law rules that transactions executed using blockchain-based smart contracts could thwart, with wide-ranging consequences: the rules expressed in the Uniform Commercial Code (UCC) Article 9 governing secured transactions.

“Agreements that market actors do not currently associate with UCC Article 9, when expressed as smart contracts, behave like secured transactions.”⁵⁹ For example, if a liquidated damages clause in a services contract becomes self-executing, then the contract partitions assets to satisfy obligations. “Code-based, self-executing mechanisms arguably bring any agreement that utilizes them within the UCC’s statutory parameters for security interests.”⁶⁰ At the same time, blockchain-based smart contracts can create a “functional convergence of security interests and entities.”⁶¹ “If blockchain-based smart contracts partition assets in ways that are difficult to classify, market actors may proceed on the grounds that transactions on a blockchain avoid secured transactions law all together.”⁶²

Secured transactions law expresses numerous policy choices relevant to the curtailment of systemic risk. Consider, for example, UCC Article 9’s various rules regarding notice and requiring the reasonable disposition of assets upon default. If entire markets can use fintech to side-step the UCC’s notice requirements and commercial reasonableness standards for disposition of assets, then fintech can undermine longstanding policy choices of political significance. How would such a development impact systemic risk?

A joint study group of the American Law Institute (ALI) and Uniform Law Commission (ULC) has been meeting to evaluate the UCC and emerging

56. *Id.*

57. See Kenneth C. Kettering, *Securitization and its Discontents: The Dynamics of Financial Product Development*, 29 CARDOZO L. REV. 1553,1633 (2008) (explaining how courts and lawmakers decline to enforce legal doctrines that threaten dominant market practices when doing so would cause upheaval.)

58. See *id.*; Allen, *supra* note 3 (arguing that regulators should be involved with algorithmic automation now, while they can still have influence).

59. *Blockchain and the Future of Secured Transactions Law*, *supra* note 3.

60. *Id.*

61. *Id.*

62. *Id.*

technologies. This ALI and ULC effort proceeds with the posture of assessing whether the UCC is sufficiently technology neutral. The statute is sufficiently technology neutral if current rules can accommodate and do not conflict with emerging technology-enabled transactions and practices. The group engages normative questions about the desirability of intermediation, or about the meaning and purpose of perfection of a security interest, for example. But the group, given time constraints and the number of issues to address, does not necessarily engage the type of normative, values-driven assessment of law and fintech that legal scholars are calling for. Ensuring that the UCC does not impede or fail to accommodate emerging technologies is an important step. Waiting for market practices to evolve before taking on more difficult and conceptual questions, however, runs the risk that market practices will depart from legal norms in an irretrievable way.⁶³

A decade ago, in the wake of the last financial crisis, scholars observed that levels of complexity that can exacerbate moral hazard and financial instability indicate a disregard for foundational property-law principles.⁶⁴ If financial transactions are creatures of contract alone, then nothing prevents contracting to oblivion: creating more and more complex and compounded claims. Contracts may be infinitely complex and obtuse, as they are enforceable only by and against parties in privity of contract with one another. Property rights, in contrast, are enforceable against third parties. As such, *numerus clausus* is a feature of property law systems around the world.⁶⁵ This concept—"the number is closed"—refers to how property law will only enforce interests in property that take an established, recognizable form.⁶⁶ Market actors cannot make up new forms of property by contract. If they could, they would contract around bankruptcy rules, foreclosure protections, and tax obligations. The scope of a property interest is determined by law, based on the intent of the parties as evidenced by the economic substance of the deal.⁶⁷

It is an example of *numerus clausus* when a court characterizes a conveyance as an assignment of a security interest rather than an outright sale. For another example, consider the various, established forms of business entities recognized by statute in each state. Scholars have argued for regulation to standardize financial products, such as, for example, permitting issuance of new products with a "conform or explain" approach.⁶⁸ This would help preserve the capacity of secondary markets to assess and value—and therefore trade—claims more readily when markets are volatile.

63. See *id.*; Allen, *supra* note 3, at 195 (arguing that waiting for proof of risks before addressing them through policy can be very costly).

64. See *Financial Product Complexity, Moral Hazard, and the Private Law*, *supra* note 12, at 4.

65. See Merrill & Smith, *supra* note 13.

66. *Id.* at 4.

67. *Property and the True-Sale Doctrine*, *supra* note 54, at 148.

68. See Jill E. Fisch, *Rethinking the Regulation of Securities Intermediaries*, 158 U. PA. L. REV. 1961, 2030 (2010) (describing the benefits of the "conform or explain" approach).

Now, consider the implications for market complexity of a transacting platform—blockchain-enabled smart contracts—that expresses contractual obligations enforceable against third parties. This type of fintech platform presents a challenge. If the functions of contract and property law converge, how do we sustain the dynamic between freedom of contract and the formalities of property law that is integral to the legal administration of markets? Tasking various federal regulatory bodies with policing outcomes in blockchain-based financial markets, to preserve financial stability, may be crucial. But it is also crucial to watch and digest how private-law concepts operate on emerging platforms and to tend to the state statutes and common law doctrines on which market expectations rely.

V

CONCLUSION

To the extent lawmakers wish to preserve existing policy choices, and to forge a functional public and private dynamic surrounding financial markets, they must be willing to engage with fintech as a phenomenon that presents normative questions. To the extent we wish to foster financial inclusion and sustainability, we must think critically about how to harness the best of fintech for the provision of banking services and access to credit, while protecting against its challenges to financial systems.

FINANCIAL INCLUSION AND BANKING REGULATION: THE ROLE OF PROPORTIONALITY

KERN ALEXANDER*

I

INTRODUCTION

Financial inclusion involves the integration of economic agents into the financial system by providing them with useful and affordable financial products and services delivered in a responsible and sustainable way.¹ Although access to financial services has increased in the last decade in both developed and developing countries, approximately one-third of the world's adult population does not have a transaction account through a regulated financial institution or mobile money provider.² In many emerging and developing countries, the share of those without financial accounts has increased to nearly ninety percent.³ Yet, seventy percent of people in these countries—approximately one billion people—have access to a mobile phone, which technically enables them to access financial products and services.⁴ Although financial inclusion is often closely associated with increased access to financial products and services, they are not the same. Some individuals may have access to financial services, but may not

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1. *Financial Inclusion*, WORLD BANK, <https://www.worldbank.org/en/topic/financialinclusion/overview> [<https://perma.cc/MNQ4-2EKS>]. For more discussion on what financial inclusion involves, see also, Steven L. Schwarcz & Theodore L. Leonhardt, *Scoping and Defining Financial Inclusion, Access to Credit, and Sustainable Finance*, 84 LAW & CONTEMP. PROBS., no. 1, 2021, at 1, 5–7.

2. ASLI DEMIRGÜÇ-KUNT, LEORA KLAPPER, DOROTHE SINGER, SANIYA ANSAR & JAKE HESS, THE GLOBAL FINDEX DATABASE 2017: MEASURING FINANCIAL INCLUSION AND THE FINTECH REVOLUTION 35 (2018). See generally, Kern Alexander & Xenia Karametaxas, *Digital Transformation and Financial Inclusion*, in ROUTLEDGE HANDBOOK ON FINANCIAL TECHNOLOGY AND LAW, 273, 279–284 (I. Chu & G. Deipenbrock eds., 2021) (discussing the advantages and legal risks of digital transformation in financial services inclusion in India and China and the implications for other developing countries).

3. Aaron Mehrotra & James Yetman, *Financial Inclusion – Issues for Central Banks*, BIS Q. REV., Mar. 2015, at 83. See also Jon Frost, *The Economic Forces Driving Fintech Adoption Across Countries* 3 (BIS Working Papers No. 838, 2020. Right panel of Figure 1).

4. WORLD BANK GRP., WORLD DEVELOPMENT REPORT 2016: DIGITAL DIVIDENDS 6 (2016). But see PEW RSCH. CTR., MOBILE DIVIDES IN EMERGING ECONOMIES 3 (2019) (showing that in eleven emerging economies, a median of 6% of adults do not use phones at all, and a median of 7% do not own phones but instead borrow them from others, together corresponding to 87% having a mobile phone).

utilize such services, due to prohibitively high prices, regulatory barriers, or a combination of market, institutional and cultural obstacles.⁵ Access to financial services varies widely between developing and developed economies; in the latter most economic participants are included in the formal financial system, whereas in most developing countries only a small percentage are. Most of those who are financially excluded are in deprived societal groups⁶: for instance, women are more likely to be financially excluded, as are people with less education and those living in rural areas, due to the lack of infrastructure and poor economic conditions.⁷

The G20's Global Partnership for Financial Inclusion (GPFI) has led international efforts to promote financial inclusion. The GPFI's 2011 white paper set forth observations and recommendations for how the International Standard-Setting Bodies (ISSBs) should integrate financial inclusion into their standard setting by addressing the issue of who "get[s] access to *what range* and *quality* of formal financial services and *at what cost*."⁸ The Financial Stability Board plays a coordination role for the ISSBs in pursuit of financial inclusion and other regulatory objectives, particularly in relation to financial stability.⁹ As a result, the ISSBs, such as the Basel Committee on Banking Supervision, have incorporated financial inclusion into their regulatory standards and supervisory principles.¹⁰ Moreover, the International Monetary Fund and World Bank assess member country progress in meeting financial inclusion targets.¹¹ However, most countries have applied their regulatory standards and supervisory principles in respect to financial inclusion in widely disparate ways with little or no framework for determining whether they are appropriate to meet regulatory objectives.

