Eastern Medicine for Western Finance: Rethinking Financial Regulation

Dan Awrey & Kathryn Judge

This article reveals a fundamental mismatch between the nature of finance and the nature of financial regulation. Modern finance is dynamic and complex. Market actors and regulators often have only a fraction of the information pertinent to the decisions they are making. The process of regulating finance, however, makes rule changes difficult and contingent on processes that implicitly assume a high degree of predictability and stability with respect to the impact of a proposed legal change. The challenges that result are myriad. The processes meant to confer legitimacy and improve efficacy fail to achieve either aim, resulting instead in excess ex ante investment and too little discussion when it matters. Regulation often aggravates rather than offsets the degree of dynamism, complexity and unknowns in the financial system. The article argues that incremental changes are needed but not sufficient to tackle these challenges. It proposes complement current approaches to financial regulation with commissions, constituted once a decade, that could take a more holistic approach to assessing the state of finance and financial regulation. These commissions could help address both the legitimacy and efficacy concerns that arise from the mismatch between finance and how it is regulated.

Starting in the 1970s, research finding a correlation between the consumption of dietary fat and heart disease inspired physicians and others to promote a low-fat diet as the best path to health.[1] The U.S. dietary guidelines encouraged Americans to "avoid too much fat, saturated fat, and cholesterol."[2] Americans responded. In the 2000s, the other shoe dropped. In the process of successfully reducing the relative amount of fat in their diets, Americans had ramped up overall caloric consumption, with a particularly marked increase in refined carbohydrates. Obesity and Type II diabetes ballooned as a result.[3]

The 1980s also saw financial institutions and their regulators embrace securitization as a tool for dispersing risk more widely, thereby improving the resilience of the financial system.[4] Securitization too had unintended consequences. Separating origination from ownership of home loans created a host of agency problems, contributing to more bad loans.[5] Securitization also contributed to the growth of a massive "shadow banking system," one that increased the complexity and opacity of the financial system, giving rise to new sources of systemic risk.[6] The 2007-2009 financial crisis brought to life the potential for securitization to contribute to fragility in ways that could wreak havoc on the real economy.

In each instance, the motivating insight was not wrong. Dietary fat can adversely affect health; securitization can shift credit and interest rate risk off bank balance sheets—traditionally a flashpoint for financial crises. The challenge arises in the space between insight and understanding. Higher dietary fat may well contribute to coronary problems, but human beings are not particularly good at reducing fat in their diets without making other modifications as well. That the food industry is large, influential, and often profits when individuals make decisions that are not personally or socially optimal accentuates the challenge of using recommended dietary changes to improve health. The delay between intervention and effect, and the fact that other environmental factors are also changing, further complicate the process of understanding how particular changes in behavior impact

---

[1] Ann F. La Berge, *How the Ideology of Low Fat Conquered America*, 63 J. OF THE HISTORY OF MED. AND ALLIED SCI. 139, 139–177 (2008), , https://doi.org/10.1093/jhmas/jrn001; Allison Aubrey, *Why We Got Fatter During the Fat-Free Food Boom*, NPR, March 28, 2014, https://www.npr.org/sections/thesalt/2014/03/28/295332576/why-we-got-fatter-during-the-fat-free-food-boom. For more on this debate, see Melenda Wenner Moyer, *Why Almost Everything Dean Ornish Says about Nutrition Is Wrong. UPDATED: With Dean Ornish's Response*, SCI. AM., June 1, 2015, https://www.scientificamerican.com/article/why-almost-everything-dean-ornish-says-about-nutrition-is-wrong/.

[2] Lisa Jahns et al., The History and Future of Dietary Guidance in America. Adv. Nutr. 2018;9:136–147; doi: https://doi.org/10.1093/advances/nmx025.

[3] Gross LS, Li L, Ford ES, & Liu S, *Increased consumption of refined carbohydrates and the epidemic of type 2 diabetes in the United States: an ecological assessment*, 79 AM. J. CLINICAL NUTRITION (2004), https://www.uptodate.com/contents/dietary-carbohydrates/abstract/1; Gross LS, Li L, Ford ES, and Liu S, *Increased consumption of refined carbohydrates and the epidemic of type 2 diabetes in the United States: an ecologic assessment*, 79 AM. J. CLINICAL NUTRITION,774 (2004), https://www.ncbi.nlm.nih.gov/pubmed?term=15113714; for more on this debate, see Melenda Wenner Moyer, *Why Almost Everything Dean Ornish Says about Nutrition Is Wrong. UPDATED: With Dean Ornish's Response*, SCI. AM., June 1, 2015, https://www.scientificamerican.com/article/why-almost-everything-dean-ornish-says-about-nutrition-is-wrong/.

[4] Hyun Song Shin, *Securitization and Financial Stability*, 119 ECON. J. 309, 309-332 (2009).

[5] Hyun Song Shin, *Securitization and Financial Stability*, 119 ECON. J. 309, at __.

[6] Hyun Song Shin, *Securitization and Financial Stability*, 119 ECON. J. 309, 309-332 (2009).; Kathryn Judge, *Fragmentation Nodes: A Study in Financial Innovation, Complexity and Systemic Risk*, 64 STANFORD L. REV. 101 (2012).

human health. And, as if that were not enough, heart disease is not the only outcome variable that matters. While a significant contributor to morbidity and mortality, it is but one of the myriad health conditions affected by what people eat.

The U.S. Dietary Guidelines have since been amended to reflect subsequent learning. Pursuant to statutory mandate, the guidelines are revised every five years to reflect new learning. Moreover, the processes through which those guidelines are produced has evolved so that they can better accommodate evolving and sometimes conflicting views on how what Americans eat affects their long-term health. These processes including convening a diverse group of doctors and other public health experts to provide detailed feedback on the guidelines and how they measure up in light of relevant literature and public engagement through comment periods and open meetings.[7] Although far from perfect, these processes have improved the quality and legitimacy of the guidelines. This article calls for similar processes to be instituted to improve the quality and legitimacy of financial regulation.

Like the human body, today's financial system is a dynamic and complex ecosystem. In these environments, policymakers inevitably operate with an incomplete understanding of how the system works and how it will respond to regulatory intervention. Exacerbating the challenge is the fact that the finance industry is even quicker and more creative than the food industry in finding ways to minimize the costs of complying with new regulations. Tomorrow's financial system will not look like today's, and efforts to improve the stability and functioning of today's system will be among the factors driving that change.

This article argues that dynamism, complexity and unknowns are three of the most pressing challenges for financial regulation, both substantively and as a matter of process. Recognizing these issues as core, rather than peripheral, raises fundamental questions about the processes through which finance is regulated. As this article shows, those processes implicitly rest on an assumption that policymakers have a reasonably good understanding of the system they are regulating and how that system will respond to a given intervention. The existing regime also frequently fails to anticipate change and failure. The result is a regulatory regime that inherently grows less effective with time and can break down when guidance is most needed. Focusing on these deficiencies reveals ways to improve how finance is regulated, and the particular value of complementing the current regime with a fundamentally different approach to regulation.

Just as human health has improved as medical practitioners have gone from just treating disease to thinking more broadly about how to promote health, the efficacy and resilience of the financial system could be enhanced by moving past the treatment of identifiable market failures and toward a more expansive and health-oriented approach to finance. As Albert Einstein famously said: "No problem can be solved from the same level of consciousness that created it." The evolution of finance and financial regulation are at an inflection point. Better outcomes are possible, but they will require new types of thinking, new modes of understanding what has gone wrong and how to fix it, and new ways of conceptualizing the horizons of what is possible.

---

[7] Office of Disease Prevention and Health Promotion, About the Dietary Guidelines, https://health.gov/dietaryguidelines/process.asp (last visited May 31, 2019).

In addition to laying out the problem, this article lays the groundwork for a better path forward. It discusses some of the ways that the current approach to financial regulation might be modified to better address dynamism, complexity and unknowns, and it examines some of the helpful ideas others have proposed to address one or more of these dynamics. There are signs of progress in practice and thinking, and more that could be done. Ultimately, however, the analysis here suggests that the efforts to address these challenges, in practice and theory, and the additional steps that could be taken within established paradigms cannot suffice to overcome the fundamental tension here revealed.

By casting doubt on the capacity of working within established regimes, the article lays the groundwork for something new that can operate alongside the current system. Just as a stereotypical practitioner of Eastern medicine focuses on lifestyle and daily patterns along with manifestations of disease, an altered frame for assessing finance might allow variables like the degree of public trust in finance or access to basic financial services, to register as meaningful benchmarks, alongside recognized market failures. Revisiting reforms with fresh eyes might reveal they are not working as intended, but might also reveal they are working for reasons other than those intended. It can also reveal critical interactions among reforms and other market changes. In accord with the way medical outcomes have improved as Western approaches to treating disease have been integrated with more Eastern approaches to promoting health, so the functioning of the financial system may be enhanced by complementing existing approaches with a more holistic approach to financial regulation.

This essay proceeds in five parts. Part I provides a stylized account of how finance is regulated, looking specifically at the core processes governing how financial regulation is conceived, designed, approved, and implemented. Part II shifts the focus to the financial system. It examines the interrelated phenomena of dynamism, complexity, and unknowns, and identifies each as core to financial markets and institutions today. Part III examines this mismatch in action: demonstrating what actually happens when the legal processes try to keep pace with the speed, complexity, and opacity of modern finance. It begins with two case studies of post-crisis reform efforts, and then expands the lens to look back over the longer history of financial regulation. Part IV considers how putting dynamism, complexity and unknowns center stage can help us make marginal improvements within the context of existing regulatory frameworks. Importantly, however, it also demonstrates the inherent limits of these frameworks in bridging the growing gap between finance and financial regulation. In Part V, we therefore present our blueprint for a more holistic approach to financial regulation. The main policy proposal is the formation of commissions, constituted once a decade, to re-assess how the financial system is working and the effects of financial regulation. The aim is to produce much needed information, shift thinking toward the holes in what is known and understood, promote the broad dialogue needed to confer legitimacy, and spur consideration of whether regulations ought to be revised in light of unintended consequences, unforeseen interactions, or other intervening developments. By recognizing the constitutive role of law in finance and embracing a more holistic mindset, we can devise new ways of analyzing how best the law can promote resilience and other aims.

I. How Finance is Regulated

How law is made, and the reasons for those processes, are matters that people have devoted lifetimes to understanding and explicating. Even a rudimentary effort to do justice to the many issues at stake in these debates is beyond the scope of this paper. What follows

is instead a highly simplified, and in many ways stylized, account of the multiple tiers of processes through which financial regulations is promulgated. The focus is on revealing the often implicit but critical, assumptions that policy makers have a reasonable understanding of the system they are regulating and how it will respond to a given intervention, and that the system is sufficiently static to justify entrenching rules in ways that make them difficult to change.

a. International Financial Regulation

Beginning in the 1970s, the breakdown of the Bretton Wood system, together with the increasing globalization of finance, spurred the creation of several international organizations designed to foster greater cross-border regulatory coordination. These organizations included the Basel Committee on Banking Supervision, Committee on Payments and Market Infrastructures, and International Organization of Securities Commissions. In recent decades, these organizations have come to play an important role in setting international standards in areas such as bank capital, liquidity, and supervision, payment infrastructure, and securities regulation and enforcement.[8] In the wake of the 2007-2009 financial crisis, these organizations—and in particular the G20 and Financial Stability Board—have also taken the lead in setting the global agenda for financial regulatory reform.[9]

The Basel Committee on Banking Supervision is among the most influential of these international organizations and it embodies the way international financial regulation operates today. Created in 1974 following the failure of Herstatt Bank in West Germany[10], members of the Basel Committee include the central bank governors and national bank supervisors of the G20 member states.[11] The Committee's mandate is to strengthen the regulation, supervision, and practices of banks worldwide for the purpose of enhancing financial stability. Although it purports to provide a three-pillar approach, focused on bank capital, supervision, and market discipline, its rules regarding capital and liquidity are probably the most important in shaping and constraining lawmaking at the national level. The first Basel standards (Basel I) were published in 1988, after almost a decade of protracted negotiations amongst its then ten member states.[12] This was followed by a series of technical amendments leading eventually to the publication of Basel II in 2004.[13] The

[8] For a more detailed description of the different roles played by these organizations, see Chris Brummer, *How International Financial Law Works (And How It Doesn't)*, 99 GEORGETOWN L. REV. 257 (2011). See also John Armour, Dan Awrey, Paul Davies, Luca Enriques, Jeff Gordon, Colin Mayer & Jennifer Payne, PRINCIPLES OF FINANCIAL REGULATION ch. 28 (OUP Oxford, 1st ed. 2016).

[9] Brummer, *supra* note [?].

[10] Herstatt had entered into a number of foreign exchange contracts with international banks. Herstatt's failure in the middle of the German business day meant that it was unable to perform its obligations under these contracts, thereby exposing its counterparties to considerable losses; see Armour et al., *supra* note [?], 399.

[11] In total, the Basel Committee currently has 45 members from 28 jurisdictions. The Committee also has nine "observers" drawn from central banks, supervisory groups, and other international organizations.

[12] For a more detailed history of the Basel Committee and the negotiations over Basel I, see Charles Goodhart, THE BASEL COMMITTEE ON BANKING SUPERVISION: A HISTORY OF THE EARLY YEARS 1974-1997 (Cambridge U. Press, 2011).