Separately, financial technology (fintech) innovations have emerged as one of the fastest growing economic sectors worldwide.¹² Fintech includes digital

5. WORLD BANK GRP., GLOBAL FINANCIAL DEVELOPMENT REPORT 2014: FINANCIAL INCLUSION 2 (2014).

6. EUGENIA MACCHIAVELLO, MICROFINANCE AND FINANCIAL INCLUSION: THE CHALLENGE OF REGULATING ALTERNATIVE FORMS OF FINANCE 9 (2017).

7. *Id.*

8. *See generally* GLOB. P'SHIP FOR FIN. INCLUSION, GLOBAL STANDARD-SETTING BODIES AND FINANCIAL INCLUSION FOR THE POOR: TOWARD PROPORTIONATE STANDARDS AND GUIDANCE 1, 7 (2011), <https://www.gpfi.org/sites/gpfi/files/documents/White-Paper-Global-Standard-Setting-Bodies-Oct-2011.pdf> [<https://perma.cc/6SK3-9URK>].

9. *Id.* at 7, n.2.

10. BASEL COMM. ON BANKING SUPERVISION, RANGE OF PRACTICE IN THE REGULATION AND SUPERVISION OF INSTITUTIONS RELEVANT TO FINANCIAL INCLUSION 3 (2015), <https://www.bis.org/bcbss/publ/d310.pdf> [<https://perma.cc/QC4Z-444K>] [hereinafter BASEL COMMITTEE RANGE OF PRACTICE]; BASEL COMM. ON BANKING SUPERVISION, MICROFINANCE ACTIVITIES AND THE CORE PRINCIPLES FOR EFFECTIVE BANKING SUPERVISION 1, 4–5, 9 (2010), <https://www.bis.org/publ/bcbss175.pdf> [<https://perma.cc/LKN3-VBNQ>] [hereinafter BASEL COMMITTEE MICROFINANCE].

11. *See* WORLD BANK GRP., FINANCIAL SECTOR ASSESSMENT PROGRAMS (FSAPs): COVERAGE OF FINANCIAL INCLUSION IN FSAPs – EVOLUTION DURING 2000-2013 app. C (2014); *See also* INT'L MONETARY FUND, REPORTS ON THE OBSERVANCE OF STANDARDS AND CODES (ROSCs) <https://openknowledge.worldbank.org/handle/10986/26233> [<https://perma.cc/3LSY-M2UZ>].

12. *Global Fintech Market Value is Expected to Reach \$309.98 Billion at a CAGR of 24.8% Through 2022*, CISION PR NEWswire (Sept. 26, 2019), <https://www.prnewswire.com/news-releases/global->

payments, which are transforming how customers pay for products and services and carry out other financial transactions.¹³ More specifically, fintech applications, including block chain, mobile payment systems, platform-based lending, and capital-raising, are radically transforming the financial services sector by challenging the business models of established financial institutions and the operational system by which payments and transactions are conducted. This digital transformation of the financial sector provides individuals and firms with lower prices for services, enhanced terms for obtaining credit and other financial products, and expanded access to the financial system.¹⁴

The GPFI addressed fintech in a follow-up white paper in 2016,¹⁵ which reviewed, among other things, the ISSBs' work in incorporating financial inclusion into international standard-setting by addressing new regulatory challenges including the "digitization of financial services" and its importance in "reaching financially-excluded and under-served customers."¹⁶ Digital financial inclusion has become an important objective for international policymakers, the ISSBs, and most central banks and national regulatory authorities.¹⁷ In 2020, however, the COVID-19 pandemic and related lockdowns across the world imposed severe economic burdens on digital payment and other fintech providers because of reduced transaction volumes, resulting in many fintech firms accessing government support schemes to reduce their losses during lockdown.¹⁸ International bodies and most national authorities recognize the importance of digital payments and other fintech innovations in limiting the spread of COVID-19.¹⁹ Most countries—particularly developing and emerging market countries—have adopted support measures, including regulatory relief, for financial institutions and the fintech industry to facilitate increased use of digital payments during the lockdowns and to promote other fintech innovations.

fintech-market-value-is-expected-to-reach-309-98-billion-at-a-cagr-of-24-8-through-2022—300926069.html [https://perma.cc/D9VP-H49Z].

13. *Id.*

14. Mark Carney, Chair, Fin. Stability Bd., *The Promise of FinTech - Something New Under the Sun?*, Address at the Deutsche Bundesbank G20 Conference on "Digitising finance, financial inclusion and financial literacy", Wiesbaden (Jan. 25, 2017), in *BANK OF ENGLAND* 2, 6–7, 11, <https://www.bankofengland.co.uk/speech/2017/the-promise-of-fintech-something-new-under-the-sun> [https://perma.cc/GZ95-G3SA].

15. *GLOB. P'SHIP FOR FIN. INCLUSION, GLOBAL STANDARD-SETTING BODIES AND FINANCIAL INCLUSION: THE EVOLVING LANDSCAPE* (2016), https://www.gpfi.org/sites/gpfi/files/documents/GPFI_WhitePaper_Mar2016.pdf [https://perma.cc/64ZP-8B7V] [hereinafter the GPFI, White Paper].

16. *Id.* at xi.

17. In fact, approximately one-half of the central banks surveyed had explicit financial inclusion mandates. *See* IRVING FISHER COMM. ON CENT. BANK STATS., IFC REPORT: MEASURES OF FINANCIAL INCLUSION – A CENTRAL BANK PERSPECTIVE 9–10 (2016) (describing the research findings concerning central banks' use of financial inclusion mandates).

18. Gringoli Vincenzo, Glen Williams, John Ott & Thomas Olson, *The Covid-19 Tipping Point for Digital Payments*, BAIN INSIGHTS (Apr. 29, 2020), <https://www.bain.com/insights/the-covid-19-tipping-point-for-digital-payments> [https://perma.cc/QQ2U-5GMP].

19. *Id.*

This Article analyzes the regulatory implications for the banking and financial services sector, the risks of the emerging digital financial inclusion policies, and how the principle of proportionality can be interpreted and applied to regulatory standards and supervisory practices to address these risks. Part II discusses the definitions and rationale of financial inclusion and how international standard setting bodies and national authorities—including central banks and regulators—recognize the growing importance of digital financial services and other fintech innovations to enhance financial inclusion. Part III analyzes to what extent fintech is contributing to financial inclusion and highlights some of the main advantages and regulatory risks of the digital transformation of financial services. Part IV analyzes some regulatory approaches that support financial inclusion, including the growing use of innovation offices and regulatory sandboxes, and how the principle of proportionality can be applied to balance the risks associated with fintech innovations to promote financial inclusion, while not undermining other regulatory objectives. Part V concludes. The analysis is particularly relevant in the context of the global economic slowdown caused by the COVID-19 pandemic and accompanying national lockdowns, as well as the response of many policymakers and regulators to support digital financial inclusion during this period.

II

FINANCIAL INCLUSION AND INTERNATIONAL PUBLIC POLICY

A. Definitions and Rationale

Although financial inclusion is broadly defined as access to financial services,²⁰ there is no standard universally accepted definition, as official sector definitions by central banks and regulators are not harmonized across countries. According to a Bank for International Settlements survey, most central banks and regulators reported that the most important elements of the definition were “access and effective use” of financial services.²¹ Most respondents framed access to financial services in terms of the ability to use financial products and proximity to various access points.²² Significantly, most respondents stated that socio-economic barriers can limit access, and, more broadly, “the pricing and other terms and conditions of financial products and services can also be relevant factors limiting the scope for access to financial services for segregated groups.”²³

All respondents stated that an important dimension of access for the broader population was how effectively they used financial products and services, including “deposit accounts, payment services, micro-credit schemes, and

20. See IRVING FISHER COMM. ON CENT. BANK STATS., *supra* note 17, at 4 (discussing the general importance of financial inclusion in central banks’ work).

21. *Id.* at 7.

22. *Id.*

23. *Id.* at 8.

insurance products.”²⁴ The measurement of effective use requires collecting both micro and macro data on financial products, such as the percentage of adults with at least one regulated deposit or savings account or the number of credit lines and credit cards issued by regulated institutions, as well as the aggregate value of credit or deposits relative to a country’s gross domestic product.

A lesser number of respondents defined financial inclusion to include the supply or availability of financial products and services offered to households and businesses.²⁵ This involves an assessment of the available products, as well as demand factors such as the cost of the products.²⁶ Various administrative regulations—including capital requirements and due diligence requirements—can increase that cost, especially among those with poor credit or low access to credit products.²⁷

Financial inclusion is a public policy concern that directly relates to the objectives and activities of central banks, financial regulators and international financial standard-setting bodies.²⁸ Based on a survey of bank regulators worldwide, the Basel Committee on Banking Supervision concluded that the definition of financial inclusion consists of several concepts; including access to, and usage of, financial services; the reliable supply of a variety of products and services; and the quality of products and services in terms of price, affordability, and suitability for the capacity of the customer to benefit without incurring disproportionate risk.²⁹

Advocates of financial inclusion, including the World Bank and G20,³⁰ stress that the process of integrating more individuals and businesses into the financial system contributes to income equality, alleviates poverty, influences saving rates and investment decisions, and improves overall economic welfare.³¹ From an

24. *Id.* at 3.

25. *Id.*

26. *Id.*

27. *Id.*

28. Mehrotra & Yetman, *supra* note 3, at 4.

29. BASEL COMMITTEE MICROFINANCE, *supra* note 10, at 4–5.

30. GPFI, White Paper, *supra* note 15, at 14–15.

31. Peter J. Morgan & Victor Pontines, *Financial Stability and Financial Inclusion* 13 (Asian Dev. Bank Inst., Working Paper No. 488, 2014), <https://www.adb.org/sites/default/files/publication/156343/adbi-wp488.pdf> [<https://perma.cc/YX35-W2YL>] (showing greater inclusion leads to reduced liquidity risks and increased stability of deposit bases); Rui Han & Martin Melecky, *Financial Inclusion for Financial Stability: Access to Bank Deposits and the Growth of Deposits in the Global Financial Crisis* 16–17 (World Bank Grp., Policy Research Working Paper No. 6577, 2013), <http://documents1.worldbank.org/curated/ar/850681468325448388/pdf/WPS6577.pdf> [<https://perma.cc/5DWS-7GVQ>] (showing a positive influence of financial inclusion on financial stability because low-income savers and borrowers tend to have financially stable behavior during crises); Shri H. R. Khan, Deputy Governor, Reserve Bank of India, *Financial Inclusion and Financial Stability: Are They Two Sides of the Same Coin?*, Address Before BANCON 2011 (Nov. 4, 2011), in RBI M. BULL., Mar. 2012, at 553, 563 (arguing that increasing access to deposit accounts for low-income customers can make bank funding more resilient during market stress). *But see* Alfred Hannig & Stefan Jansen, *Financial Inclusion and Financial Stability: Current Policy Issues* 24–25 (Asian Dev. Bank Inst., Working Paper No. 259, 2010), <https://www.econstor.eu/bitstream/10419/53699/1/654899762.pdf> [<https://perma.cc/5NG5-UG2A>] (arguing that increased access to financial services can result in unsustainable credit booms and financial system

economic perspective, financial inclusion is considered one of the major enablers of economic development.³² The access to useful and safe financial products may allow previously unbanked individuals to invest in assets, including their own education and training, potentially reducing income inequality.³³ Conversely, financial exclusion increases the risk of poverty and, thus, is a key barrier to development.³⁴ Moreover, by making saving and investment decisions more efficient and facilitating the functioning of the economy, financial inclusion also reinforces monetary and financial stability.³⁵

The indirect macroeconomic rationale for financial inclusion is that expanding access to finance benefits society as a whole because it leads to economic growth and, thus, to a more stable monetary and financial system.³⁶ According to economists Aaron Mehrotra and James Yetman, enhanced inclusion should lead to a more efficient allocation of capital and should support central bank efforts to maintain price stability.³⁷ Further, increased access to credit and investment services boosts firm performance and enhances economic well-being.

B. International Initiatives for Financial Inclusion

ISSBs, the G20, and policy makers have actively addressed the challenges related to financial inclusion.³⁸ In 2006, the UN declared that “access to a well-functioning financial system can economically and socially empower individuals, in particular poor people, allowing them to better integrate into the economy of their countries, actively contribute to their development and protect themselves against economic shocks.”³⁹ GPFI, along with its partners, including the Alliance

fragilities). *See also* Mandira Sarma & Jesim Pais, *Financial Inclusion and Development*, 23 J. INT. DEV. 613, 626 (2011) (showing that certain financial inclusion policy initiatives likely to have a more “positive and significant” effect than others).

32. Asli Demirgüç-Kunt & Leora Klapper, *Measuring Financial Inclusion: The Global Findex Database* 38–40 (World Bank Grp., Policy Research Working Paper No. 6025, 2012), <https://openknowledge.worldbank.org/bitstream/handle/10986/6042/WPS6025.pdf> [<https://perma.cc/F3XK-TFMQ>]; Minjin Kim, Hannah Zoo, Jeejin Lee & Juhee Kang, *Mobile Financial Services, Financial Inclusion, and Development: A Systematic Review of Academic Literature*, E.J. INFO. SYS. DEV. COUNTRIES, Sept. 2018, at 1, 1; Oksana Kabakova & Evgeny Plaksenkov, *Analysis of Factors Affecting Financial Inclusion: Ecosystem View*, 89 J. BUS. RES. 198, 198 (2018).

33. Mehrotra & Yetman, *supra* note 3, at 83.

34. Kim et al., *supra* note 32, at 2. *See generally* Kabakova & Plaksenkov, *supra* note 32 (surveying factors enabling financial inclusion in developing countries).

35. IRVING FISHER COMMITTEE ON CENTRAL BANK STATISTICS, *supra* note 17, at 4.

36. Philip Mader, *Contesting Financial Inclusion*, 49 DEV. CHANGE 2, 461–483, 469 (2018) (supporting the proposition and caveating its general applicability by acknowledging that evidence of this trend is inconclusive).

37. Mehrotra & Yetman, *supra* note 3, at 83.

38. *See, e.g.*, Kabakova & Plaksenkov, *supra* note 32, at 198 (“explor[ing] factors that affect the development of financial inclusion”); M. Mostak Ahamed & Sushanta K. Mallick, *Is financial inclusion good for bank stability? International evidence*, 157 J. ECON. BEHAV. ORGAN. 403–427 (2019).

39. U.N. DEPT. OF ECON. & SOC. AFFAIRS AND U.N. CAPITAL DEV. FUND, BUILDING INCLUSIVE FINANCIAL SECTORS FOR DEVELOPMENT 4 (2006), <https://www.unctd.org/article/597/building-inclusive-financial-sectors-for-development-migration> [<https://perma.cc/2FLX-36JE>].

for Financial Inclusion (AFI),⁴⁰ the Consultative Group to Assist the Poor, and the International Finance Corporation, have led international efforts to promote financial inclusion. Launched in 2010 at the G20 Summit in Seoul, the GPFI endorsed a Financial Inclusion Action Plan and spurred initial policy actions by publishing the G20 Principles for Innovative Financial Inclusion as a platform for knowledge sharing, policy advocacy and coordination.⁴¹

In 2011, the AFI adopted the Maya Declaration on Financial Inclusion (Maya Declaration), an initiative to reach the world's unbanked individuals—numbering 2.5 billion at that time—and to encourage national financial inclusion commitments by central banks in partnership with private sector actors.⁴² The Maya Declaration provides that financial inclusion has a critical role in improving “national and global financial stability and integrity” and in contributing to “strong and inclusive growth in developing and emerging market countries.”⁴³ Also, the Better than Cash Alliance, a UN-based partnership of governments (mainly from developing economies), foundations, companies, and international organizations, was formed in 2012 with the aim to accelerate the transition from cash to digital payments in order to reduce poverty and promote inclusive growth.⁴⁴

Financial inclusion was also recognized in the UN's 2030 Agenda for Sustainable Development (2030 SDG Agenda).⁴⁵ While not a sustainable development goal (SDG) in itself, financial inclusion is considered an enabler of the SDGs, and it is featured as a target in eight of the seventeen SDGs listed in the 2030 SDG Agenda.⁴⁶

The emphasis on financial inclusion in the 2030 SDG Agenda is premised on the important role that the financial system plays in the shift towards a more sustainable economy. In this vein, financial inclusion has also caught the attention

40. The AFI is a network of financial inclusion policy members consisting of central banks and other financial regulatory bodies from more than 80 emerging and developing economies. See Alliance for Financial Inclusion, *A Policy Leadership Alliance*, AFI GLOBAL, <https://www.afi-global.org/about.us> [<https://perma.cc/G9J4-SDFV>]. The mission of the AFI is to empower policymakers to increase access and usage of quality financial services for the underserved, through formulation, implementation, and global advocacy of sustainable and inclusive policies. *Id.*

41. See James Pearse, *About GPFI*, GPFI, <https://www.gpfi.org/about-gpfi> [<https://perma.cc/L5TQ-6T8S>] (last visited Aug. 18, 2020) (discussing the GPFI's work and mission).

42. See generally ALLIANCE FOR FINANCIAL INCLUSION, *2018 Maya Declaration Progress Report* (2018), https://www.afi-global.org/sites/default/files/publications/2018-09/AFI_Maya_report_2018_AW_digital.pdf [<https://perma.cc/ADA4-2283>].

43. *Id.* at 3.

44. *About*, BETTER THAN CASH ALLIANCE (2020), <https://www.betterthancash.org/about> [<https://perma.cc/NBH8-R7UT>] (discussing the BCA members, the mission, and work program).

45. G.A. Res. 70/1, ¶ 27 (Oct. 21, 2015).

46. *Id.* SDG 1's objective is “[t]o end poverty in all its forms everywhere by 2030” while SDG 2 is “[t]o end hunger, achieve food security and improved nutrition and promote sustainable agriculture.” *Id.* Leora Klapper, Mayada E.-Zoghbi & Jake Hess, *Achieving the Sustainable Development Goals: The Role of Financial Inclusion 2* (U.N. Sec'y Gen.'s Special Advoc. for Inclusive Fin. for Dev., Working Paper, 2016) (discussing the relationship between expanding access to financial services and achieving the SDGs).

of international financial institutions and central banks. In 2016, the primary global standard setter for prudential banking regulation, the Basel Committee on Banking Supervision, published its guidance on effective banking supervision.⁴⁷ Although the Basel Committee's initial focus was on the microfinance activities of deposit-taking institutions,⁴⁸ it has since broadened to include how supervisors can assist banks in managing the risks associated with the full range of financial products and services that those with low-income and other socially marginal groups can access in order to enhance their economic positions.⁴⁹

ISSBs have had an active agenda in promoting financial inclusion in their standard-setting activities.⁵⁰ Until recently, most of the ISSBs and financial market regulators had little appreciation for the role of regulation in mitigating the social risks associated with financial exclusion and inequity.⁵¹ Most central banks and regulators now observe that financial inclusion is within their respective mandates.⁵²

In parallel, post-crisis global regulatory reforms have led the ISSBs to rethink the relationship between the safety and soundness of banking systems and other regulatory objectives, such as market integrity, financial consumer protection and financial inclusion. The Bank for International Settlements-based Committee on Payment and Market Infrastructure (CPMI) has focused on facilitating financial inclusion by proposing standards to enhance the operation of payment systems by increasing the efficiency and security by which inter-bank payments can be made.⁵³ Similarly, the Financial Action Task Force formally recognized the risks of financial exclusion as contributing to money laundering and terrorist financing.⁵⁴ Also, in 2017, the World Bank Group adopted the Financial Inclusion

47. BASEL COMMITTEE, *Guidance on the application of the Core Principles for Effective Banking Supervision to the regulation and supervision of institutions relevant to financial inclusion*, 1 (2016), <https://www.bis.org/bcbs/publ/d383.htm> [<https://perma.cc/H6RG-4CGY>].