[13] See Basel Committee on Banking Supervision (BCBS), *Basel II: International Convergence of Capital Standards: A Revised Framework* (June, 10 2004), https://www.bis.org/publ/bcbs118.htm. Significant amendments to Basel I preceding the publication of Basel II included the 1996 "Mark Risk" Amendment; see Basel Committee on

Basel II standards were themselves still being implemented when the financial crisis prompted a fundamental overhaul of the Basel framework under what would become known as Basel III.[14] Published in 2010, the target date for full implementation of Basel III was 1 January 2019.[15]

The role played by the Basel Committee in developing global banking standards reflects the work of other international organizations in several key respects. First, these organizations typically enjoy few (if any) formal legal powers: relying instead on negotiation and consensus to develop and promote the adoption of non-binding standards.[16] Second, while politics plays a role shaping their agenda and standard setting, the process by which they develop and refine these standards is highly technocratic.[17] Third, reflecting both the political and technocratic nature of these organizations, the development of these standards is often a slow, deliberative, and incremental process. Finally, despite the absence of formal legal power—or perhaps because of it[18]—these organizations have been relatively successful in promoting the adoption of international standards in a number of important areas of financial regulation. As of 2015, for example, over 80 jurisdictions (including the United States) had announced their intention to adopt one or more of the core elements of Basel III(?).[19] Ultimately, however, the power to incorporate these international standards into law still rests in the hands of domestic policymakers.

b. Statutes

In the United States, the backbone of all financial regulation is the United States Code. The U.S. Code consists of all of the statutes ever adopted by Congress, including any amendments or modifications to earlier statutes. Title 12 of the Code addresses banks and banking, while other core elements of financial regulation, like securities regulation, are codified elsewhere.[20]

The process of making new laws, or modifying old ones, begins when a member of Congress introduces a bill with her proposed changes to the law. That bill is then referred to a specialized committee, and perhaps from there to a subcommittee. The committee may then hold hearings and discuss the bill, along with others on related matters. A small subset of the bills introduced emerge from this process, and those that do are often modified in the process. A bill that is approved by a majority of committee members is then slated for consideration by the full body. The processes are a little different in the House and Senate,

---

Banking Supervision (BCBS), *Amendment to the Capital Accord to Incorporate Market Risks* (January, 4 1996), https://www.bis.org/publ/bcbs24.htm.

[14] See Basel Committee on Banking Supervision (BCBS), *Basel III: A Global Framework for More Resilient Banks and Banking Systems* (June 1, 2011), https://www.bis.org/publ/bcbs189.htm and Basel Committee on Banking Supervision (BCBS), *Basel III: Finalizing Post-Crisis Reforms* (December, 7 2017), https://www.bis.org/bcbs/publ/d424.htm.

[15] See BCBS (2011), *supra* note [?], Annex 4. The scheduled implementation date for some Basel III reforms has since been extended to January 2022.

[16] See Brummer, *supra* note [?].

[17] *Id*.

[18] Viewed from this perspective, the fact that these standards are non-binding makes the resulting commitments less costly from the perspective of jurisdictions contemplating their adoption, thereby increasingly the likelihood that they will be adopted; *id.*

[19] See Financial Stability Institute, *Survey – Basel II, 2.5 and III Implementation* (June, 29 2015), https://www.bis.org/fsi/fsiop2015.htm.

[20] [citation]

but both generally involve further debate and hearings, possibly followed by a vote. When both chambers do manage to approve similar bills, they usually approve different versions, resulting in reconciliation hearings and a compromise text that then must again be approved by a majority of voting members of both houses of Congress. That bill must then be signed into law by the President or, if he vetoes the bill, approved by 2/3rds of the voting members of each house of Congress.

The requirements of bicameral approval and presentment are set forth in the Constitution and create significant frictions in the lawmaking process. The use of committees and other procedural tools within each house exacerbate this friction. For this reason, political scientists often conceptualize the process of making statutory law in the United States using a "vetogate model" to capture the numerous points in the process that can stop a bill from becoming law.[21] The net effects of these processes in a domain that is not otherwise regulated is to reduce the degree of government intervention and regulation. In domains that are already subject to significant regulation, the effect is to put a very heavy thumb on the scale in favor of the status quo.[22]

The aims of these procedures are myriad. At the most mundane level, the requirement that laws be passed by democratically elected officials aims to promote accountability and responsiveness to the public. At the same time, the unique form of republican governance embodied in the Constitution was also meant to accommodate the many practical challenges that arise from trying to serve the will of the people. As James Madison explained in *Federalist* No. 51, requirements like bicameralism and presentment help to create checks and balances. These are necessary because neither citizens nor their elected officials are "angels." "In framing a government which is to be administered by men over men, the great difficulty lies in this: you must first enable the government to control the governed; and in the next place oblige it to control itself."[23] The use of committees and other procedural rules similarly serve a number of aims, from allowing Congress to more effectively manage the many, many issues subject to federal regulation today, to improving the quality of legislation by allowing for some degree of specialization, and learning from experts and debate.[24]

There is growing evidence that Congress may not be functioning in quite the way the this simplified account depicts.[25] Unorthodox legislation, from emergency legislation passed with far less process or debate to "long and messy" omnibus bills, is increasingly common.[26] Legislative vetoes in which Congress effectively overrides the Supreme Court's

---

[21] William N. Eskridge et al, CASES AND MATERIALS IN LEGISLATION AND REGULATION: STATUTES AND THE CREATION OF PUBLIC POLICY 53 – 55 (West Acad. Pub., 5th ed. 2014) and sources cited therein.
[22] William N. Eskridge, Jr., *Vetogates and American Public Law*, 31 J. OF LAW, ECONS., AND ORGS. 756 (2015) https://academic.oup.com/jleo/article-abstract/31/4/756/2492402?redirectedFrom=fulltext and sources cited therein.
[23] Alexander Hamilton or James Madison, *Federalist* No. 51, CONGRESS.GOV RESOURCES, https://www.congress.gov/resources/display/content/The+Federalist+Papers#TheFederalistPapers-51.
[24] Herbert B. Asher, *Committees and the Norm of Specialization*, SAGE JOURNALS (1974), https://journals.sagepub.com/doi/abs/10.1177/000271627441100106.
[25] Derek Willis & Paul Kane, *How Congress Stopped* Working, PROPUBLICA, Nov. 5, 2018, https://www.propublica.org/article/how-congress-stopped-working.
[26] Abbe R. Gluck, Anne Joseph O'Connell, and Rosa Po, *Unorthodox Lawmaking, Unorthodox Rulemaking*, 115 COLUMBIA L. REV. 1789, https://columbialawreview.org/content/unorthodox-lawmaking-unorthodox-rulemaking/.

interpretation of a statute—a sign that Congress is paying attention and able to respond in the inevitable instance that the Supreme Court's view on a matter is not shared by Congress—are on the decline.[27] And perhaps most discussed, though still contested, is the way increased partisanship may be hampering Congress's capacity to get anything done.[28] Nonetheless, these processes remain deeply embedded and there is little evidence that they will undergo radical change anytime soon.

c. Rulemaking

Today, most statutes are not complete or self-executing legal instruments. Rather, they allocate significant authority to administrative agencies to make rules and otherwise implement the scheme set forth in the statute. The 2010 Dodd–Frank Wall Street Reform and Consumer Protection Act is a case in point. It is a very detailed, prescriptive piece of legislation, totally 849 pages.[29] Within that text, however, Congress also explicitly requires eleven different agencies to produce, collectively, 243 new rules, 67 one-time reports, and 22 new periodic reports. Among the reasons for these delegations is an effort to harness the technocratic expertise housed within federal agencies responsible for administering, monitoring and enforcing financial regulation.

Like the process of making statutory law, the process of promulgating new or modifying existing regulations entails numerous procedural requirements. Most of the default procedures that agencies must follow are set forth in the Administrative Procedure Act (APA).[30] The APA requires that before implementing or modifying a regulation, an agency generally must publish its proposed rule, along with background and explanatory materials, and invite public comment on that proposal.[31] For matters of financial regulation, the most thorough and relevant letters are often provided by banks and other financial market participants who will be subject to the regulation.[32] The agency will then address the substantive issues raised in those comment letters in connection with issuing its final, often revised, rule.

Like statutory lawmaking, these processes serve numerous purposes. According to Cass Sunstein: "Democratization of the regulatory process, through public comment, has an epistemic value. It helps to collect dispersed knowledge and to bring it to bear on official choices."[33] In addition to being aimed at improving the quality of the rules finally issued, this extensive and resource-intensive process is also designed to enhance transparency and accountability, allowing the public to participate in and understand the reasons behind

---

[27] Matthew R. Christiansen & William N. Eskridge Jr., *Congressional Overrides of Supreme Court Statutory Interpretation Decisions, 1967–2011*, 92 TEXAS L. REV. 1317 (2014).
[28] Sam Rosenfeld, THE POLARIZERS: POSTWAR ARCHITECTS OF OUR PARTISAN ERA (U. CHI. PRESS 2017), https://www.press.uchicago.edu/ucp/books/book/chicago/P/bo24660595.html; Thomas E. Mann, *Admit It, Political Scientists: Politics Really Is More Broken Than Ever*, THE ATLANTIC, May 26, 2014, https://www.theatlantic.com/politics/archive/2014/05/dysfunction/371544/.
[29] Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 123 Stat. 1376, (2010) (codified at 15 U.S.C. § 78o), https://www.govinfo.gov/content/pkg/PLAW-111publ203/pdf/PLAW-111publ203.pdf.
[30] [cite]
[31] 5 U.S.C. § 553 (1966).
[32] Kim Krawiec, *Don't Screw Joe the Plumber*, 54 ARIZ. L. REV. 54 (2013).
[33] Adam Looney, *How to effectively comment on regulation*, BROOKINGS, August 2018, https://www.brookings.edu/wp-content/uploads/2018/08/ES_20180809_RegComments.pdf.

agency rulemaking. Just as with legislation, there is evidence that agency action often deviates from this stylized model, but the overall framework remains entrenched and mandatory.[34]

As part of this process, financial regulators often do, and sometimes must, assess the benefits and costs of the proposed regulation. The notion that cost-benefit analyses should be central to the process of rulemaking has been widely, though far from universally, embraced, particularly among those in the law and economics movement.[35] It is also reflected in requirements imposed on agencies, and other agency practices.[36] In a decision that remains controversial, the D.C. Court of Appeals struck down a rule promulgated by the Securities and Exchange Commission (SEC) on the basis that the SEC's failure to engage in an adequate, quantified analysis showing that the expected benefits exceeded the expected costs rendered the rule arbitrary and capricious. In part because of this ruling, the SEC and other financial regulatory agencies often devote significant resources attempting to quantify the benefits and costs of proposed rules, proceeding only when those measured costs exceed the identified and measurable benefits.[37]

d. Ongoing supervision and related activities

In addition to being subject to the legislation enacted by Congress, together with the more detailed rules adopted by regulatory agencies, banks and certain other financial institutions are subject to ongoing supervision. One aim of supervision is to assess compliance with applicable regulations, but supervision also has the potential to be more forward-looking and dynamic. Another longstanding aim of bank supervision is to ensure the "safety and soundness" of supervised entities, an aim that is justified both by reference to the fact that many bank deposits are insured by the Federal Deposit Insurance Corporation (FDIC) and by the adverse spillover effects of bank failures and runs. After the CRISIS, there have also been efforts, most notably through regular stress testing, to make bank oversight and the rules to which banks are subject more dynamic and responsive. As will be discussed further, these are important components of financial regulation, and ones that can help mitigate the mismatch between the nature of finance and the process through which the rules governing finance are regulated.

---

[34] Abbe R. Gluck, Anne Joseph O'Connell, and Rosa Po, *Unorthodox Lawmaking, Unorthodox Rulemaking*, 115 COLUMBIA L. REV. 1789, https://columbialawreview.org/content/unorthodox-lawmaking-unorthodox-rulemaking/; David T. Zaring, *Administration by Treasury*, 95 MINN. L. REV. 187 (2010).

[35] See [Sunstein]; Eric Posner & E. Glen Weyl, *Cost-Benefit Analysis of Financial Regulations: A Response to Criticisms*, 124 YALE L. J. FORUM 246 (2015), https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=11561&context=journal_articles. Even John Coates, a notable critic of quantified cost-benefit analyses for financial regulation supports the use of cost-benefit analyses as a conceptual framing device in rulemaking. John C. Coates, *Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications*, 124 YALE L. J. 882 (2015), https://www.yalelawjournal.org/article/cost-benefit-analysis-of-financial-regulation.

[36] Rules issued by executive agencies undergo a cost-benefit analysis overseen by the Office of Information and Regulatory Affairs in the White House before being submitted to the public for comment. E.O. 12866. Most financial regulators are independent and hence not subject to this requirement, but some commentators and courts take the position that certain financial regulators are required to undertake quantified, judicially reviewable cost-benefit analyses when promulgating new rules. See John C. Coates, *Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications*, 124 YALE L. J. 882 (2015), https://www.yalelawjournal.org/article/cost-benefit-analysis-of-financial-regulation.

[37] [cite]

Although any discussion of bank regulation would not be complete without some acknowledgment of the role of supervision, supervision has never been a sufficient tool for identifying and addressing problems at banks in a timely basis. Bank supervision did not prevent, and weaknesses in bank supervision may have exacerbated, the savings and loan debacle of the 1980s and the 2007-2009 financial crisis. And stress testing is unlikely to alter some of the inherent limitations in established approaches to trying to produce a healthier financial system.[38]

The deeper point is that although there are, in practice and theory, alternative approaches to regulation, those have been second order in the post-Crisis reform effort, which has if anything embraced more rulemaking and more formalism, through the procedures just described. New rules were the order of the day at Basel, for Congress, and for regulators. More cooperative and dynamic forms of regulation, many of which rested on an assumption of shared interests and good faith, were largely rejected.[39] Rulemaking, in ever-more detailed international accords, statutes, and regulations, remains the primary mechanism through which financial regulation operates and evolves.