48. See GPFI, White Paper, *supra* note 15, at 20 (discussing an overview of the Basel Committee's work on financial inclusion).

49. BASEL COMMITTEE MICROFINANCE, *supra* note 10, at 42-43.

50. GPFI, White Paper, *supra* note 15, at 16-20, 43.

51. MACCHIAVELLO, *supra* note 6, at 14.

52. Basel Committee, *Range of Practice Financial Inclusion*, *supra* note 10, at 11-12. See also GPFI, White Paper, *supra* note 15, at 9-10.

53. COMM. ON PAYMENT & MKT. INFRASTRUCTURE & WORLD BANK GROUP, PAYMENT ASPECTS OF FINANCIAL INCLUSION (April, 2016) <https://www.bis.org/cpmi/publ/d144.pdf> [<https://perma.cc/2RM9-MPDL>] (providing guiding principles to help countries advance financial inclusion including key actions to provide basic accounts at little or no cost, stepping up efforts to increase financial literacy, and adapting electronic payment services to support large-volume payment programmes, such as government payments).

54. FINANCIAL ACTION TASK FORCE, FATF GUIDANCE: ANTI-MONEY LAUNDERING AND TERRORIST FINANCING MEASURES AND FINANCIAL INCLUSION 12-27 (2013), https://www.fatf-gafi.org/media/fatf/documents/reports/AML_CFT_Measures_and_Financial_Inclusion_2013.pdf [<https://perma.cc/3JNT-HTJ3>] (defining financial inclusion and guidance on support for financial inclusion).

Global Initiative to support and accelerate the implementation of country-led reform actions to meet national financial inclusion targets.⁵⁵

C. Financial Inclusion – The Dark Side

Notwithstanding the economic benefits of financial inclusion, increased access to financial services can contribute to excessive financialization in the economy, resulting from widespread mis-selling of financial products and investments, and unduly stringent repayment terms saddling vulnerable groups with onerous debts and undermining the security of long-term savings and pensions. The current level of private debt in many developed and developing countries can be described as a ticking time bomb that contributes to growing inequality. For instance, many countries have ballooning household debt, sometimes higher than was observed before the 2008 financial crisis.⁵⁶ In the United Kingdom, Bank of England data shows that since 2010, lending to individuals and small businesses has increased significantly, particularly in personal loans, overdrafts, and credit card debt.⁵⁷

The literature in law, behavioral economics, and sociology has generally criticized the current policy paradigm as based, more or less implicitly, on a set of concepts—such as: increased access to finance is always beneficial, consumers are rational, or the market produces efficient outcomes—which require fundamental rethinking.⁵⁸ Increased financial inclusion raises fundamental questions about the effectiveness of existing financial regulation, the adequacy of current debt management policies, and the adequacy of social and economic support for vulnerable groups who have undue exposure to risky financial products.

III

DIGITAL TECHNOLOGY AND FINANCIAL INCLUSION

Fintech links together the delivery of financial services with digital technology. The financial services industry has always relied on technological

55. *Financial Inclusion Global Initiative (FIGI)*, WORLD BANK GRP. (July 18, 2019), <https://www.worldbank.org/en/topic/financialinclusion/brief/figi> [https://perma.cc/6PEM-29GC].

56. See, e.g., DANIEL HARARI, HOUSE OF COMMONS, *HOUSEHOLD DEBT: STATISTICS AND IMPACT ON ECONOMY*, 2018, CPB-7584, at 9–10 (showing that, after a period of declining household debt following the recession, UK household debt began rising sharply again beginning in 2014); See also, Nicholas Gane, *Debt, Usury and the Ongoing Crises of Capitalism*, in *THE SOCIOLOGY OF DEBT* 175 (Mark Featherstone ed., 2019) (“Just over ten years since the start of the global financial crisis, many advanced capitalist societies are witnessing the rise of private debt to the levels previously seen in 2008 . . .”).

57. *Money and Credit – June 2019*, BANK OF ENGLAND (Oct. 29, 2020), <https://www.bankofengland.co.uk/statistics/money-and-credit/2020/september-2020> [https://perma.cc/AC73-U398].

58. See generally IAIN RAMSAY, *PERSONAL INSOLVENCY LAW IN THE 21ST CENTURY* (2017); Anne-Francoise Lefevre & Michael Chapman, *Behaviour Economics Consumer Financial Protection* (OECD Working Papers on Fin., Insurance & Private Pension, Paper No. 42, 2017), <https://www.oecd-ilibrary.org/docserver/0c8685b2-en.pdf?expires=1606229792&id=id&accname=guest&checksum=E6713B7B59753C763A385C1A73542E4D> [https://perma.cc/62BL-US7G].

advances to drive innovation in the provision of services and the allocation of capital, but recent innovations—such as blockchain, mobile payment systems, peer-to-peer lending and crowd-funding platforms, and other internet-based services—have challenged the traditional business models for delivering banking and financial services. Indeed, fintech has given rise to new forms of currencies and new ways of allocating capital, managing risks, and carrying out financial transactions. This digital transformation of the financial sector provides consumers with better targeted-services and lower prices, facilitates access to credit for small and medium-sized enterprises (SMEs), enhances productivity of traditional financial institutions, and, more fundamentally, enhances the potential for individuals and firms to access the financial system.⁵⁹

A. Fintech and Financial Inclusion

Fintech innovations contain the potential to increase proximity with customers by bypassing financial intermediaries. The boundaries between financial providers and their customers has become increasingly blurred, which challenges current regulatory approaches.⁶⁰ For instance, crowdfunding companies have disrupted the business of raising capital and challenged the market power of large banks in deciding which companies and individuals receive loans and investment. Another example is software and mobile phone applications that match borrowers with lenders without a traditional intermediary. These so-called peer-to-peer lending platforms have been highly successful in China where they expanded exponentially in just a decade, from a single platform in 2007 to almost two thousand in 2017.⁶¹ These platforms can pool capital from multiple sources and allocate it to a wide range of customers thus diversifying default risk. Consequently, large banks find themselves under competitive pressure, which improves overall economic efficiency.

The shortened intermediary chain facilitates access to financial products and services by drastically reducing information asymmetry and transaction costs. This suggests that digital transformation has the potential not only to create a highly efficient and integrated economic system, but also to increase access to financial products and services for those who lack formal transaction accounts, thereby increasing access to the financial system.

59. See Carney, *supra* note 14, at 2, 5–7, 11. See also Dirk A. Zetsche, Douglas W. Arner, Roos P. Buckley & Rolf H. Weber, *The Future of Data Driven Finance: Financial Regulation, Data Regulation, and RegTech*, CLS BLUE SKY BLOG (Apr. 15, 2019), <https://clsbluesky.law.columbia.edu/2019/04/15/the-future-of-data-driven-finance-financial-regulation-data-regulation-and-regtech/> [https://perma.cc/8B69-MLZW].

60. MACCHIAVELLO, *supra* note 6, at 213. See also, Gudula Deipenbrock, *Sustainable Development, the Interest(s) of the Company and the Role of the Board from the Perspective of a German Aktiengesellschaft* (Univ. of Oslo Faculty of L. Legal Studies Research Paper Ser. No. 210-02).

61. James Guild, *Fintech and the Future of Finance*, 10 ASIAN J. PUB. AFF. 52, 59 (2017).

Considering the above, the link between expanding access to financial products and services and development seems unquestionable.⁶² However, while fintech innovations create significant potential to widen access to the financial system, that widened access does not necessarily lead to a more sustainable financial system, as it creates or exacerbates financial risks, as well as social risks, to which traditionally excluded groups are exposed. First, fintech innovations raise concerns about consumer protection and over-indebtedness. While the digital transformation of the financial sector spurs financial inclusion of low-income households and businesses by boosting their incomes and savings, it also leads to individuals and SMEs incurring more debt.

Second, fintech innovations create more opportunities for misuse of financial data. Most individuals underestimate the privacy risks that cheap financial products entail. Indeed, fintech providers use algorithms to make decisions about their customers, which may reinforce existing disparities and financial exclusion.⁶³ Whereas traditional financial institutions are bound by a detailed regulatory framework to protect the use of their customer's data, fintech companies often do not fit into existing legal categories which allows them to avoid compliance with burdensome regulation.

In considering the linkages between regulating both finance and data, the EU's implementation of the General Protection of Data Regulation has resulted in a fundamental change in how firms are required to manage personal data; it applies to all EU markets and citizens, as well as all non-EU persons and firms dealing with EU markets and firms.⁶⁴ The EU places great emphasis on a privacy-oriented approach to data protection that provides uniquely stronger safeguards for customer data protection and portability than almost any other large economic jurisdiction. In contrast, the United States has taken a different, and far less stringent, approach to data regulation and privacy in the financial sector that has allowed the emergence of a small group of Big Tech and fintech companies who dominate the market share.⁶⁵ Indeed, although the digitalization of financial services has led to increased access to financial services for under-privileged groups, along with reductions in corruption and tax evasion in some countries,⁶⁶ there are serious regulatory challenges regarding financial stability,

62. See Klapper et al., *supra* note 46, at 9 ("People with access to financial services are better positioned to succeed economically and build a decent life, ultimately making it easier to reduce inequality . . .").

63. Pearse, *supra* note 41.

64. See generally Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regards to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, 2016 O.J. (L 119) 1.

65. See Dirk A. Zetsche, Douglas W. Arner, Roos P. Buckley & Rolf H. Weber, *The Future of Data Driven Finance and RegTech: Lessons from EU Big Bang II*, at 37 (Eur. Banking Inst. Working Paper No. 35, 2019).

66. India has adopted the India Stack strategy that combines a system of digital identification supporting a digital payment system that facilitates interoperability across traditional and new payment technologies and providers. An important part of India Stack is the Aadhaar system that is operated by the Unique Identification Authority of India. The Aadhaar system provides a unique 12-digit randomised

depositor protection, consumer financial protection, and the control of money laundering and terrorist finance.

B. International Initiatives in Digital Financial Inclusion

The G20 reaffirmed its initial 2010 Principles for Innovative Financial Inclusion in 2016 by endorsing the G20 High-Level Principles for Digital Financial Inclusion, which focused on providing a basis for national action plans to leverage the potential offered by digital technologies to enhance access to financial services.⁶⁷ The G20 High Level Principles have driven other ISSBs to incorporate digital financial regulation into regulatory standards and supervisory practices. These international initiatives are premised on the key assumption that the expansion of digital financial markets and enhanced technology in the provision of financial services is vital for economic development, particularly in developing and emerging market countries. Moreover, the growing role of Big Tech firms such as Google, Amazon, and Facebook, along with the existing influence of incumbent financial institutions in providing financial services, are leading a transformation of the traditional banking and financial system to a data-driven business model, resulting in a Big Bang in the provision of financial services.⁶⁸ This has highlighted one of the greatest challenges for the global financial services industry regarding how to reconcile the objectives and the tools of data regulation and financial regulation. The proponents of this “Big Bang” in data-driven financial services and its broad scope of application argue that it will enhance financial inclusion by widening access to financial services, resulting in improved living standards and poverty alleviation because of reduced transaction costs in the provision of capital and credit to a larger number of individuals and firms.⁶⁹

identification number to all residents on a voluntary basis. Since 2016, almost all of India’s 1.3 billion people have been registered with numbers that make it more administratively efficient for the government to provide access to government services, including social insurance and welfare payments, and banking, insurance and other services. See Kathryn Henne, *Surveillance in the name of governance: Aadhar as a Fix for Leaking Systems in India*, in, INFORMATION, TECHNOLOGY AND CONTROL IN A CHANGING WORLD – UNDERSTANDING POWER STRUCTURES IN THE 21ST CENTURY 223, 224 (Blayne Haggart, Kathryn Henne & Natasha Tusikov eds., Palgrave Macmillan 2019).

67. G20, G20 HIGH-LEVEL PRINCIPLES FOR DIGITAL FINANCIAL INCLUSION (2016), [https://www.gpfi.org/sites/gpfi/files/documents/G20 High Level Principles for Digital Financial Inclusion - Full version-.pdf](https://www.gpfi.org/sites/gpfi/files/documents/G20%20High%20Level%20Principles%20for%20Digital%20Financial%20Inclusion-Full%20version-.pdf) [<https://perma.cc/2WW7-QT2J>].

68. The U.S. Federal Trade Commission (FTC) has addressed some of the important questions about how to regulate finance, data, and technology in ways that do not inhibit the development of the digital economy. The FTC adopted in 2019 broad new requirements for financial institutions to protect the privacy and security of customers’ data. See Federal Trade Commission, *FTC Seeks Comment on Proposed Amendments to Safeguards and Privacy Rules* (Mar. 15, 2019), <https://www.ftc.gov/news-events/press-releases/2019/03/ftc-seeks-comment-proposed-amendments-safeguards-privacy-rules> [<https://perma.cc/748X-5U2R>].

69. See, e.g., Tavneet Suri & William Jack, *The long-run poverty and gender impacts of mobile money*, 354 SCIENCE 1288, 1288 (2016) (explaining how mobile money has “increased the efficiency of the allocation of consumption over time while allowing a more efficient allocation of labor, resulting in a meaningful reduction of poverty in Kenya”).

Nonetheless, policymakers and regulators should not be unduly optimistic about the use of digitalization to promote financial inclusion as a strategy for poverty alleviation and development. The hypothesis that digitally-driven financial inclusion leads to improved living standards has attracted controversy and criticism regarding the social risks involved.⁷⁰ Critics point out that financial inclusion is a mere re-branding for microfinance, which appeared in the 1970s and, following initial praise,⁷¹ developed into a “global finance-development hybrid specialized in making high-interest loans”.⁷² Microfinance institutions have come under scrutiny for a variety of reasons, notably their high-interest rates and their fixation on credit, which often leads to over-indebtedness.⁷³

Although microfinance and financial inclusion are related concepts,⁷⁴ there are important differences. With community-based programs, cooperative institutions, technology firms, mobile network operators, and credit card companies on board, financial inclusion involves a new set of players and practices that have little in common with microfinance.⁷⁵ In addition, with the impetus of sustainable development, financial inclusion blends the concepts of capital formation and financial governance with the idea of social justice and equality.⁷⁶ Financial inclusion expands the focus of finance beyond the mere allocation of savings from investors to viable economic projects but also provides access to finance by those individuals and businesses who have traditionally faced barriers to the formal financial system. Indeed, an important objective of financial policy not only is to provide a sustainable flow of finance on efficient terms to viable economic agents but also to expand access to socially marginal groups in order to create more opportunities for wealth creation and to mitigate social risks, including economic inequality. Although fintech innovations can play

70. For a critical view on financial inclusion, see Mader, *supra* note 36, at 46. See generally Milford Bateman, Mare Duvendack & Nicholas Loubere, *Is fin-tech the new panacea for poverty alleviation and local development? Contesting Suri and Jack's M-Pesa findings published in Science*, 46 REV. AFR. POLIT. ECON. 480 (2019).

71. The U.N. and the World Bank regarded microfinance as a “miraculous tool to spur development.” MACCHIAVELLO, *supra* note 6, at 82. See also International Conference on Financing for Development, *Monterrey Consensus of the International Conference on Financing for Development*, 8, ¶18, U.N. Doc. A/CONF.198/11 (Mar. 18–22, 2003), https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.198_11.pdf. [<https://perma.cc/R9LH-TGDU>] (“Microfinance and credit for micro-, small and medium-sized enterprises, including in rural areas, particularly for women, as well as national savings schemes, are important for enhancing the social and economic impact of the financial sector.”); Ousa Sananikone, *Microfinance and the Millennium Development Goals* (Consultative Grp. to Assist the Poor, Donor Brief No. 9, 2002), <https://www.cgap.org/sites/default/files/CGAP-Donor-Brief-Microfinance-and-the-Millennium-Development-Goals-Dec-2002.pdf> [<https://perma.cc/SUW9-FDM4>] (explaining how microfinance contributes to global development goals).

72. Mader, *supra* note 36, at 463.

73. See *Id.* (“[T]here is some truth to this suggestion of a mere re-branding, because much of today’s financial inclusion activity is still microfinance: high-interest loans extended to low-income people.”).

74. For a discussion of the interrelationship between financial inclusion and microfinance, see MACCHIAVELLO, *supra* note 6, at 18, 82.

75. Mader, *supra* note 36, at 463.

76. *Id.*

an important role in expanding access to the financial system, they can have unintended consequences. The distribution of unsuitable financial products to individuals can undermine consumer financial protection by leading to disproportionate losses resulting in high levels of indebtedness, growing poverty, and other social pathologies.⁷⁷

C. COVID-19 and Digital Financial Inclusion

Social risks have come to the forefront with the policy and regulatory measures taken by many governments to support digital financial inclusion during the COVID-19 pandemic and economic lockdowns. Although the pandemic lockdown has led to reduced transaction volumes for most digital payment providers,⁷⁸ it has created an unexpected opportunity to use digital technologies to enhance access to financial services to financially excluded groups. In many developing countries where financial inclusion levels are among the lowest in the world, governments have adopted policy measures in response to COVID-19 that enhance the role of digital finance to support financial inclusion.⁷⁹ Generally, government measures across the developing world have focused on maintaining access to payment channels and instruments in order to reduce the risk of infection due to handling cash.⁸⁰ While some countries have designated banks and payment service providers as essential service providers in order to maintain cash-in and cash-out networks for customers, others have allowed mobile money providers and other networks of payment agents to continue operating during lockdown in order to allow them to disburse government payments and social benefits.⁸¹ Still other countries have reduced or eliminated mobile payment service providers' fees,⁸² while other jurisdictions have relaxed anti-money laundering know-your-customer procedures to increase remote access to financial accounts through digital payment methods.⁸³ Some

77. *Id.*

78. Gringoli et al., *supra* note 18.

79. See *AFI COVID-19 Policy Response & Dashboard*, ALL. FOR FIN. INCLUSION, <https://www.afi-global.org/afi-covid-19-policy-response> [<https://perma.cc/FM4P-Q4V6>] (follow the "View the live page >" hyperlink at the top of the perma.cc record; then select the "Dashboard – AFI members' COVID-19 Policy Response" image to access the dashboard hosted on Dropbox).