Putting this into the frame of western v. eastern approaches to medicine, the bulk of the post-crisis regulatory reform efforts have been western in nature. Even though it was the financial system as a whole that failed, and it did so at least in part because of unappreciated interactions among pieces of that system, the efforts at reform have continued to focus on targeting individual pieces and in a piecemeal way.

e. Legal process

The costly, complex, and lengthy legal process by which financial regulation is have a range of implications and effects. In practice, this process is often initiated *after* significant problems have been exposed.[40] These problems are then often cast as "market failures". These market failures include high information, agency, or coordination costs asymmetric endowments of information in the marketplace, imperfect competition, and the negative externalities generated by widespread financial instability.[41] At various points in the legislative, regulatory, and supervisory process, policymakers seek to asset the impact of these market failures, along with the anticipated costs and benefits of various forms of regulatory intervention. Where this assessment yields a compelling case for intervention, policymakers then design, calibrate, and implement legislation, regulation, and supervisory practices with the objective of correcting these market failures.[42]

But these processes aim to do more than just enhance the efficacy of financial regulation and its capacity to address known weaknesses. They also aim to promote buy-in

---

[38] See infra Part ___.

[39] See infra Part IV.

[40] Compare Roberta Romano's iron law with recent findings by Peter Conti-Brown.

[41] These market failures are the subject of an enormous body of economic scholarship. See e.g. Robert Akerlof, *The Market for Lemons*, 84:3 Q. J. OF ECON. 488 (1970) (describing information and adverse selection problems); Michael Jensen & William Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305 (1976) (describing agency problems in the context of firms); Oliver Williamson, *Credible Commitments: Using Hostages to Support Exchange*, 73:4 AM. ECON. REV. 519 (1983) (describing asset-specific investment and the resulting hold-up problems), and Ronald Coase, *The Problem of Social Cost*, 3 J. OF ECON. 1 (1960) (describing the concepts of public goods and externalities).

[42] Simultaneously, of course, policymakers will need to have some sense of how the rules will be designed in order to undertake this assessment.

and legitimacy. The aim is that engagement should improve the quality of the rules, but it should allow serve as a mechanism for adjudicating competing and divergent views about what values to prioritize. The very process of public engagement among diverse stakeholders too is meant to promote their faith in the outcome; if they have the chance to chime in on relevant issues, and to feel heard, they may have greater respect for the outcome of those deliberations even if their views do not prevail. As the decade since the financial crisis has made all too clear, neither the financial system nor financial regulation comes out on top when legitimacy is given a backseat to technocratic aims.

II. Dynamism, Complexity, and Unknowns

Having examined the processes through which finance is regulated, this Part now shifts the focus to finance. It lays out the heart of this paper—that dynamism, complexity, and unknowns are both core to finance and the core challenges for financial regulation. After examining each and the relationships among them, this Part concludes by briefly exploring their implications for the efficacy of financial regulation.

a. Dynamism

Constant change is endemic to finance. As Paul Volcker, former Chairman of the Federal Reserve Board of Governors opined recently: "What almost overwhelms me in looking at the world of finance — banking and beyond banking — is how different it is from when I was most active." Finance has been, and continues to be, transformed. To understand both why this is the case, and why efforts to preclude it using top-down rules about how finance ought to be structured are unlikely to succeed, it is helpful to examine the reasons for this dynamism.

i. Cyclical nature of finance

One source of dynamism is the cyclicality that is built into finance. This is in part because periods of economic health induce changes in behavior that alter system design. As Hyman Minsky argued nearly fifty years ago, even as finance has changed; "fundamentals are unchanged; sustained economic growth, business cycle booms, and the accompanying financial developments still generate conditions conducive to disaster for the entire economic system."[43] As he explained in great detail, this occurs because "the structural characteristics of the financial system change during periods of prolonged expansion and economic boom and … these changes cumulate to decrease the domain of stability."[44] Since Minsky's time, an array of economists have formalized some of the ways that periods of stability bring about changes in behavior and pricing that contribute to the structural changes he identifies as core.

Work on the credit cycle, for example, explores the way changes in the pricing of assets used as both factors of production and as collateral for loans can accelerate boom and

[43] H.P. Minsky, "Financial instability revisited: the economics of disaster," Prepared for the Steering Committee for the Fundamental Reappraisal of the Discount Mechanism appointed by the Board of Governors of the Federal Reserve System (1972) at 1

[44] H.P. Minsky, "Financial instability revisited: the economics of disaster," Prepared for the Steering Committee for the Fundamental Reappraisal of the Discount Mechanism appointed by the Board of Governors of the Federal Reserve System (1972).

bust cycles.[45] John Geankoplos has shown that periods of growth lead to higher leverage, which translates into higher asset prices, providing a distinct mechanism for built-in cyclicality. Yet other work by Markus Brunnermeier and Lasse Pedersen looks at the interactions between the two sides of dealer balance sheets to help explain how changes in the capacity of dealers to access short-term funding affects their capacity to provide liquidity in asset markets, explaining another way that stability and growth induces changes in behavior that accentuate fragility.[46] Though differences in these mechanisms have important policy implications, the body of work and its breadth highlight the way current conditions, good or bad, induce particular types of actions by market participants and those actions in turn alter the environment, changing structures and prices and accentuating both the highs and the lows.

ii. Regulatory endogeneity

Regulation contributes to the dynamism of finance in at least two ways. First, regulation can amplify the cyclicality of finance. The introduction of a risk-weighting methodology for calculating bank capital requirements under Basel II offers an illustrative example.[47] Basel II tied the amount of capital that banks were required to hold to the riskiness of the assets in their portfolios. Under what is known as the "internal ratings-based" (IRB) approach, banks could then calculate the riskiness of these assets using data regarding historical default rates and market volatility. During periods of economic expansion, the relatively low level of defaults and muted volatility would thus translate into lower capital requirements—enabling banks to extend more credit on the basis of the same level of equity capital. In this way, capital requirements would reinforce economic booms and, potentially, contribute to the formation of asset and credit bubbles. When these bubbles burst, risk weighted capital requirements would also reinforce the resulting economic contraction: forcing banks to raise more capital during periods of relatively high volatility or, perhaps more likely, reduce lending or sell portfolio assets to shore up their balance sheets.

Second, regulation almost inevitably spurs regulatory arbitrage. As Robin Greenwood and co-authors explain: "There is no set of ex ante rules, no matter how granular or how sophisticated, that can satisfactorily tackle the problem of regulatory arbitrage."[48] When new regulations are implemented, the structure of the financial system will evolve to reduce the costs of compliance. Nothing malicious or even intentional is required. This is reflected in the repeated growth of various forms of "shadow banking." This term grew to prominence in the wake of the Crisis, as it became apparent that the early cracks leading to the Crisis had emanated from a market-based regime consisting of

---

[45] Nobuhiro Kiyotaki, & John Moore, *Credit Cycles*, 105 J. OF POL. ECON. 211, 211-248 (April 1997), 211. See also Ben Bernanke, Mark Gertler, & Simon Gilchrist, *The Financial Accelerator and the Flight to Quality*, 78 REV. OF ECON. AND STAT. 1, 1-15 (Feb. 1996); Arvind Krishnamurthy & Tyler Muir, *How Credit Cycles across a Financial Crisis*, Working Paper 23850, NAT'L BUREAU OF ECON. RES. (Sept. 2017).

[46] Markus K. Brunnermeier & Lasse Heje Pedersen, *Market Liquidity and Funding Liquidity*, 22 THE REV. OF FIN. STUD. 2201 (2009), https://academic.oup.com/rfs/article-abstract/22/6/2201/1592184.

[47] Anil Kashyap & Jeremy Stein, *Cyclical Implications of the Basel II Capital Standards*, FED. RES. BANK OF CHI. ECON. PERSPECTIVES 18 (2004).

[48] Robin Greenwood et al, *Strengthening and Streamlining Bank Capital Regulation*, BROOKINGS PAPERS ON EON. ACTIVITIES (Sept. 2017), https://www.brookings.edu/wp-content/uploads/2017/09/6_greenwoodetal.pdf. See also Calomiris, Charles, *Financial Innovation, Regulation, and Reform*, 29 THE CATO J. 65, 65-91 (Jan. 2009) ("Financial innovations often respond to regulation by sidestepping regulatory restrictions that would otherwise limit activities in which people wish to engage.").

interconnected entities that collectively engaged in the type of credit, maturity, and liquidity transformation that has long characterized banks. This system funded mortgages and other types of long-term loans traditionally the domain of banks, and at the other end of the spectrum it was funded by short-term debt, with money market funds serving as a substitute for deposits.[49] Between these ends lied an array of institutions and relationships that functioned largely outside the perimeter of conventional banking regulation. Given the myriad costs of operating as a bank, from complying with activities restrictions, facing ongoing supervisory oversight, and paying for deposit insurance, regulatory arbitrage was likely among the forces driving the rapid growth of this regime in the years leading up to the crisis.

This, however, was not the first or only shadow banking system. Recent work by economic historian Hugh Rockoff examines the dozen financial panics in the United States between, and including, the panics of 1819 and 2008. He shows that eleven of the twelve emanated from that day's version of the shadow banking system, that is, from institutions providing bank-like functions but operating just outside the formal banking sector. Banks have always relied on a high degree of trust, which when not achieved through a scheme of public deposit insurance and oversight has often instead been obtained through private regimes that impose prudential-like restrictions and other costs on members. Whether public or private, these safety enhancing regimes entail sufficient costs that institutions consistently grow up in their shadows. The Panic of 1907, for example, which triggered the formation of the Federal Reserve, erupted in trust companies, institutions that had provided bank-like services but had grown just outside a multi-tiered private clearinghouse regime, a regime that helped protect banks from runs but also had correspondent costs.[50] Any regime, private or public, that promotes the safety and soundness of subject institutions will entail costs. Those costs create opportunities that market participants have consistently found ways to exploit by offering close substitutes for the services provided by regulated institutions without having to comply with their regulatory burdens.

At least in the United States, there does not seem to be any way out of this conundrum. The extensive and costly regulatory burdens put in place following the Crisis, no matter how justifiable, will inevitably invite yet further evolution and further migration of activity to less regulated spaces. These developments are already underway. Consider, for example, housing finance. After the crisis, banks and their regulators became far more wary of home loans extended to any but the most worthy of borrowers, and in some ways home loans more generally. Nonbank lenders have stepped in. A recent report by the Housing Finance Policy Center shows that most home loans today are securitized through Fannie Mae, Freddie Mac or Ginnie Mae (the agencies).[51] The report further shows that as of June 2018, nonbanks originated 64% of those mortgages, a figure that was closer to 30% as

---

[49] For a description, See Zoltan Poszar, Tobias Adrian, Adam Ashcraft & Haley Boesky, *Shadow Banking*, 458 FED. RES. BANK OF N.Y. STAFF REPORT NO. 458 (July, 20 2010).

[50] Huge Rockoff & Isao Suto, COPING WITH FINANCIAL CRISES: SOME LESSONS FROM ECONOMIC HISTORY, (Springer, 1st ed. Nov. 9, 2017) at __; See also Robert F. Bruner and Sean D. Carr, PANIC OF 1907: LESSONS LEARNED FROM THE MARKET'S PERFECT STORM (Wiley, 1st ed., Oct. 14, 2008).

[51] Laurie Goodman, et al., *Housing Finance at a Glance: A Monthly Chartbook*, HOUSING FIN. POL'Y CENTER (July 2018) at 6. (showing that the agencies are responsible for $6.4 trillion of the $10.6 trillion mortgage market), https://www.urban.org/sites/default/files/publication/98817/july_2018_chartbook_0.pdf.

recently as 2013 and appears poised for further growth.[52] Moreover, even though these loans are sold to the agencies and thus come off the balance sheets of the originating institutions, nonbanks provide disproportionately more credit to borrowers with lower credit scores.[53] Limitations imposed on banks or other regulated entities do not stop the flow of credit; instead, so long as there is demand, the system evolves in form to provide that credit outside the regulated sector.

Moreover, other evidence affirms that this pattern is not limited to housing finance, nor to the United States. A recent report from the Bank for International Settlements on credit growth globally reveals that nonbank financial firms and nonfinancial firms are both providing a significant and growing amount of global credit, and recent work by the Institute of International Finance similarly documents the rapidly growing role of nonbanks in the provision of credit.[54] None of this should come as a surprise. The financial crisis led to a significant wave of reforms, most of which disproportionately or exclusively burdened banks. As those reforms have been implemented, entities not subject to those costly requirements are finding new and creative ways to provide core services, like the provision of credit, that are historically the domain of banks.

iii. Innovation

Yet another significant driver of the dynamism of the financial system is innovation. The innovations that can change finance range from theoretical insights (like the Black-Scholes model for pricing options), to technological innovations (like massive increases in computing power), to the emergence of new financial markets, institutions, and instruments (like derivatives, structured finance, or fintech)—and very often entails the combination of all three. The almost daily pronouncements of the ways big data and artificial intelligence are going to "disrupt" finance are merely the most recent iteration of a continual process of innovation and transformation that has been underway for decades, if not centuries.[55]

Consider again the rise of market-based intermediation, the particular shadow banking system that grew in the decades prior to the Crisis and which, depending on how one measures it, remains as large as the regulated banking sector.[56] Even if its growth is propelled, in part, by cost savings associated with not being a bank, the capacity to disperse risks once largely contained solely in banks more broadly across the financial system and to nonbanks may also have had real efficiency gains, enabling homeowners and others to access credit at lower expense.[57] Neither the regulatory cost savings nor those efficiency gains, however, would have been possible without the myriad technologies enabling securitization, money market mutual funds and other design features key to enabling this regime to work. The nature of these innovations are diverse, including creative new uses of

---

[52] Laurie Goodman, et al., *Housing Finance at a Glance: A Monthly Chartbook*, HOUSING FIN. POL'Y CENTER (July 2018) at 12, https://www.urban.org/sites/default/files/publication/98817/july_2018_chartbook_0.pdf.
[53] Laurie Goodman, et al., *Housing Finance at a Glance: A Monthly Chartbook*, HOUSING FIN. POL'Y CENTER (July 2018) at 13, https://www.urban.org/sites/default/files/publication/98817/july_2018_chartbook_0.pdf.
[54] Paul J. Davies, *Banks and Private Markets: Marking Fresh Connections*, WALL STREET J., Aug. 8, 2018, https://www.wsj.com/articles/banks-and-private-markets-making-fresh-connections-1533722346.
[55] Citi GPS: Global Perspectives & Solutions, *Bank of the Future: The ABCs of Digital Disruption in Finance*, CITI (March 2018), https://www.codex.com/wp-content/uploads/2018/04/Bank_of_the_future.pdf.
[56] Kathryn Judge, *Information Gaps and Shadow Banking*, 103 VA. L. REV. 411 (May 2017).
[57] Kathryn Judge, *Investor-Driven Innovation*, 8 HARVARD BUS. L. REV. 291 (Spring 2018).

legal structures and contracts, new modeling techniques, and massive increases in computing power that allow ever more data to be analyzed when designing structures.

In the decade that has passed since the Crisis, innovations have continued to flourish. One way to look at the degree of transformation technology is enabling is by looking at the money flowing into these investments. In the past three years alone, more than $120 billion in new capital has been invested globally in fintech firms.[58] Moreover, established banks themselves invest significant resources in trying to innovate and improve their operations. A recent Citibank report shows that banks spend 15-25% of their annual budgets on improvements in technology.[59] Thus the median spending on technology is higher in the banking sector than any other single sector, including "high tech" firms.[60]

The changes promised by fintech are sometimes modest, but other times quite radical. Big data and machine learning have led many to aspire to devising new and more accurate ways of assessing the creditworthiness of borrowers, making more credit available at better rates to a larger pool of individuals and firms.[61] Others are using new technologies, like blockchain, to not only fulfill traditional functions more efficiently, but to also offer new asset types.[62] As Marco Iansiti and Karim R. Lakhani, two professors at Harvard Business School, explain: "Blockchain is a foundational technology: It has the potential to create new foundations for our economic and social systems."[63] In their view, the radical potential embodied in blockchain is such that it likely "will take decades for blockchain to seep into our economic and social infrastructure," but, once it does, "the impact will be enormous."[64]

The potential for new technologies to disrupt established institutions and modes of financing is already on display in many emerging market economies. An example that rightfully garners a lot of attention is the use of mobile money in Kenya. In a situation common to many emerging economies, Kenya lacked the comprehensive and trustworthy infrastructure needed to process the bulk of retail payments through its banking sector.[65] Against this backdrop, Kenya's leading mobile phone provider introduced M-Pesa, a phone-based money transfer service. Unlike ApplePay and other U.S. payment innovations, M-Pesa does not rely directly on the traditional banking infrastructure.[66] In the year ending July 31, 2017, M-Pesa processed 1.7 billion transactions with an aggregate value of over

---

[58] Lauren M. Mostowyk, *Global fintech funding tops US$31B for 2017 – fueled by US$8.7B in Q4: KPMG's Pulse of Fintech Report*, KPMG, Feb. 13, 2017, https://home.kpmg.com/xx/en/home/media/press-releases/2018/02/global-fintech-funding-tops-us-31b-for-2017-fueled-by-us-in-q4-kpmg-pulse-of-fintech-report.html.

[59] Citi GPS: Global Perspectives & Solutions, *Bank of the Future: The ABCs of Digital Disruption in Finance*, CITI (March 2018) at 5; see also id. at 11.

[60] Id.

[61] [cites – marketplace lending and others]

[62] Marco Iansiti & Karim R. Lakhani, *The Truth About Blockchain*, HARVARD BUS. REV. 118 (Jan.-Feb. 2017), https://hbr.org/2017/01/the-truth-about-blockchain.

[63] Marco Iansiti & Karim R. Lakhani, *The Truth About Blockchain*, HARVARD BUS. REV. 118, 118-127 (Jan.-Feb. 2017), https://hbr.org/2017/01/the-truth-about-blockchain.

[64] *Id.*

[65] The Economist explains, *Why does Kenya lead the world in mobile money?*, THE ECONOMIST, Mar. 2, 2015, https://www.economist.com/the-economist-explains/2015/03/02/why-does-kenya-lead-the-world-in-mobile-money.

[66] Although it does offer at least one product—M-Shwari —that utilizes conventional bank accounts.

48% of the country's GDP.[67] Thus, in less than a decade, Kenya has developed a completely new payment system, one that is more efficient in many regards even than those at work in the most advanced economies.

iv. Radical change

The discussion thus far has focused on the drivers of change, that is, for the ongoing dynamism of the financial system. This is very helpful in explaining history, and why we should expect dynamism to remain a dominant feature of finance in the years to come. But shifting the analysis to consider the nature of change, and how changes interact, is crucial to providing a more complete picture of what might lie ahead.

Dynamism is sometimes incremental and predictable, but sometimes it is not. This is particularly true when multiple factors, and a wide diversity of actors, are involved. There are reasons to expect that the aggregate impact of the forces driving financial dynamism could produce changes that are hard to even imagine today. Such claims are not just the domain of technologists. In 2006, it likely would have been unfathomable to anyone on Wall Street or elsewhere that in a matter of a few short years, of the five leading investment banks, one would be acquired to avert bankruptcy, another would file for bankruptcy, a third would be acquired to assure its survival during a period of upheaval, and the remaining two would both choose to become far more heavily regulated bank holding companies to ensure their own survival.

Mervyn King, former head of the Bank of England, puts the situation thus:

> The essential challenge facing everyone living in a capitalist economy is the inability to conceive of what the future may hold. The failure to incorporate radical uncertainty into economic theories was one of the factors responsible for the misjudgments that led to the crisis. [68]

In his assessment, this is a failure that has yet to be corrected, despite the significant post-crisis reforms. Moreover, it is one structurally built into the ways that economists and all of us respond to uncertainty, particularly when it holds the potential to produce a world far different to the one with which we are familiar. Nassim Nicholas Taleb's best-selling book on "black swans" makes a similar point: Our perceptions of the world are inherently limited by our experience and our tendency to believe that we understand far more about how the world works and what it will look like in the future than is possible given the inherently limited data on which our current understandings are based. As he explains, "Black Swan logic makes *what you don't know* far more relevant than what you do."[69] The Crisis helped propel the success of his book because it was such a blatant and important example of the phenomenon he helps explain. That so many of the post-crisis accounts suggest believing in securitization is equivalent to believing in magic or deny that such structures can genuinely produce assets that are higher quality than the home loans packaged into a securitization vehicle—and believe us, they can—exemplifies how core these dynamics are to finance.

---

[67] Thomas McGath, *M-PESA: how Kenya revolutionized mobile payments*, N26 MAGAZINE, April 8, 2018, https://mag.n26.com/m-pesa-how-kenya-revolutionized-mobile-payments-56786bc09ef.

[68] Mervyn King, THE END OF ALCHEMY: MONEY, BANKING, AND THE FUTURE OF THE GLOBAL ECONOMY (W. W. Norton & Co., 1st ed. Mar. 21, 2016).

[69] Nassim Nicholas Taleb, THE BLACK SWAN: SECOND EDITION: THE IMPACT OF THE HIGHLY IMPROBABLE (Random House, 2d ed., May 4, 2010) at xxiii.

b. Complexity

A second defining feature of modern finance is its complexity. This complexity can be observed across a wide variety of different financial markets, instruments, and institutions. As Professor Steven Schwarcz has opined, complexity is "the greatest financial-market challenge of the future."[70] One reason for this is that it changes so fundamentally what regulators can and do know. As Simon Levin and Andrew Lo explain: "The financial system has crossed a threshold of complexity where the system is evolving faster than regulators and regulations can keep pace." [71]

Examining just a small slice of the financial system makes this plain. Recent work by Jacopo Carmassi and Richard Herring, for example, looks at the corporate structures of today's largest banks.[72] As a proxy for complexity, Carmassi and Herring examine the number of majority-owned corporate entities within a banking organization.[73] They find that, despite significant heterogeneity, the average number of subsidiaries controlled by globally significant banks roughly doubled between 2002 and 2013. They also find few signs of improvement in the wake of the financial crisis—notwithstanding the fact that complexity is often cited as one of its most important drivers.[74] As of the end of 2013, the average global systemically important bank (G-SIB) had more than 1,000 subsidiaries, and some had more than twice that figure.[75] Adding further to this complexity is the wide variety of activities undertaken by these subsidiaries: including mutual funds and other trust companies, insurance companies, and myriad other financial and nonfinancial subsidiaries which, in the United States, are subject to primary oversight by different regulators.[76] As Carmassi and Herring explain: "the complexity of the structure of financial institutions and opaque interconnections among them impeded effective oversight by the authorities ex ante and greatly complicated crisis management and the resolution of institutions ex post."[77] Indeed, their analysis reveals the virtual impossibility for any regulator in one jurisdiction to have a comprehensive understanding of all of the activities in which such an institution is engaged and all of the risks to which it may be exposed. It also raises real questions about the capacity of management and boards to have a comprehensive understanding of their institutions.

---

[70] Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 WASH. U. L. REV. 211, 213, https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=2741&context=faculty_scholarship.
[71] Simon A. Levin & Andrew W. Lob, *Opinion: A new approach to financial regulation*, PNAS, http://www.pnas.org/content/pnas/112/41/12543.full.pdf.
[72] R. Herring & J. Carmassi. *The corporate structure of international financial conglomerates: Complexity and its implications for safety and soundnesss*, ch. 8 of THE OXFORD HANDBOOK OF BANKING (1st ed., 2012) at 175-201, http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199640935.001.0001/oxfordhb-9780199640935.
[73] Other researchers, like Mark Flood and colleagues, have used other innovative approaches to assessing the complexity of bank holding companies; and have reached similar conclusions regarding their incredible complexity; Mark D. Flood, Dror Y. Kenett, Robin L. Lumsdaine, & Jonathan K. Simon, *The Complexity of Bank Holding Companies: A Topological Approach*, NBER Working Paper No. 23755, NAT'L BUREAU OF ECON. RES. (August 2017), https://www.nber.org/papers/w23755.
[74] Id. at fig. 1, 180.
[75] Id.
[76] Id. at tbl. 2, 182-83.
[77] Id. at 175.

The same complexity also pervades many financial instruments. Claire Celerier and Boris Vallee, for example, use lexicographic analysis of the term sheets of 55,000 retail structured products issued in 17 European countries between 2002 and 2010 to examine how those instruments have evolved over time.[78] They "develop an algorithm that … identifies each feature embedded in the payoff formula of all the past and currently existing structured products in the retail market". A product's complexity is then defined as the number of features in a given product. They find that average complexity increased substantially just prior to the Crisis, leveled off (but did not retreat to earlier levels) between 2007 and 2009, and then continued to rise in 2010.[79] They further found that, at least in the retail market, "product complexity is associated with higher product profitability for banks and lower performance for investors" and that "product financial complexity increases when competition intensifies."[80]

Importantly, the proliferation of complex instruments can bring about fundamental changes to the structure of finance. Securitization illustrates this point. Traditionally, when banks made loans, they held those loans on their balance sheets until they matured or were otherwise extinguished. Securitization allows banks and other loan originators to instead bundle loans together into a newly created, bankruptcy remote vehicle. To fund the acquisition of those loans, the vehicle simultaneously issues brand-new securities, such as mortgage-backed securities or collateralized debt obligations, which entitle the holder to certain rights to the cash flows from the underlying debt instruments. These rights are set forth in a waterfall provision which explains in great detail how the timing of cash flows, the characterization of payments received (interest or principal), and aggregate performance of loans at a given point in time alter the cash flow rights of the various tranches of securities issued. Because the underlying loans are inherently unique, the waterfall provisions are similarly unique to each vehicle. The aggregate impact of these various contractual provisions, the creation of new legal entities, and the appointment of new third parties (like a servicer to interact with the borrowers and a trustee to accept cash flows and pay them out according to the waterfall for that particular vehicle) result in a system that helps to move risk out of banks, but also creates new layers of information that previously had not mattered to the value of the new instruments issued.[81]

The spread of securitization vehicles thus had multiple different effects. As an initial matter, it created new informational issues. In addition to the intricate waterfall provisions just described, a range of other issues, like the individual representations and warranties made by the originator when selling the assets packaged into a vehicle and the correlation in the performance of the underlying loans, are now matters that matter—at least in some states of the world. Another, related, source of complexity that arose from the spread of securitization vehicles is that these structures redistributed risks in complicated and state

---

[78] Claire Célérier & Boris Vallée, *What Drives Financial Complexity? A Look into the Retail Market for Structure Products*, HARVARD BUS. SCH., https://www.hbs.edu/faculty/conferences/2013-household-behavior-risky-asset-mkts/Documents/What-Drives-Financial-Complexity_Celerier-Vallee.pdf.

[79] Id. at fig. 2.

[80] Id. at 1.