80. Raphael Auer, Giulio Cornelli & Jon Frost, *Covid-19 Cash and the Future of Payments*, BIS BULL., at 1–6 (April 3, 2020).

81. Nitish Narain, Abhishek Anand, Surbhi Sood & Shobhit Mishra, *CICO Agents: the under-valued "first responders"*, MICROSAVE CONSULTING (April 15, 2020), <https://www.microsave.net/2020/04/15/cico-agents-the-under-valued-first-responders/> [<https://perma.cc/GP2T-SB6E>] (discussing India's designation of all mobile money providers and payment agents as essential service providers).

82. The Central Bank of Kenya announced on March 16, 2020 "measures to facilitate increased use of mobile money transactions instead of cash, in the context of the COVID-19 pandemic," including eliminating charges for mobile money transactions, resulting in more than 1.6 million additional customers using mobile money channels. ALL. FOR FIN. INCLUSION, *supra* note 79.

83. The Bank of Ghana adopted legislation in March 2020 to "facilitate more efficient payments and promote digital forms of payments" and to increase transaction account limits during the lockdown. See BANK OF GHANA, MONETARY POLICY PRESS RELEASE (2020), <https://www.bog.gov.gh/wp-content/uploads/2020/03/MPC-Press-Release-March-2020-3.pdf> [<https://perma.cc/US89-M7U2>].

countries have adopted a risk-based regulatory approach that assigns a risk level to different types of customers and accounts in order to determine an acceptable volume and value for transaction limits.⁸⁴

These measures aim to use digital financial services to support economies during the lockdown and to contribute to longer-term economic recovery. Both developed and developing countries are adopting facilitation strategies like the above to provide regulators with more flexibility in supporting digital financial inclusion without undermining regulatory objectives.

Ultimately, the quest for social justice suggests that regulators and policymakers should ensure that data-driven financial services and related fintech innovations do not lead to a development hybrid that increases the asymmetric power of financial institutions at the expense of their customers, particularly those in socially marginal and vulnerable groups. An inclusive financial system calls for a digital transformation of finance and not for incremental measures that merely mitigate the symptoms of poverty by extending services to the poor as a goal itself. The aim should be to maximize economic opportunities while minimizing the risks for society.

IV

PROPORTIONALITY

The risks and unintended consequences of digital financial inclusion raise important policy questions about the appropriate role for regulation and supervision to support financial inclusion. From a regulatory perspective, the challenge is to ensure that digital financial inclusion enhances access to financial services in a way that maximizes economic opportunities and minimizes the risks for society.⁸⁵ Directing fintech innovation towards inclusive growth and increased social equity requires coordination on an international level that brings together all relevant stakeholders such as fintech companies, standard-setting bodies, and national financial regulators. As a first step, the UN has recommended the development of good practices for regulating and monitoring fintech innovations.⁸⁶ But the more significant work in this area should come from the specialized international financial standard-setting bodies.

84. The Central Bank of Egypt has increased transaction limits for mobile payment providers in response to Covid-19 by allowing individuals to send up to approximately \$2,000 per day and \$6370 per month. *See* CENT. BANK OF EGYPT, CIRCULAR DATED 20 MARCH 2020 FOLLOWING THE PRECAUTIONARY MEASURES TO COUNTER THE EFFECTS OF COVID-19 VIRUS (2020); *see also* CENT. BANK OF EGYPT, CIRCULAR DATED 29 MARCH 2020 REGARDING SETTING MAXIMUM LIMITS FOR CASH DEPOSITS & WITHDRAWALS WITHIN THE PRECAUTIONARY MEASURES TO COUNTER THE EFFECTS OF COVID-19 VIRUS (2020), <https://www.cbe.org.eg/en/Pages/HighlightsPages/Circular%20dated%2029%20March%202020%20regarding%20setting%20maximum%20limits%20for%20cash%20deposits%20&%20withdrawals%20within%20the%20precautionary%20measures%20to%20counter%20the%20effects%20of%20COVID-19%20virus.aspx> [<https://perma.cc/734Z-44ZS>].

85. Carney, *supra* note 14, at 3, 8.

86. *See* UN SEC'Y GEN.'S SPECIAL ADVOC. FOR INCLUSIVE FIN. FOR DEV., 2019 ANN. REP. TO SEC'Y GEN., https://www.unsgsa.org/files/8215/6942/4860/UNSGSA_2019_Annual_Report.pdf [<https://perma.cc/4T5S-DTD9>].

A. International Regulation and Digital Financial Inclusion

Financial markets are increasingly interconnected, yet financial systems remain primarily administered on a national level. In order to unleash the full potential for fintech to contribute to sustainable and inclusive growth, financial regulators and central banks should consider how the principle of proportionality should apply to manage the risks that arise from digital financial innovations to support a more inclusive financial system. William Magnuson identified three principles for an “internationally minded regulatory regime” to fintech regulation.⁸⁷

First, the network of fintech suppliers, consumers, and investors are dispersed across national borders, resulting in multiple regulators having an interest in regulating the cross-border activities of fintech providers. The regulation of fintech activities therefore requires a significant extraterritorial dimension.⁸⁸

Second, the regulatory approach of one country necessarily affects other countries, for there are important distributional effects of choosing one regulatory regime over another.⁸⁹ This means that jurisdictions are in competition with each other, which may lead to a race to the bottom, given that a specifically burdensome regulatory approach may cause fintech activity to shift from one country to another.

Third, despite regulatory competition between jurisdictions, financial regulators should establish ties with their counterparts in other jurisdictions, in order to share useful information with respect to their experience with fintech regulation. By building networks for formal and informal exchanges of information, financial regulators could benefit from the experiences of other financial authorities.⁹⁰

The Basel Committee began to address the risks associated with increased financial inclusion in the context of microfinance and the risks it poses to banks and other deposit-taking institutions in a survey it conducted of member and non-member countries in 2009.⁹¹ The results of the survey led to the Basel Committee adopting a set of guidelines in 2010 for how banks should manage the risks associated with microfinance, which were the first set of international guidelines for how bank supervisors should integrate inclusion into their regulatory frameworks.⁹²

Later, following the GPFI’s 2011 white paper that emphasized the importance of “proportionate standards and guidance” to achieve “financial inclusion for the poor,”⁹³ the Basel Committee and the Financial Stability Board undertook a

87. William Magnuson, *Regulating Fintech*, 71 VAND. L. REV. 1167, 1222 (2018).

88. *Id.*

89. *Id.*

90. *Id.* at 1225.

91. See BASEL COMMITTEE RANGE OF PRACTICE, *supra* note 10, at 3.

92. See BASEL COMMITTEE MICROFINANCE, *supra* note 10, at 5, 12 (applying BCP to microfinance activities).

93. Glob. P’ship for Fin. Inclusion, *supra* note 8.

review of their member countries' regulatory practices to assess the extent to which they incorporate financial inclusion. To this end, the Basel Committee established a Workstream on Financial Inclusion in 2013 to gain a better understanding of the context and institutional constraints facing member and non-member countries in promoting financial inclusion. The Workstream conducted a survey of regulatory and supervisory practices for banks and deposit-taking institutions in developed and developing countries resulting in a report in a 2015.⁹⁴ Based on this survey, the Basel Committee revised the Core Principles for Banking Supervision in 2016 to recommend some regulatory approaches for supervising the risks associated with digital financial inclusion.⁹⁵

The Basel Committee's efforts raise the important issue of how regulatory frameworks can facilitate the process of expanding access to finance for underserved and socially excluded groups, particularly in low-income countries. Central banks, financial regulators, and international financial organizations control many of the levers that can integrate financial inclusion into regulatory frameworks while the principle of proportionality in financial supervision allows a degree of flexibility to respect local institutional structures and social market practices.

B. Proportionality as a Legal Concept

When it comes to considering possible policy pathways to promote digital financial inclusion, the principle of proportionality is vital for understanding how regulators can balance important rights and interests in the pursuit of this policy aim. How can we shape regulation in a way that does not unduly restrict inclusion? What is the optimal level of regulation for the market? On the one hand, regulatory safeguards are necessary to mitigate the risks that arise with fintech innovation. On the other hand, given that regulation raises prices for products and services, regulatory intervention should not infringe fundamental rights, such as the freedom to conduct business, which includes the right to dispose of one's property and to keep sensitive information confidential.⁹⁶

Similarly, the freedom to conduct a business derives from the right to property recognized under international law and the European Convention on Human Rights. Despite the recognized right to property under international and human rights law, states may regulate such ownership rights for a valid public purpose so long as the imposition on property rights is proportionate to achieve

94. See BASEL COMMITTEE RANGE OF PRACTICE, 5-8, *supra* note 10, at 5-8.

95. BASEL COMM. ON BANKING SUPERVISION, GUIDANCE ON THE CORE PRINCIPLES FOR EFFECTIVE BANKING SUPERVISION TO THE REGULATION AND SUPERVISION OF INSTITUTIONS RELEVANT TO FINANCIAL INCLUSION 3, 4 (2016), <https://www.bis.org/bcbs/publ/d383.pdf> [https://perma.cc/74YZ-UY7V].