[81] Kathryn Judge, *Fragmentation Nodes: A Study in Innovation, Complexity, and Systemic Risk*, 63 STANFORD L. REV. 657 (2012); Larry Cordell, Yilin Huang, & Meredith Williams, *Collateral Damage: Sizing and Assessing the Subprime CDO Crisis*, FED. RES. BANK OF PHILA. (May 2012), https://www.philadelphiafed.org/-/media/research-and-data/publications/working-papers/2011/wp11-30.pdf.

contingent ways. For example, because originators sold loans to securitization vehicles (or, rather, usually first to warehouses and then to sponsors/trustees of the securitization vehicle), they seemed to pass along to the buyers the credit and interest rate risk associated with those loans. Because those sales documents included detailed representations and warranties regarding the creditworthiness of the borrowers, the value of homes or other assets collateralizing a loan, and the processes the bank employed in making the loan, the originator remained exposed to contingent liability should any of those representations prove inaccurate and material. As reflected in the billions of dollars that banks have paid in the decade since the Crisis, these contingencies proved to be considerable, and not well understood.[82]

The final point to emphasize is that the complexity of securitization vehicles and the ways they redistributed risks mattered. The combination resulted in massive new information gaps. These gaps exacerbated market dysfunction, as investors lacked the information needed to understand fully the ramifications of bad news. The complexity also increased, by orders of magnitude, the time, effort, and other costs associated with producing that information, resulting in much of the analysis being done only much later even when relevant data was, in theory, publicly available.[83] At the same time, the complexity adversely affected resilience by impeding the capacity of any regulator to understand, and thus address in a timely and proportionate manner, the weaknesses in the system.[84] As then Federal Reserve Governor Randal Krozsner observed during the early phases of the Crisis:

> In the old days, we used to know where the risks were; unfortunately, we knew that they were all on the bank balance sheets. With the originate-to-distribute model and securitizations, we have been able to move to a different model in which the risks are much more dispersed . . . . [S]ome of them are certainly going to be coming onto the bank balance sheets, so the banks never fully get out of this. But it leads to potential pockets of uncertainty, and that is exactly what has come up.[85]

In the thick of the crisis, these information gaps made it exceptionally difficult for regulators to ensure the stability of the financial system. The Federal Reserve, for example, is supposed to provide liquidity support to help reduce the adverse macroeconomic impact of panics. But in the fall of 2007, the panic that was occurring took the form of runs on asset-backed commercial paper, rather than bank deposits, resulting in a situation where the Federal Reserve—which only oversaw banks and their holding companies—lacked information that was critical to their ability to understand and contain the unfolding panic.

The spread of increasingly complex securitization vehicles prior to the Crisis illustrates how dynamism and complexity undermine the ability of policymakers to identify

---

[82] [data on some of the MBS settlements – Verdier perhaps]

[83] Robert P. Bartlett, *Inefficiencies in Information Thicket: A Case Study of Derivatives Disclosures during the Financial Crisis*, 36 J. CORP. L. 1 (2010); Larry Cordell, Yilin Huang, & Meredith Williams, *Collateral Damage: Sizing and Assessing the Subprime CDO Crisis*, FED. RES. BANK OF PHILA. (May 2012), https://www.philadelphiafed.org/-/media/research-and-data/publications/working-papers/2011/wp11-30.pdf.

[84] Kathryn Judge, *The First Year*: *The Role of a Modern Lender of Last Resort* 116 COLUMBIA L. REV. 843 (2016); Kathryn Judge, *Information Gaps and Shadow Banking*, 103 VA. L. REV. 411 (May 2017).

[85] U.S. Fed. Res. Bd., *Minutes of Federal Open Market Committee* (Sept. 18, 2007) at 86, http://www.federalreserve.gov/fomc/minutes/20070918.htm.

risks and take timely and effective regulatory action. As explained above, regulatory arbitrage, that is, an effort to replicate bank-like functions outside the banking system and thus without the costs associated with operating as a bank, was among the drivers behind the growth of securitization and the shadow banking system of which it was a part. It is thus predictable, not aberrational, that as this complex innovation spread, it also resulted in a migration of activity outside the direct prudential purview of regulators.

The analysis thus far has focused on the incredible complexity of financial markets today and that such complexity has shown no signs of retreating in the decade since the Crisis despite the role of complexity in contributing to the market dysfunction of the time. This failure reflects in part the numerous and powerful forces continually pushing the system toward greater complexity. These forces include the ongoing globalization of finance, the constantly shifting structure of financial markets and institutions (along with the wider financial services industry), and the simple fact that market participants can often extract rents from greater complexity.[86] Importantly, these forces also include the regulation that we use in an attempt to tame this complex and constantly evolving system. The confluence of these forces suggests that, however complex the financial system is today, tomorrow's financial system will be even more complex.

c. Unknowns

As the analysis thus far has already made clear, market participants and regulators operate with only a fraction of the information that may be pertinent to the decisions they are making. The incredible complexity of financial markets, and the costs of information generation, make it so all actors become accustomed to operating with only a subset of relevant information and relying on proxies, from ratings to reputation, to fill in the rest. They may be constantly updating their assessments, but it would be cost prohibitive most of the time to gather, much less analyze, all of the information that might be pertinent in all states of the world that might arise in the time period affected by a given decision. Dynamism couples with complexity to increase the size of these information gaps, that is, the information that is theoretically knowable but not fully known by any single market actor or regulator at a given time. Information that may be accurate at Time A may or may not be true at Time B, and it is costly to assess, so updating will be far from complete. Exacerbating the pervasiveness and size of information gaps are frictions that can limit access to pertinent information. Counterparties can choose what information they are willing to share, and what they will not. Different regulators have different jurisdictions, limiting the scope of their authority even when activity pertinent to their actions make activity outside their perimeter relevant to their capacity to achieve their given tasks. The creation of the Financial Stability Oversight Council and the Office of Financial Research in the United States have helped mitigate some of these frictions, but have far from eliminated them given the restrictions that continue to impede interagency information sharing. More importantly, given the incredible complexity and dynamism of finance, and inherently finite resources of regulators, effort and other costs remain a powerful constraint on who knows what at any point in time.

[86] Dan Awrey, *Complexity, Innovation, and the Regulation of Modern Financial Markets*, 2 HARVARD BUS. L. REV. 235 (2011).

Apart from these large information gaps, a second factor exacerbating unknowns is uncertainty. Much of finance is about risk taking and risk shifting. But as Frank Knight long ago explained, not all unknowns can be translated into probabilistic terms.[87] There are categories of things that might happen, good and bad, that are beyond even the category of issues that a decision maker might identify as relevant. These are Donald Rumsfeld's "unknown unknowns."[88] They encompass the "radical uncertainty" about which Mervyn King is concerned, and which could make the future look very different than today, but also changes that are more subtle in character but no less beyond the imagination of actors for whom the development may be important.

As if information gaps and uncertainty were not challenge enough, unknowns can also arise from a failure of interpretation. It is not just information that becomes stale as a result of dynamism, but the framework for assessing what it means. Both policy makers and market actors are often viewing what information they do have through a lens colored by an outdated understanding of the financial system and its constituent parts.

As explained by Richard Clarida, now Vice Chair of the Board of Governors of the Federal Reserve: "It would seem that the supervision and regulation of US investment and commercial banks during the great moderation was based on an assumption about how the financial system was supposed to work, not upon sufficient knowledge about how the financial system actually worked."[89] Prior to 2008, policymakers and academics alike were fooled into believing that the system had become more stable at precisely the time massive new forms of systemic risk were growing unchecked. Banks looked well capitalized, and although well aware of each of the component parts that constitute the market-based intermediation regime where the Crisis emanated, no one appreciated how those component parts operated in a mutually dependent fashion that exposed them to the same run risk banks have long faced.[90] The point here is not only that change creates unknowns; it is that economists, policymakers, and others are often ill-equipped to assess what they know and what they don't. A western mindset can promote a focus on what is known, and what can be controlled for, even when those dynamics are but a small piece of the relevant picture.

III. The Mismatch

This Part examines in closer detail the tensions between the aims animating the processes through which policymakers learn and make decisions about how best to regulate the financial system. It brings these dynamics to life through two case studies: bank capital requirements, which are at the heart of international financial regulation and post-crisis reforms, and money market mutual funds, a predominantly US phenomenon that has also be the target of significant, if protracted, reform in the wake of the crisis.

a. Case Studies

i. Bank capital requirements

---

[87] [From Information Gaps]

[88] [From Information Gaps]

[89] Richard H. Clarida, *What Has – and Has Not – Been Learned about Monetary Policy in a Low Inflation Environment? A Review of the 2000s* 44 J. OF MONEY, CREDIT AND BANKING (Feb. 3, 2012).

[90] Gary B. Gorton, MISUNDERSTANDING FINANCIAL CRISES: WHY WE DON'T SEE THEM COMING (Oxford U. Press, 1st ed., Nov. 2, 2012); Tobias Adrian et al, *Shadow Banking*, FED. RES. BANK OF N.Y. (July 2010).

Perhaps nowhere has the mismatch between finance and financial regulation been more evident than in the development of bank capital requirements. The basic function of these requirements is deceptively simple. The business of banking is based on leverage: and specifically the issuance of deposits and other short-term debt to finance the extension of loans and the purchase of financial assets. The heavy reliance on short-term debt makes banks vulnerable to destabilizing runs by depositors and other creditors.[91] In theory, one of the ways that bank shareholders and managers can reduce this vulnerability is by utilizing a relatively high amount of equity in its capital structure.[92] In effect, because equity can absorb losses while a bank is a going concern, utilizing more equity makes banks better able to withstand large fluctuations in asset prices—thus reducing both the probability and potential impact of bank failure.

In practice, however, there are several possible reasons why shareholders and managers will often have strong incentives to prefer debt over equity.[93] First, shareholders may seek to use debt—and short-term debt in particular—as a commitment mechanism designed to help address potential agency problems vis-à-vis bank managers and depositors.[94] Second, bank managers may prefer debt because it mechanically increases a bank's return on equity: a common metric for performance-based compensation. Second, debt often enjoys certain tax advantages. Third, and perhaps most importantly, unlike shareholders, creditors often stand to benefit from any government intervention to support a failing bank. The expectation of government support will then be reflected in the lower cost of debt relative to equity.[95] Viewed from this perspective, the function of *minimum* capital requirements is to provide a counterweight against the incentives of shareholders, managers, and creditors to operate with dangerously low levels of loss absorbing capital and mitigate the moral hazard problems generated by the expectation of government support.

As described in Part I, the first international capital standards were published by the Basel Committee in 1988. In the United States, these standards were then incorporated into federal law and phased in between 1989 and 1992.[96] Yet even before the ink was dry,

---

[91] See Douglas Diamond & Philip Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401 (1983) (discussing "risks which lead to a demand for liquidity" that can lead to bank runs). For a recent survey of the literature on the vulnerability of banks to depositor runs, see Franklin Allen et al., *Moral Hazard and Government Guarantees in the Banking Industry*, 1 J. FIN. REG. 30 (2015). For a description of how banks can be vulnerable to runs by short-term creditors other than depositors, see Gary Gorton & Andrew Metrick, *Securitized Banking and the Run on Repo*, 104 J. FIN. ECON. 425 (2012).

[92] Another way that bank shareholders and managers can reduce this vulnerability is by holding large amounts of cash and other highly liquidity assets. Like equity capital, shareholders and managers have strong incentives have strong incentives not to hold these assets, thus providing the rationale for another important pillar of banking regulation: minimum reserve requirements.

[93] For a more comprehensive analysis of why bank shareholders and managers may prefer debt to equity, see Anat Admati & Martin Hellwig, THE BANKERS' NEW CLOTHES: WHAT'S WRONG WITH BANKING AND WHAT TO DO ABOUT IT (Princeton U. Press, Revised ed. March 23, 2013).

[94] See Charles Calomiris and Marcel Kahan, *The Role of Demandable Debt in Structuring Optimal Banking Arrangements*, 81:3 AM. ECON. REV. 497 (1991).

[95] Maureen O'Hara & Wayne Shaw, *Deposit Insurance and Wealth Effects: The Value of Being Too Big to Fail*, 45(5) J. OF FIN. 1587 (1990). See also Viral Acharya, Deniz Anginer & Joseph Warburton, *The End of Market Discipline? Investor Expectations of Implicit Government Guarantees* (1 May 2016), https://ssrn.com/abstract=1961656.

[96] See Risk-Based Capital Guidelines, 54 Fed. Reg. 4186-01 (Jan. 27, 1989); Risk-Based Capital Guidelines, 54 Fed. Reg. 4168-01 (Jan. 27, 1989); Capital Maintenance; Final Statement of Policy on Risk-Based Capital, 54 Fed. Reg. 11500-01 (March 21, 1989).

observers were already pointing out serious flaws in the new Basel framework.[97] In particular, Basel I adopted a relatively crude approach to risk weighting bank assets for the purposes of calculating minimum capital requirements that essentially divided the entire universe of financial assets into four categories—or "buckets"—based on their perceived level of risk. This presented banks with a relatively straightforward arbitrage opportunity. Specifically, by investing in the riskiest assets in any given bucket, banks could take more risks, and presumably generate more profits, while being required to hold the exact same amount of capital.

Introduced in 2004, Basel II sought to eliminate this arbitrage opportunity by permitting larger and more sophisticated banks to calculate their own risk weights under the so-called "internal ratings-based" (IRB) approach. In a nutshell, the IRB approach enabled banks to use their own internal computer models, historical default rates, and other market data to generate key input variables necessary to calculate minimum capital requirements in connection with both their loan and trading books.[98] In addition to eliminating the arbitrage opportunities presented by Basel I, the introduction of the IRB approach appears to have been motivated by a desire on the part of bank regulators to ensure that capital requirements were as "accurate" as possible: i.e. that they reflected institutional and market-based assessments of credit, market, and other risks.[99]

The implementation of Basel II coincided with the outbreak of the global financial crisis. The crisis exposed the flaws in the IRB approach. As a preliminary matter, it demonstrated that financial models based on historical data are vulnerable to small sample errors and the under-estimation of so-called "tail" risks.[100] The wide variance in risk weighting methodologies also stoked concerns that banks were using their discretion over important input variables to manipulate the IRB approach in order to reduce their risk-weighted minimum capital requirements.[101] And most importantly, the crisis demonstrated that market-based measures of credit, market, and other risks did not fully capture the *systemic* risks arising from the myriad of complex, opaque, and interconnected activities undertaken by banks and other financial institutions.[102]

Predictably, the financial crisis was followed by yet another overhaul of the Basel framework. First published in 2010—and revised in 2011, 2012, 2014, 2016 and 2017—

---

[97] See Charles Goodhart, THE BASEL COMMITTEE ON BANKING SUPERVISION: A HISTORY OF THE EARLY YEARS 1974-1997 576 (Cambridge U. Press, July 27, 2011).

[98] The IRB approach is itself divided into two subcategories: *foundational* and *advanced* IRB. In connection with the calculation of capital requirements in a bank's loan book, for example, the foundational approach would permit the bank to calculate a loan's probability of default (PD). Under the advanced approach, meanwhile, the bank would be permitted to calculate PD, loss given default (LGD), and exposure at default (EAD).

[99] See Robin Greenwood et al, *Strengthening and Streamlining Bank Capital Regulation*, BROOKINGS PAPERS ON EON. ACTIVITIES (Sept. 2017), 36 https://www.brookings.edu/wp-content/uploads/2017/09/6_greenwoodetal.pdf.

[100] [insert citation].

[101] For empirical evidence of this variance, see Basel Committee on Banking Supervision (BCBS), *Regulatory Consistency Assessment Programme: Analysis of Risk Weighted Assets for Market Risk* (January 2013) and Vanessa Le Leslé and Sofiya Avramova, *Revisiting Risk-Weighted Assets: Why Do RWAs Differ Across Countries and What Can Be Done About It?*, IMF WORKING PAPER (March 2012).

[102] See Armour et al., *supra* note [?], 301.

Basel III introduces a number of significant reforms.[103] In the realm of bank capital, these reforms include refinements to the definition and categories of capital, new countercyclical capital and capital conservation buffers, and a capital surcharge for global systemically important banks.[104] The Basel Committee has also responded to the threat that banks might manipulate the IRB approach by introducing a non-risk weighted leverage ratio and, more recently, risk weight floors for credit, market, and operational risks.[105] The target date for full implementation of Basel III was originally 1 January 2019—almost a full decade after these new global standards were first published.[106] In any(?) event, many of the more recent reforms, including the new risk weight floors, are now not scheduled for full implementation until 2027.[107]

The first thing that the thirty-year arc between Basel I and III makes abundantly clear is the pervasive impact of regulatory arbitrage. Despite the enormous amount of time, effort, and other resources that have been committed to designing and refining the Basel framework, each successive iteration of these global standards has been undercut by banks' relentless efforts to limit their impact and, ultimately, their effectiveness. Indeed, the story of the evolution of the Basel framework is largely the story of policymakers' ongoing—and largely unsuccessful—attempts to curb regulatory arbitrage. Importantly, the ability of banks to engage in effective regulatory arbitrage is bolstered by the considerable time lag between the publication of new Basel standards and their implementation into domestic law. In this respect, it was almost inevitable that banks would find new ways of arbitraging Basel III long before these reforms came into full force and effect.[108] On our present course, it is thus only a matter of time before we see the publication of Basel IV.

Regulatory arbitrage of the Basel framework has been an important driver of both the dynamism and complexity of the financial system. The development of structured finance provides an illustrative example. Amongst the many reasons for the rise of structured finance during the 1990s was the fact that selling mortgages and other raw loans into bankruptcy remote structured finance vehicles providing sponsoring banks with relief from regulatory capital requirements.[109] The forces of regulatory arbitrage thus contributed to the emergence and development of a complex financial ecosystem within which risks were often highly fragmented, but where—unbeknownst to regulators—contingent liabilities in the form of liquidity puts loan(?) sponsoring banks exposed to the risk of widespread market

---

[103] See Basel Committee on Banking Supervision (BCBS), *Basel III: A Global Framework for More Resilient Banks and Banking Systems* (June 2011), https://www.bis.org/publ/bcbs189.htm and Basel Committee on Banking Supervision (BCBS), *Basel III: Finalizing Post-Crisis Reforms* (December 2017), https://www.bis.org/bcbs/publ/d424.htm. For a history of the revisions to this framework, see Basel Committee on Banking Supervision (BCBS), *Basel III: A global regulatory framework for more resilient banks and banking systems – revised version* (June 2011), https://www.bis.org/publ/bcbs189.htm.

[104] For a summary of these reforms, see Armour et al., *supra* note [?], ch. 13.

[105] See BCBS (2017), *supra* note [?], 137-158.

[106] See BCBS (2011), *supra* note [?], Annex 4.

[107] See Basel Committee on Banking Supervision (BCBS), *Finalizing Basel III In Brief* (December 2017), 8.

[108] See for example, Dong Beom Choi, Michael Holcomb & Donald Morgan, *Bank Leverage Limits and Regulatory Arbitrage: New Evidence on a Recurring Quest*ion, FED. RES. BANK OF N.Y. STAFF REPORT No. 856 (November 2018), https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr856.pdf.

[109] See David Jones, *Emerging Problems with the Basel Capital Accord: Regulatory Capital Arbitrage and Related Issues*, 24 J. OF MONEY, BANKING & FIN. 35 (2000).

disruption.[110] Perversely, then, the very rules that were designed to ensure the stability of banks thus helped spur the creation of new markets, institutions, and instruments that made it more difficult for regulators to detect the build-up of potential systemic risks within the banking system.

Notably, how policymakers have responded to the threat of regulatory arbitrage has also contributed to the complexity of financial regulation. Historically, the Basel Committee has responded to this threat by writing detailed rules designed to close the gaps exploited by banks for the purposes of reducing their minimum capital requirements.[111] The resulting rulification is reflected in the ever increasing length of the Basel framework: while Basel I was articulated in a crisp 30 pages, Basel II ran to 347 pages, and Basel III came out at a whopping 616 pages.[112] In the United States, the legislation and regulations implementing Basel III came out at over 1,000 pages. The problem, of course, is that adopting new, more detailed, and more complex rules invite banks to find new, more bespoke, and more complex ways of getting around them.[113] It is therefore unsurprising that the strategy of attempting to combat regulatory arbitrage with yet more regulation has led to an exponential increase in the size and complexity of the Basel rulebook without necessarily yielding any commensurate increase in its effectiveness.

The rulification of the Basel framework has also increased the probability that rules will interact in unexpected and potentially harmful ways.[114] Economists Greenwood, Hanson, Stein, and Sunderam, for example, have demonstrated how the combination of market-based risk weighting methodologies (introduced under Basel II) with a non-risk weighted leverage ratio (introduced under Basel III) can incentivize banks to shift into lines of business where they are less competitive and, conversely, lead them to eschew lines of business where they possess a comparative advantage.[115] Greenwood and his coauthors identify two potential implications of their findings. First, the interaction between these different regulatory requirements may encourage banks to enter businesses where they have little historical expertise, existing capabilities, or risk management infrastructure.[116] Second, insofar as these requirements drive banks to adopt similar business models, this could

---

[110] See Armour et al., *supra* note [?], 465-466.

[111] See Robin Greenwood et al, *Strengthening and Streamlining Bank Capital Regulation*, BROOKINGS PAPERS ON ECON. ACTIVITIES (Sept. 2017), 3 https://www.brookings.edu/wp-content/uploads/2017/09/6_greenwoodetal.pdf.

[112] For empirical data describing the rulification of financial regulation, along with an overview of the challenges this creates for both policymakers and market participants, see Andy Haldane, *The Dog and the Frisbee*, paper given at the Federal Reserve Bank of Kansas City's 36th economic policy symposium in Jackson Hole, Wyoming (31 August 2012), https://www.bankofengland.co.uk/paper/2012/the-dog-and-the-frisbee.

[113] This observation is encapsulated in Goodhart's Law: the prediction that "any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes"; see Charles Goodhart, *Problems of Monetary Management: The UK Experience*, 1 PAPERS IN MONETARY ECONOMICS (1975).

[114] In addition to the research conducted by Greenwood et al. (n [?]) described below, the Financial Stability Board (FSB) has recently highlighted how the Basel III leverage ratio interacts with the new margin requirements for derivatives to disincentivize access to central clearing, thus undermining one of the key pillars of the post-crisis reform agenda. See Financial Stability Board, Bank for International Settlements, & International Organization of Securities Commissions, *Incentives to Centrally Clear Over the Counter (OTC) Derivatives: A Post-Implementation Evaluation of the Effects of the G20 Regulatory Reforms* (Final Report) (November 19, 2018), 62-68, http://www.fsb.org/2018/11/incentives-to-centrally-clear-over-the-counter-otc-derivatives-2/.

[115] *Id.* at 18.

[116] *Id.* at 27.

increase the risk of correlated undercapitalization during periods of market turmoil.[117] In this way, the incremental build-up of well-intentioned microprudential rules can both engender significant changes within the financial system and potentially sow the seeds of future macroprudential instability.

These same challenges can also be observed in connection with new rules introduced under Basel III that are designed to ensure that banks not only have enough capital, but also sufficient *liquidity*. Many view the acute liquidity problems experienced banks and other financial institutions as residing at the root of the Crisis. In response, the Basel Committee introduced two new liquidity rules: the liquidity coverage ratio (LCR) and net stable funding ratio (NSFR).[118] The LCR is designed to ensure that banks have a sufficient stock of high-quality liquid assets to survive a hypothetical 30-day stress scenario. The NSFR, meanwhile, is designed to constrain the reliance of banks on unstable, short-term sources of wholesale funding.

While the rationale for both the LCR and NSFR may seem relatively straightforward, their detailed design and implementation have proven far more challenging. The Office of Financial Research, for example, has suggested that the complexity of the LCR, at least as adopted in the United States, serves to undermine its utility as a benchmark for evaluating a bank's liquidity position.[119] There is also some evidence to suggest that the LCR has reduced the amount of liquidity creation and transformation being performed by banks and other financial institutions.[120] And as described in greater detail below, the LCR has even played a role in the important changes to the money market mutual fund market in recent years.[121] Meanwhile, full implementation has been delayed in part on concerns about potential unintended consequences, along with its potential impact on bank profitability.[122] Despite the best of intentions, it is thus still far from clear whether they will ultimately have the desired impact.

The dynamism and complexity of modern finance, together with the myriad of poorly understood feedback effects between capital requirements and bank behavior, generate significant unknowns. Indeed, for all the technocratic expertise that has gone into the design of the Basel framework—including several attempts to empirically quantify its costs and benefits—there is still remarkably little consensus around many seemingly basic questions. Perhaps most importantly, while something of a consensus has started to emerge around the need for stringent capital requirements, there is considerably less agreement around the precise benefits of imposing higher capital requirements on banks and other large financial institutions,[123] Other important and contested questions include: what is the

---

[117] *Id.*

[118] See BCBS, "Liquidity Coverage Ratio (LCR)" (January 2013), and "Net Stable Funding Ratio (NSFR)" (October 2014), available at http://www.bis.org/bcbs/basel3.htm.

[119] [https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2681372]

[120] [https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2921691; https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3179800; https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3199876]

[121] [See Part III(ii)3.]

[122] [https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2443168]

[123] For a survey of different views on this question, see Eric Posner, *How Do Bank Regulators Determine Capital Adequacy Requirements?* COASE-SANDOR INSTITUTE FOR LAW & ECONOMICS Working Paper No. 698 (2014), 9-11.

cost of bank equity capital and, if equity is more expensive than debt, what explains this difference?[124] How do higher capital requirements affect credit creation and economic growth?[125] And what is their impact on money creation, both within and outside the conventional banking system? Ultimately, the lack of consensus around these questions serves to deprive policymakers of a clear blueprint for the optimal design and calibration of bank capital requirements.

[[The ongoing evolution of the Basel capital requirements demonstrates how finance moves faster than financial regulation. More importantly, it demonstrates how conventional approaches to financial regulation are poorly equipped to address the challenges stemming from the dynamism and complexity of the financial system. Indeed, regulation is often an important driver of these forces. Unsettlingly, the net result is the existence of pervasive unknowns at the very heart of banking regulation.]]

ii. Money market mutual funds

1. Background

The very existence and size of the money market mutual fund market is a reflection of the idiosyncrasies of the way the United States historically regulated banks and markets. Following the Great Depression, the United States adopted broad deposit insurance for banks, but also imposed significant restrictions on what banks could do and how they could do it. This included restrictions, embodied in Regulation Q, on the interest rates that banks could pay to depositors.[126] This system worked well for a while. Banks could rely on deposits as a sticky and low-cost source of funding for banks, and to the extent that enhanced the value of bank charters, it may have added to the risk aversion induced by memories of the Great Depression.[127]

---

[124] Compare Hellwig & Admati, *supra* note [?] with Douglas Elliott, *Higher Capital Requirements Would Come at a Price*, BROOKINGS INST. (Feb. 20, 2013), https://www.brookings.edu/research/higher-bank-capital-requirements-would-come-at-a-price/.

[125] On one side of this debate stand organizations such as the Basel Committee itself, which has estimated that Basel II will reduce gross domestic product by between 0.25 and 0.92 percentage points—representing roughly $1.4 trillion in lost output for the U.S. alone; see Basel Committee on Banking Supervision (BCBS), *An Assessment of the Long-Term Economic Impact of Stronger Capital and Liquidity Requirements* (August 2010), 173, http://www.bis.org/publ/bcbs173.pdf. One the other side stand a number of preeminent economists who argue that capital requirements could be increased well beyond the levels mandated by Basel III without triggering a material decrease in either credit creation or economic growth. Miles, Yang, and Marcheggiano, for example, estimate that doubling bank capital requirements would increase bank funding costs by only 10-40 basis points and generate significant net benefits in terms of financial stability; David Miles, Jing Yang & Gilberto Marcheggiano, *Optimal Bank Capital*, 123 ECON. J. 1 (2012). Firestone, Lorenc, and Ranish similarly estimate that optimal bank capital levels in the U.S. range from just over 13 percent to over 26 percent—again well in excess of the Basel III minimums; Simon Firestone, Amy Lorenc, & Ben Ranish, *An Empirical Economic Assessment of the Costs and Benefits of Bank Capital in the United States*, FED. RES. BD. WORKING PAPER No. 2017-034, https://www.federalreserve.gov/econres/feds/files/2017034pap.pdf. And at the far end of the spectrum, Admati and Hellwig argue that a 25 percent non-risk weighted capital requirement for systemically important banks would entail few, if any, social costs; Admati & Hellwig, *supra* note [?].