96. Chiara Zilioli, *Proportionality as the Organizing Principle of European Banking Regulation*, in ZENTRALBANKEN, WÄHRUNGSUNION UND STABILES FINANZSYSTEM – FESTSCHRIFT FÜR HELMUT SIEKMANN [CENTRAL BANKS, MONETARY UNION, AND A STABLE FINANCIAL SYSTEM] 257 (Theodor Baums et al. eds., 2019).

a legitimate state aim.⁹⁷ In financial regulation, regulators may therefore adopt regulatory controls that impinge on the freedom to conduct a business so long as those controls are proportionate measures to achieve valid regulatory objectives, such as investor and consumer protection, the stability of the financial system, and market integrity.⁹⁸

The EU Treaties and secondary legislation also recognize the principle of proportionality as a fundamental legal principle that guides the exercise of state power when it impinges on fundamental treaty rights.⁹⁹ Article 5(4) notes that “under the principle of proportionality, the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties.”¹⁰⁰ The Court of Justice of European Union (CJEU) has recognized proportionality as an unwritten general principle of law and has recognized a three-step test to determine whether a governmental measure is proportionate or not.¹⁰¹

First, the CJEU considers whether the governmental measure in question is suitable or appropriate for achieving a specific legitimate aim.¹⁰² According to CJEU case law, a measure is appropriate or suitable if it genuinely reflects a concern to attain the objective in a consistent and systematic manner.¹⁰³ The CJEU has applied this test by limiting its review to whether the relevant measure is “manifestly inappropriate having regard to the objective pursued.”¹⁰⁴

Second, the CJEU considers whether the governmental measure that infringes a fundamental right—i.e. a property right—is necessary to achieve a valid state objective, or if there is a less intrusive means to achieve the aim. Under this necessity test, there should not exist alternative measures which fulfil the

97. JOHN LINARELLI, MARGOT E. SALOMON & MUTHUCUMARASWAMY SORNARAJAH, *THE MISERY OF INTERNATIONAL LAW: CONFRONTATIONS WITH INJUSTICE IN THE GLOBAL ECONOMY* 96, 161, 166 (2018) (discussing the emergence of proportionality in the law of expropriation and its use in foreign investment treaties, and how arbitrators apply the proportionality principle).

98. See Council Regulation (EU) 1024/2013, art. 1(1), 2013 O.J. (L 287) 63, 72.

99. See ANA PAULA CASTRO CARVALHO, STEFAN HOHL, ROLAND RASKOPF & SABRINA RUHNAU, *FIN. STABILITY INST., PROPORTIONALITY IN BANKING REGULATION: A CROSS-COUNTRY COMPARISON* 15 (2017), <https://www.bis.org/fsi/publ/insights1.pdf> [<https://perma.cc/GP52-M4CM>].

100. Consolidated Version of the Treaty on European Union art. 5(4), May 9, 2008, 2008 O.J. (C 115) 18.

101. See Case C-442/02, *CaixaBank France v. Ministère de l'Économie, des Finances et de l'Industrie* (*The CaixaBank Case*), 2004 E.C.R. I-08961 ¶ 17.

102. According to the German Federal Constitutional Court, a measure is suitable or appropriate if it results in achieving a certain goal. BVerfG, 2 BvR 859/15, May 5, 2020, https://www.bundesverfassungsgericht.de/SharedDocs/Entscheidungen/EN/2020/05/rs20200505_2bvr085915en.html [<https://perma.cc/4JB6-ULD4>]. EU member states and countries that are parties to the European Convention on Human Right recognize the principle of proportionality in their respective legal systems. *Id.* at 58.

103. See Case C-64/08, *Staatsanwaltschaft Linz v. Engelmann*, 2010 E.C.R. I-08219, 8256 ¶ 35; Case C-137/09, *Josemans*, 2010 E.C.R. I-13054, 13077 ¶ 70; Case C-28/09, *Comm'n v Austria*, 2011 E.C.R. I-13567, 13605 ¶ 126.

104. Case C-210/03, *Swedish Match v. Secretary of State for Health*, 2004 E.C.R. I-11900, 11919 ¶ 48; Case C-15/10, *Etimine SA v. Secretary of State for Work and Pensions*, 2011 E.C.R. I-6725, 6762 ¶ 145; Case C-40/72, *Schroeder v Germany*, E.C.R. 1973, I-126, 142 and 143 ¶ 14.

measure's aim but which infringe on constitutional or fundamental rights of the individual in a less restrictive manner.¹⁰⁵

Third, the CJEU construes proportionality in the strict sense (*proportionality stricto sensu*). This requires a comparison of the private and the public interests at stake and asks the question: Does the public interest outweigh the limitation on the private rights—that is, the harm to constitutional rights? However, recent decisions show a tendency to merge the elements of appropriateness and necessity.¹⁰⁶

The proportionality principle applies equally in financial regulations.¹⁰⁷ *The CaixaBank Case* provides a classic statement of how the proportionality principle applies under EU banking law in respect of a regulatory measure that applied equally to foreign EU-based and host state banks but which posed a significant barrier against EU-based bank's access to the host state's local market.¹⁰⁸ In striking down the host state measure as disproportionate, the CJEU ruled that the proportionality requirement and necessity test provided that a regulatory measure “may be justified where it serves overriding requirements relating to the public interest, is suitable for securing the attainment of the objective it pursues and does not go beyond what is necessary in order to attain it.”¹⁰⁹

Based on *The CaixaBank Case* and other CJEU jurisprudence, a court's application of the proportionality principle in the context of a financial regulatory measure will involve assessing (1) the appropriateness of the measure to achieve a legitimate policy objective in a consistent and systematic manner, and (2) whether the measure is necessary, that is, whether recourse can be had to less onerous means for attaining the objective pursued. The appropriateness assessment will depend on whether the imposition on private rights is outweighed by the public interest at stake. Determining whether a measure is less onerous will depend on the relative costs and disadvantages imposed on the regulated party in comparison with the costs and disadvantages created by an alternative measure that can attain the same objective.¹¹⁰ It is suggested in the next Sub-part that the application of this principle characterized by the terms “suitable,” “appropriate” and “necessary,” according to the case-law of the CJEU, should inform the regulatory practice of states concerning digital financial inclusion if the measure in question genuinely reflects a concern to attain the objective in a consistent and systematic manner.

105. Case C-189/01, *Jippes v. Minister van Landbouw*, E.C.R. 2001, I-5693, 5720 ¶ 81; Case C-343/09, *Afton Chemical v. Secretary of State for Transport*, E.C.R. 2010, I-7062, 7078 ¶ 45; Case C-150/10, *BIRB v. Beneo-Orafti*, 2011 E.C.R. I-6881, 6911 ¶ 75; Case C-358/14, *Poland v Parliament and Council*, 2016, ECLI: EU:C:2016:323, ¶ 78.

106. Case C-58/08, *Vodafone and Others v. Secretary of State for Business, Enterprise and Regulatory Reform*, 2010 E.C.R. I-5026, 5045 ¶¶ 53 and 54.

107. *The CaixaBank Case*, 2004 E.C.R. I-08961 ¶ 17.

108. *Id.*

109. *Id.*

110. Case C-261/81, *Walter Rau Lebensmittelwerke v. De Smedt PVBA*, 1982 E.C.R. I-3962, 3973 ¶ 17.

C. The Basel Core Principles and Proportionality

The Basel Committee acknowledged the principle of proportionality as one of the core principles for effective banking supervision. For instance, Core Principle 8 entitled “Supervisory approach” provides:

An effective system of banking supervision requires the supervisor to develop and maintain a forward-looking assessment of the risk profile of individual banks and banking groups, proportionate to their systemic importance; identify, assess, and address risks emanating from banks and the banking system as a whole; have a framework in place for early intervention; and have plans in place, in partnership with other relevant authorities, to take action to resolve banks in an orderly manner if they become non-viable.¹¹¹

Accordingly, the risks from fintech players for the financial systems call for a well-calibrated regulatory and supervisory approach.¹¹²

Most policymakers and market participants would agree that regulatory intervention should be proportionate, but proportionality is an elastic concept with different meanings in different jurisdictions. International standards for digital financial inclusion should be adjusted for different jurisdictions. Since developed and developing economies have very different starting points, in terms of institutional structures and social market practices, with the latter being characterized by higher inequality and weaker institutional structures, it becomes apparent that there is no one-size-fits-all solution for regulatory intervention. In this regard, it is important to ensure that developing countries are able to experiment with different regulatory tools to address the risks posed by digital financial inclusion while supporting other regulatory and economic policy values. Emerging and developing economies, for which financial inclusion is a particular concern, should apply the principle of proportionality in a way that allows them to pursue adequately other regulatory objectives without dismantling local institutional structures and undermining social values. One way to do this would be to adopt a general approach that incorporates a similar version of the CJEU’s appropriateness assessment and necessity test. This would afford countries the flexibility to consider a range of measures to achieve digital financial inclusion objectives without undermining other regulatory or policy objectives and which pay respect to local institutional structures and social market practices.