[126] 12 C.F.R. § 217.1 (2010).

[127] Gary B. Gorton, MISUNDERSTANDING FINANCIAL CRISES: WHY WE DON'T SEE THEM COMING (Oxford U. Press, 1st ed., Nov. 2, 2012); Kathryn Judge, *Regulation and Deregulation: The Baseline Challenge*, 104 VA. L. REV. ONLINE 101 (2018) n.26, http://www.virginialawreview.org/volumes/content/regulation-and-deregulation-baseline-challenge#top-link-26.

When interest rates rose significantly in the 1970s, however, individuals and businesses were less content accepting little or no interest in exchange for the safety and liquidity that bank deposits promised.[128] Money market mutual funds grew to fill in this gap. A product of both private creativity and an accommodating regulatory environment, money market mutual funds were a money-like, albeit not government-guaranteed, product that provided holders a significantly higher rate of return. They grew quickly, to the detriment of bank's liquidity positions, and thus facilitated the demise of Regulation Q. Nonetheless, because banks still were subject to costly regulations and at least sometimes had to pay for the FDIC guarantee covering their deposits, money market funds remained an attractive and growing alternative for individuals and firms. Throughout, they were aided by SEC regulations that allowed money market funds to use a fixed $1.00 net asset value (NAV), making them seem more money like, in exchange for abiding by very significant restrictions on the duration and quality of the assets they held.[129] This in turn changed how banks and other firms funded themselves, as highly rated issuers increasingly came to rely on money market mutual funds as ready buyers of any short-term debt they might issue.[130]

All seemed well enough until the failure of Lehman Brothers in September 2008. Lehman's collapse triggered one of the oldest and largest money market mutual funds to "break that buck": that is, to redeem some shares at $0.97 (at the nadir) rather than the expected $1.00. Within the week, investors had withdrawn approximately $300 billion from "prime," that is, nongovernment, money market mutual funds, leading to massive disruptions in the short-term funding markets.[131] The Federal Reserve and Treasury Department quickly intervened, with each creatively stretching their legal authority to do so.[132] These interventions, particularly the guarantees provided by the Treasury, had the desired effect of restoring faith in money market mutual funds and aiding short-term funding markets that were facing an array of challenges. That the government had to take such extreme action was a sign to many that money market mutual funds were an important source of systemic risk and the regulations governing them should be overhauled in light of this new information.[133]

2. Reform

The Dodd-Frank Act did not address money market mutual funds, as it was clear that the SEC already had sufficient regulatory authority to address the challenges revealed during the Crisis. When the SEC failed to take meaningful action, the Financial Stability Oversight Council—a body created by the Dodd-Frank Act that brings together the heads of all of the federal financial regulators and asks them to identify threats to systemic risk—

---

[128] Paul G. Mahoney, *Deregulation and the Subprime Crisis*, 104 Va. L. Rev. 233, 236 (2018); Kathryn Judge, *Regulation and Deregulation: The Baseline Challenge*, 104 VA. L. REV. ONLINE 101 (2018) n.26, http://www.virginialawreview.org/volumes/content/regulation-and-deregulation-baseline-challenge#top-link-26.

[129] 17 C.F.R. § 270.2a-7 (1984).

[130] Jeffrey N. Gordon, *Letter to the SEC on Money Market Fund Reform*, COLUMBIA L. AND ECON. WORKING PAPER NO. 352 (Sept. 9, 2009), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1473275.

[131] https://www.sec.gov/opa/Article/press-release-2013-101---related-materials.html

[132] Get sources from Kathryn Judge, Guarantor of Last Resort, 97 TEX. L. REV. 708 (Sept. 2018).

[133] William C. Dudley, *For Stability's Sake, Reform Money Funds*, BLOOMBERG, Aug. 15, 2012, https://www.bloomberg.com/opinion/articles/2012-08-14/for-stability-s-sake-reform-money-funds; Jeff Gordon, *Why Investors Should Worry About Money Funds*, WALL STREET J., June 3, 2011.

took the unusual step of seeking public comment on ways to reform money market mutual funds, any of which could only be implemented by the SEC.[134] This authority was designed to, and had the effect, of prompting the SEC to heed the call and pursue more substantive reforms.

In June 2013, nearly five years after the 2008 run on money market mutual funds and after the SEC and others had expended significant efforts assessing how best to reform them, the SEC issued a proposed notice of rulemaking. The proposal was 693 pages and included 1,248 footnotes. The proposal identified two possible courses of actions, a floating NAV and possible changes to limit redemptions during periods of distress, and sought feedback on the expected ramifications of adopting either or both reforms.[135] The SEC received 1,400 comment letters and engaged in numerous meetings with industry and other interested parties over the following year. Over 1,200 of those letters were basic form letters.[136] The remainder were individualized, and often exceptionally detailed, letters from an array of industry participants, trade groups, and law firms representing industry participants. Trade groups, nonfinancial firms, academics, and others also provided their views, sometimes supported by data, on the likely effects and desirability of the proposed reforms. Public records further show 108 separate meetings or phone calls between SEC commissioners or staff, on one hand, and interested parties, including SIFMA, Goldman Sachs, Fidelity, Vanguard, HSBC, Blackrock, the AFL-CIO, Better Markets, the National Association of Corporate Treasurers, and UPS, on the other hand.[137]

The SEC issued its final rule bringing about significant reform to prime money market funds held by institutional investors in July 2014. The final rule, and supporting material, was 893 pages long and included 2,530 footnotes. It was detailed and, in some regards, exceptionally thorough. In the process of explaining the reasons for the final rule, the SEC addressed the myriad and often conflicting views that had been expressed in the comment letters received and the information those comment letters provided regarding the probable effects of the SEC's actions.

According to the Final Release, the SEC "believe[d] that the reforms … should … lessen money market funds' susceptibility to heavy redemptions, improve their ability to manage" the associated contagion, "and increase the transparency of their risks, while preserving, as much as possible, the benefits of money market funds." As this already makes clear, the rule was seeking to further a number of potentially conflicting aims. On the one hand, it wanted to make runs on money market mutual funds of the kind that disrupted markets and triggered government intervention less likely. On the other hand, the SEC was far from ready to foreclose the ability of mutual funds to offer a product that "as much as possible," provided the benefits of other "money-like" financial instruments.

---

[134] Press Release, *Financial Stability Oversight Council Releases Proposed Recommendations for Money Market Mutual Fund Reforms*, U.S. DEPT. OF TREASURY, Nov. 13, 2012, https://www.treasury.gov/press-center/press-releases/Pages/tg1764.aspx.

[135] Money Market Fund Reform; Amendments to Form PF, Release No. IC-30551 (June 5, 2013) https://www.sec.gov/rules/proposed/2013/33-9408.pdf.

[136] Comments on Proposed Rule: Money Market Fund Reform; Amendments to Form PF, Release Nos. 33-9408, https://www.sec.gov/comments/s7-03-13/s70313.shtml.

[137] Comments on Proposed Rule: Money Market Fund Reform; Amendments to Form PF, Release Nos. 33-9408, https://www.sec.gov/comments/s7-03-13/s70313.shtml#meetings.

Most of the Release was devoted to trying to explain why and how the SEC believed the reforms it had spent years formulating and revising would achieve those aims. A number of issues received significant attention. "Market discipline" was mentioned 17 times. The SEC opined, for example, that it "agree[d] with commenters and believe that daily disclosure [that is, a floating NAV] will increase market discipline, which could ultimately deter situations that could lead to heavy redemptions."[138] The hope was that if money market mutual funds had to provide more detailed information about the actual value of the assets that they were holding, and that even small changes in the value of those assets would affect the price mutual fund holders receive when redeeming their shares, those holders would exert pressure on mutual fund managers to be more conservative in their holdings, reducing the likelihood of a later run.

The SEC and numerous letter writers also recognized that there may be broader, systemic ramifications from the proposed changes. One big question was whether institutional holders would continue to hold prime funds even if they had floating NAVs or whether they would instead seek out a new alternative. The SEC identified a dozen alternatives, in addition to discussing the possibility that holders would take money from money market mutual funds and put it into banks, before concluding that it did "expect some outflow" from institutional prime funds as a result of the reforms, but it was "not able to estimate the flows of capital from institutional prime funds." "Given the heterogeneity of investors' preferences and investment objectives and constraints, we do not expect that all investors will allocate assets to the same alternative."[139] In short, they expected that the changes would cause some holders to seek out substitutes, but they couldn't hazard a guess as to how many, and they thought that different holders would seek different alternatives. They reached an even more equivocal non-conclusion regarding the macroeconomic effects of the reforms.[140]

In hindsight, it is notable that the Federal Home Loan Banks were mentioned only once in the entire Release, in a footnote summarizing the rules governing government money market mutual funds. As that footnote explained: "Government money market funds must invest at least 99.5 percent of their portfolio in cash, "government securities" as defined in section 2(a)(16) of the Act, … See rule 2a-7(a)(16). Allowable securities include securities issued by government sponsored entities such as the Federal Home Loan Banks, government repurchase agreements, and those issued by other 'instrumentalities' of the U.S. government."[141] Because holders had run into, rather than out of, government money market funds in 2008, the SEC had not seem any basis for revising the rules governing those funds, which meant those funds could still use the $1.00 NAV and were not subject to the other new rules potentially limiting redemptions. This is, hence, the picture of what years of dialogue and input from other government bodies, industry, think tanks, and academics had produced. This was the process that was meant to improve the quality of the rule adopted,

---

[138] Id. At 333.
[139] Id. At 635.
[140] Id. At 631 ("[W]e acknowledge changes in the market arising from the reforms may have macroeconomic effects in the future" but "[b]ecause we cannot foresee all of the ways markets will evolve, we cannot predict [those]… effects.").
[141] Id. At 610, FN 1893.

and to ensure accountability by allowing robust and public discussion of the key issues at stake.

3. Effect

The new rules became effective two years after being finalized, in October 2016. Before investors knew the precise contours of the rule, at the beginning of 2014, there was nearly $950 billion invested in institutional prime money market funds, those affected by the reforms.[142] By the time the rule was fully implemented that number was just over $120 billion.[143] It turns out that the features the SEC identified as making money market funds vulnerable were ones that most holders were not willing to forego. Institutional prime money market funds were nearly decimated by the reforms. Rather than turning to a diverse array of alternatives as the SEC had predicted, however, virtually all of those funds moved into the exact same alternative: government money market funds not subject to the new rules.[144] The total assets under management with money market mutual funds thus remained fairly constant; it is the allocation of these assets among those funds that changed dramatically.

This rise in government money market funds was possible, and possible without a meaningful decline in the rates of return offered by government money market funds, by a dramatic increase in the issuance of short-term debt instruments by the Federal Home Loan Banks. The FHLBanks, like Fannie Mae and Freddie Mac, are government-sponsored enterprises that were created after the Great Depression to try to make it easier for Americans to buy homes by making it easier for them to finance those homes. Today, the primary way the FHLBanks purport to do this is by providing collateralized funding to members (banks and insurance companies) against mortgage-related assets. They fund these loans by issuing debt through the FHLBank Office of Finance, for which all of the FHLBanks are jointly liable. The federal government does not explicitly guarantee the debt they issue, but (as the SEC rules reflect), it is widely believed that the government would step in to protect that debt if needed.[145]

---

[142] Data supplied by the Investment Company Institute (ICI). A number of other sources understate the full effect of the rule by relying on SEC data that breaks money market mutual funds into three categories, prime, government and tax-exempt. Nellie Liang, *Why Congress shouldn't roll back the SEC's money market rules*, BROOKINGS INST., Jan. 12, 2018, https://www.brookings.edu/blog/up-front/2018/01/12/why-congress-shouldnt-roll-back-the-secs-money-market-rules/; Catherine Chen, Gabriele La Spada, Philip Mulder, Neha Shah, *Money Market Funds and the New SEC Regulation*, FED. RES. BANK OF N.Y. LIBERTY STREET ECONS., March 20, 2017, https://libertystreeteconomics.newyorkfed.org/2017/03/money-market-funds-and-the-new-sec-regulation.html; U.S. SEC. AND EXCHANGE COMMISSION, *Money Market Fund Statistics*, Sept. 20, 2017, https://www.sec.gov/divisions/investment/mmf-statistics.shtml. The challenge is that prime funds held by retail investors were not affected by the reform, and hence there was little change in the value of such funds outstanding. The more granular data from the ICI makes this plain.

[143] Id.

[144] FED. RES., Financial Stability Report (Nov. 2018), at 4-4, https://www.federalreserve.gov/publications/files/financial-stability-report-201811.pdf; Nellie Liang, *Why Congress shouldn't roll back the SEC's money market rules*, BROOKINGS, Jan. 12, 2018, https://www.brookings.edu/blog/up-front/2018/01/12/why-congress-shouldnt-roll-back-the-secs-money-market-rules/.

[145] For more information about the history of the FHLBanks, what they do, and how they have evolved alongside changes in banking, see Kathryn Judge, *Three Discount Windows*, 99 CORNELL L. REV. 795 (2014).