For instance, from a systemic risk perspective, decentralized and rapidly evolving technologies may pose a risk to the stability of the financial system.¹¹³ Certainly, the arrival of new depositors generates more diversity on the lending market which, at first glance, may contribute to financial stability. Yet, the expansion of financial access also leads to rapid and excessive credit growth with inadequate lending standards and, potentially, to instability in lending markets.¹¹⁴ The fact that fintech companies are usually small, dispersed, and difficult to

111. BASEL COMM. ON BANKING SUPERVISION, CORE PRINCIPLES FOR EFFECTIVE BANKING SUPERVISION 10–11 (2012).

112. Mehrotra & Yetman, *supra* note 3, at 88.

113. Magnuson, *supra* note 87, at 1199.

114. Mehrotra and Yetman, *supra* note 3, at 84, 92; Magnuson, *supra* note 91, at 1200.

monitor raises other systemic risks than the ones that led to the financial crisis of 2008.¹¹⁵ In fact, an under-appreciated systemic risk in the fintech sector has been that its fast-paced growth creates the risk that the fintech industry skips the intermediary stage of being “too large to ignore” by evolving directly from “too small to care” to “too big to fail.”¹¹⁶

Similarly, fintech innovations and related digital technologies pose significant risks to data and anti-fraud protections, demonstrating the inherent weaknesses of such technologies, particularly in developing countries where data is much more limited and in certain cases easier to misrepresent and misuse. This is why fintech innovations should be scrutinized closely for their compliance with data protection, anti-money laundering, and cyber-security regulations.¹¹⁷ Compliance with anti-financial crime regulations is also important from a financial inclusion perspective since economic agents who are not using formal deposit-taking banks are even more vulnerable to fraud and misuse of data. Recently, scandals erupted over fraud and abusive practices by fintech companies, involving the use of mobile phones to make payments.¹¹⁸

A proportionate regulatory response is also a matter of the right timing, since regulatory requirements should not unnecessarily suppress financial innovation at an early stage. Yet, if new service providers become economically important to the extent that they could pose potential financial stability risks, regulators should intervene.¹¹⁹ An example to illustrate the importance of the right timing of regulatory intervention is the reaction of the Kenyan Central Bank following its adoption in 2007 of its digital mobile currency M-Pesa. Initially, M-Pesa benefited from low start-up requirements, since the technology used the existing telecom network, meaning that there was no need to invest in or expand infrastructure. Regulatory uncertainty, however, arose regarding how the M-Pesa digital currency service could be expanded without being subject to burdensome capital and compliance costs. In 2009, the Central Bank of Kenya responded by acknowledging that digital payment systems should not be subject to the same requirements as banking services, which paved the way for less

115. Markus Brunnermeier et al, *The Fundamental Principles of Financial Regulation*, International Centre for Monetary and Banking Studies, Geneva Reports on the World Economy 11, 13-32 (2009).

116. Douglas W. Arner, Janos Nathan Barberis & Ross P. Buckley, *The Evolution of Fintech: A Post-Crisis Paradigm?* 35 (Univ. of H.K Faculty of L., Rsch. Paper no 2015/047, Univ. of N. S. Wales Res. Paper no 2016-62, 2015) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2676553 [<https://perma.cc/9EB6-8YGH>].

117. MACHIAVELLO, *supra* note 6, at 214.

118. In 2015, a Chinese peer-to-peer lending company has revealed itself to be part of a fraudulent scheme that misappropriated over \$5.5 billion. See Emily Feng, *Chinese Government Faces Peer-to-Peer Lending Scandals Dilemma*, FIN. TIMES (Nov. 12, 2018), <https://www.ft.com/content/c71eea4a-c198-11e8-84cd-9e601db069b8> [<https://perma.cc/4F9J-ENNJ>].

119. Mehrotra & Yetman, *supra* note 3, at 88. cf. Douglas W. Arner, Ross P. Buckley & Dirk A. Zetzsche, *Fintech for Financial Inclusion: A Framework for Digital Financial Transformation* (Univ. of H.K. Faculty of Law, Rsch. Paper no. 2019/001) https://papers.ssrn.com/abstract_id=3245287 [<https://perma.cc/4X6Y-NJKH>] (stressing the need for proportionality and any regulatory response).

onerous regulatory requirements.¹²⁰ According to one study,¹²¹ M-Pesa has raised long-term consumption levels per capita and lifted nearly one in ten of Kenya's poorest households out of poverty, with an even higher impact for female-headed households.¹²² In general, the emergence of digital money in Kenya has increased financial resilience and savings. Ten years after the emergence of M-Pesa, it has reached approximately ninety percent of the Kenyan population.¹²³ The experience of M-Pesa illustrates how a country can adopt calibrated and proportionate regulatory measures that support digital financial inclusion without undermining other regulatory objectives.

Finally, the principle of proportionality should also be considered in the context of the growing use by many countries of innovative regulatory approaches, including so-called innovation offices and regulatory sandboxes to address the risks by digital finance.¹²⁴ For many regulators, innovation offices are used to improve the dialogue between regulators and financial innovators. They may serve not only to educate innovators on the regulatory environment in which they operate but also to improve the regulator's understanding of fintech practice and risks, thus informing the regulator as to the appropriateness of certain regulatory measures. Innovation offices are operated by a growing number of regulators from developed and developing countries and can be used to facilitate international cooperation on regulatory matters. For instance, the U.K. Financial Conduct Authority created Project Innovate in 2014, which has entered into cooperation arrangements with regulators in other jurisdictions in order to promote information sharing on emerging trends in financial innovation between authorities and to facilitate referrals of innovators from one market to another, thus reducing regulatory barriers to entry in foreign markets.¹²⁵

Another regulatory innovation where the principle of proportionality can be applied flexibly is the concept of a regulatory sandbox, involving a more formal regulatory approach which is described in writing and published.¹²⁶ The sandbox approach allows businesses to test "innovative products, services, business models and delivery mechanisms while ensuring that consumers are

120. Guild, *supra* note 61, at 4.

121. Suri & Jack, *supra* note 69, at 1288.

122. U.N. DEPT. OF ECON. & SOC. AFFAIRS AND THE U.N. CAPITAL DEV. FUND, *supra* note 39, at 8, 16.

123. Guild, *supra* note 61, at 4.

124. See generally U.N. SEC'Y GEN.'S SPECIAL ADVOC. FOR INCLUSIVE FIN. FOR DEV. & CAMBRIDGE CTR. FOR ALT. FIN., *EARLY LESSONS ON REGULATORY INNOVATIONS TO ENABLE INCLUSIVE FINTECH: INNOVATION OFFICES, REGULATORY SANDBOXES, AND REGTECH* (2019).

125. FINANCIAL CONDUCT AUTHORITY, *IMPACT AND EFFECTIVENESS OF INNOVATE* at 8–10 (April 2019), <https://www.fca.org.uk/publication/research/the-impact-and-effectiveness-of-innovate.pdf> [<https://perma.cc/V5FF-ULJF>].

126. The UK Financial Conduct Authority created the first regulatory sandbox in 2016. See *Financial Conduct Authority's regulatory sandbox opens to applications*, FINANCIAL CONDUCT AUTHORITY (9 May 2016), <https://www.fca.org.uk/news/press-releases/financial-conduct-authority%E2%80%99s-regulatory-sandbox-opens-applications> [<https://perma.cc/W5UG-QDUL>].

appropriately protected,” subject to regulatory oversight.¹²⁷ Such testing occurs on the boundaries or outside of existing regulatory frameworks, allowing regulators and firms to experiment in order to develop a better understanding of how new technologies work in practice and to assess which regulatory tools are most effective. For example, the successful testing of a new technology may result in several outcomes, including authorization of the innovation, changes in regulation, or an order to cease certain activity. Regulatory sandboxes, however, are resource-intensive and may therefore be inappropriate for regulators with limited resources. An important feature of regulatory sandboxes is that they facilitate dialogue between market participants and regulators, allowing for more informed regulation that allows regulators to design and calibrate measures that are proportionate for managing the risks posed by digital financial innovations.

Regulatory sandboxes are also conducive for cross-border regulatory cooperation, which can allow innovators to scale-up more rapidly on a global or regional basis. Different jurisdictions can utilize multi-jurisdictional sandboxes to facilitate cross-border expansion through shared testing programs that reduce the potential for regulatory arbitrage across national sandboxes.¹²⁸

V

CONCLUSION

This Article argues that the principle of proportionality—as a core principle of financial regulation and supervision in most countries—provides a framework for understanding how national regulators can balance the various competing interests of digital financial inclusion with other financial regulatory objectives in order to respect local institutional and social circumstances. The principle of proportionality creates a flexible framework for regulators—particularly in the context of innovation offices and regulatory sandboxes—to balance the respective interests of market participants and objectives of regulators to determine how financial inclusion can be promoted through financial technology solutions without undermining other vital regulatory objectives. The ISSBs’ standard setting demonstrates that the principle of proportionality has become a general principle of banking supervision in state practice but that its application varies widely across states, and there is a need to have local policy flexibility to reconcile competing interests to promote financial inclusion while not undermining other regulatory objectives. This Article suggests that the principle of proportionality can be applied effectively in the context of regulatory

127. *Id.*

128. For example, two multi-jurisdictional sandboxes have been established to promote cross-border regulatory cooperation in supervising digital financial innovations: first, the UK Financial Conduct Authority led 9 jurisdictions in establishing the Global Financial Innovation Network (GFIN) in 2019. See *Global Financial Innovation Network*, FIN. CONDUCT AUTH. (Jan. 31, 2019) <https://www.fca.org.uk/firms/innovation/global-financial-innovation-network> [<https://perma.cc/3WAU-UZWB>]. Second, the APIX Exchange (APIX), launched by the ASEAN Financial Innovation Network (AFIN). See *APIX Open Innovation Platform and Sandbox*, APIX (Nov. 16, 2018) <https://apixplatform.com/static/apix-news/batch55.html> [<https://perma.cc/ER96-PRZB>].

sandboxes, as they offer a tailored authorization process for new firms as they test new financial technologies while allowing regulators to provide guidance and waivers from certain requirements that may inhibit the development of useful technologies and to coordinate with other regulators on a cross-border basis to prevent arbitrage.