Between the end of 2015 and the end of 2017, the value of short-term floating notes issued by the FHLBank system escalated from $80 billion (8.9% of total bonds and notes outstanding) to $297 billion (29.2%). In other words, the FHLBanks more than tripled their relative reliance on short-term debt, the type of instrument most useful to money market funds.[146] The overall size of the FHLBanks also grew during this period.[147] This growth was in part a byproduct of the demand for FHLBank's short-term debt as a result of the SEC's reforms to money market mutual funds, but it was also a response to new liquidity requirements being imposed on banks that increased their demand for longer term funding of the kind the FHLBanks can provide.[148] There was thus an interaction between the SEC's reforms and new rules promulgated by the Basel Committee and implemented by the Federal Reserve that collectively brought about the changes on the two sides of the balance sheet of the FHLBank system.

Putting these pieces together, the primary effect of the SEC's money market mutual fund reforms seems to have been to interject the FHLBanks between banks and money market mutual funds. Instead of raising capital by issuing short-term debt obligations that were then held by money market mutual funds, banks today borrow more from FHLBanks. The FHLBanks fund these additional loans to member banks by issuing additional short-term debt of the kind that can be held by government money market mutual funds. The FHLBank system is larger, and is exposed to a greater maturity mismatch, as a result of these changes. Institutional holders of money market mutual funds have accepted a relatively modest decrease in the rate of return they earn, but otherwise are holding effectively the same product they were before the reforms.[149]

4. Some reflections

There are a range of issues at stake in the changed landscape brought about by the SEC's money market reforms. As a threshold matter, the events leading up to 2008 are relevant to the analysis here. Money market funds were a core component of the shadow banking system, and facilitated the capacity of that system to use short-term money-like

---

[146] Claude Lopez, Jonathan Adams-Kane, Elham Saeidinezhad, & Jakob Wilhelmus, *Macroprudential Policy and Financial Stability: Where Do We Stand*, MILKEN INST. (March 2018), 17, https://assets1c.milkeninstitute.org/assets/Publication/ResearchReport/PDF/MI-Macroprud-Policy-WEB-FINAL.pdf.

[147] Id. at 18.

[148] Banks' increased demand for FHLBank advances came, in significant part, from large banks now having to comply with a new liquidity coverage ratio. The two outcomes are codetermined, however, in the sense that the increased demand for FHLBank liabilities reduces their funding costs, enabling them to provide advances to banks on more attractive terms. For a discussion of this interaction, see Claude Lopez, Jonathan Adams-Kane, Elham Saeidinezhad, & Jakob Wilhelmus, *Macroprudential Policy and Financial Stability: Where Do We Stand*, MILKEN INST. (March 2018), 17, https://assets1c.milkeninstitute.org/assets/Publication/ResearchReport/PDF/MI-Macroprud-Policy-WEB-FINAL.pdf.

[149] The magnitude of the decline has been moderated both by the fact that most have shifted into government funds that are relatively more risky (those holding agency debt like that issued by the Federal Home Loan banks rather than just Treasuries, and by the way the FHLBAnks' increased issuance of short-term instruments may have helped mute a decline in the return on eligible instruments as a result of the increased demand. Stefean Gissler & Gorghan Narajabad, *The Increased Role of the Federal Home Loan Bank System in Funding Markets, Part 2: Recent Trends and Potential Drivers*, FED. RES., October 18, 2017, https://www.federalreserve.gov/econres/notes/feds-notes/the-increased-role-of-the-federal-home-loan-bank-system-in-funding-markets-part-2-20171018.htm.

liabilities to fund longer term illiquid assets like home loans. They did not grow in the "shadows" in the sense of being out of sight. Their growth was widely observed, discussed, and facilitated by the SEC regulations.[150] That money market funds could serve as a substitute for bank deposits was also obvious and discussed when they first arose. They were in the shadow only in the (very important) sense of being outside the prudential regulatory scheme governing banks and other institutions known to pose systemic risks. This was both because of, and a contributing factor to, the failure of policy makers to appreciate their systemic significance and how they might accentuate a crisis until those events actually came to pass.

The decisions by the Federal Reserve and Treasury Department to stretch their legal authority to rescue money market funds goes to the nub of some of the most contested issues in financial regulation. It has become popular to attribute all of the problems that arose in the financial system prior to the Crisis to expectations of government bailouts, and to further suggest that if the government can only commit to a no bail-out policy, then market discipline will eliminate many of the problems financial regulation is designed to resolve. And those who favor strong ex ante regulation tend to focus on banks, as reflected in proposals for far higher capital requirements than those required by Basel III. Money market funds embody the limits of both approaches. The more stringently banks are regulated, the more economic reward there is for finding ways to replicate their services outside the perimeter of prudential regulation. At the same time, because of interconnections among markets and institutions, dysfunction in one area can have significant spillover effects on others, and eventually on the real economy. Hence, apart from the constitutional difficulty of trying to tie the hands of a future Congress, there is the policy challenge that when governments intervene during periods of systemic distress, they are often doing so to mitigate spillover effects. In the case of money market mutual funds, it was not the holders of those funds that the government was seeking to protect. They were the indirect beneficiaries of the government's effort to protect the role those funds had come to play in the cash management systems of nonfinancial industrials and other markets. Market discipline can never suffice in the presence of large externalities.

Turning to the reforms, the effects are mixed. Money market mutual funds probably are more stable as a result of the reforms, and the potential for money market mutual funds to serve as an amplifying mechanism through which an adverse development (like the failure of Lehman Brothers) triggers dysfunction in other markets (inhibiting the ability of Ford to issue commercial paper) has probably been reduced. This has happened, however, by increasing the government footprint. Government guarantees, even if implicit, often help enhance stability. But they can also undermine market discipline and make taxpayer losses more likely. The increased liquidity mismatch being borne by the FHLBanks and increased size of that system also raise a host of questions about their oversight and operations.[151]

Our aim here is not to resolve these policy questions, but merely to point to the fact that these are among the most important, and contestable, questions raised by the actual effect of the SEC's reforms. Nonetheless, the they were not among the many, many issues debated among policy makers, industry participants, and other parties before the reforms

---

[150] See Paul Mahoney, *Deregulation and the Subprime Crisis*, 104 VA. L. REV. 2235 (April 2018).
[151] Stanley Fischer, *An Assessment of Financial Stability in the United States*, Remarks, BANK FOR INT'L SETTLEMENTS, June 27, 2017, https://www.bis.org/review/r170704b.pdf.

were adopted. Despite the years of study and debate, the possibility that the FHLBank system would grow, and assume additional liquidity risk, to satisfy growing demand for government money market funds was not even mentioned in the nearly 900 pages of and 2500 plus footnotes in the Final Release.

It would be easy to fault the SEC for this. There are reasons to be concerned that its institutional inclination to see the world through the lens of a market regulator prevented it from appreciating the conflicting nature of its aims (seeking to making prime institutional money market funds less money like without scaring off holders who held the shares precisely because they were money like) and led it to overestimate the potential role for market discipline as a corrective.[152] But the SEC was not alone in its failure. One aim of the lengthy, resource-intensive process the SEC undertook before adopting the reforms was to provide it with insights from market participants, academics, and other informed observers so that it could gather the collective wisdom and improve the rule it issued accordingly. Although market participants may have had reasons to downplay the enhanced role the FHLBanks might play, that outcome also depended on the willingness of individual FHLBanks to issue more short-term debt and increase the size of their balance sheets, something that no one could have taken for granted at the time. Put differently, if this silence represents a failure, it is a failure of processes meant to inform the SEC not one specific to the institutional competence of the SEC as a body.

Also noteworthy is that now that policy makers and others actually have high-quality, accurate information about the actual effects of the reforms and the policy issues they raise, the discussion is largely closed. Some policy makers, researchers and think tanks have drawn attention to these dynamics, but there is little concerted discussion of whether the changes actually wrought by the SEC reforms are desirable. The frictions that would impede any change to the new rules, and exhaustion from the effort already expended, are likely among the factors contributing to this relative dearth of discussion.

Taking a step back to consider these two case studies, and the range of other consequences flowing from the reforms following the Crisis-era reforms, it is clear that there are a lot of different issues on the table. Substantive questions abound. We know a lot more than we did a decade ago about how the market will respond to particular interventions, how those interventions interact with each other, and the new challenges they create. For example, to facilitate netting and promote transparency, the United States and other countries now require standardized derivatives to be cleared through a centralized exchange. Forced clearing of standardized derivatives may have yielded many of the expected gains, but they also produced new sites of systemic risk that were not adequately addressed in the first round of reforms.[153] The compelled expansion of centralized clearing has also raised other questions, like whether reduced interbank discipline is a good thing or the implications of the global monopolies some centralized clearing parties enjoy with respect to a number of products.[154] The Volcker Rule, a provision of the Dodd-Frank Act which prohibits banks from engaging in proprietary trading, was controversial even when adopted, as many questioned whether activity that was not obviously tied to the causes of the

---

[152] Kathryn Judge, *Information Gaps and Shadow Banking*, 103 VA. L. REV. 411 (May 2017); Kathryn Judge, *Investor-Driven Innovation*, 8 HARVARD BUS. L. REV. 291 (Spring 2018).
[153] [citation]
[154] [citations]

crisis should be targeted for reform.[155] The rule took years to finalize, is massively complex, and imposes significant compliance costs on banks. Paul Volcker has bemoaned this process and the result, and yet others have found new ways of conceptualizing the rule and its virtues.[156] Just as reflected in the case study of capital requirements, it often takes time to understand why a rule is working even when it yields real benefits. And unintended consequences can be both good and bad.

The point is not to seek to answer any of these difficult questions but to highlight the gap between the discourse that was had at the time most of these rules were first adopted and the actual issues at stake in those discussions. Information is always lacking, and dynamism changes things even when information was good. At the same time, as reflected in the resistance to recent efforts to reform the Volcker Rule and the lack of any effort to repeal provisions of the Dodd-Frank Act that the financial industry opposed initially, once banks and others invest the significant resources needed to comply with a new requirement, they don't necessarily want the rules to again change anytime soon.[157] The law should probably not, even if it could, seek to make constant incremental changes in response to every new development in the market.

Another thing that these case studies make clear is the incredible scale of the public and private resources invested at the time a new rule is proposed and adopted, despite the often limited information available at that time. As John Coates noted with reference to quantified cost-benefit analyses, among the reasons to question its utility is that has never been "shown to pass its own test—that is, to be likely to result in benefits that outweigh its costs."[158] And the related issue that because so much debate occurs at a point in time when information about the actual effects of a rule are limited, the degree of public buy-in and legitimacy conferred by the process is questionable.

As the range and magnitude of these issues reflects, putting dynamism, complexity, and unknowns of finance center stage can provide a very different and much needed perspective on the challenges financial regulation should seek to address, the types of tools most likely to be effective in achieving those aims, and the limits of regulation, in addition to the process-related dynamics that are the focus of the analysis here. The next Part touches on the substantive and procedural issues at stake to draw out implications, while also revealing the limits of trying to solve or eliminate these dynamics within established frames.

---

[155] Douglas J. Elliott, *The Volcker Rule Is Still a Bad Idea*, BROOKINGS INST., March 19, 2012, https://www.brookings.edu/opinions/the-volcker-rule-is-still-a-bad-idea/

[156] [Volcker quotation] [Tarullo at hearing after finalization]

[157] For example, after the Republican wins in 2016, many conservative commentators and think tanks called for the elimination of the Consumer Financial Protection Bureau, but they were not joined in their efforts by the financial industry players that had opposed the formation of the CFPB in the Dodd-Frank Act. Alden Abbot, *Time to Eliminate the Consumer Financial Protection Bureau*, The Heritage Foundation, Feb. 8, 2016, https://www.heritage.org/markets-and-finance/report/time-eliminate-the-consumer-financial-protection-bureau; David Harsanyi, *This Is The Perfect Time To Destroy The Consumer Financial Protection Bureau*, THE FEDERALIST, Nov., 27, 2017, https://thefederalist.com/2017/11/27/perfect-time-destroy-consumer-financial-protection-bureau/.
With respect to efforts to reform the Volcker Rule, see Lalita Clozel, *Banks Say No Thanks to Volcker Rule Changes*, WALL STREET J., Aug., 15, 2018, https://www.wsj.com/articles/banks-say-no-thanks-to-volcker-rule-changes-1534353932.

[158] John C. Coates IV, *Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications*, 124 YALE L. J. 882 (2015) https://www.yalelawjournal.org/article/cost-benefit-analysis-of-financial-regulation

IV. The Limits of Reform within the Existing Regulatory Framework

We are not the first to observe that dynamism, complexity, and unknowns are core features of modern financial systems. Nor are we the first to identify the myriad of challenges they create for financial regulation. Indeed, scholars and policymakers have proposed a variety of substantive and procedural reforms designed to address one or more of these challenges. Yet insofar as these proposals focus on these dynamics in isolation—without considering the complex interactions between them—they are unlikely to yield meaningful or lasting improvements. We begin by demonstrating how putting the relationship between these dynamics front and center exposes the limits of substantive regulatory reforms as a mechanism for addressing these challenges. We then examine the limits of some of the incremental procedural reforms that have been either proposed or adopted in the wake of the Crisis. Understanding the limits of these reforms sets the stage for our claim that a new—Eastern—approach to financial regulation could serve as a critical complement to the established framework: improving both the quality of substantive regulation and the legitimacy of the processes through which it is designed and implemented.

a. The Limits of Substantive Reforms

The focus of this article is on the relationship between the dynamism, complexity, and unknowns at the heart of modern finance and the processes through which finance is regulated. Yet it is difficult to completely disentangle process from substance. In the aftermath of the Crisis, many have asked important questions about whether more onerous substantive regulation is necessary in order to ensure that banks and other financial institutions better serve the interests of society. These questions have spurred ambitious proposals intended to reduce the capacity of these dynamics to threaten systemic stability. The dynamism and complexity of financial markets, for example, have prompted calls for more robust regulation of financial products, including ex ante licensing regimes.[159] The complexity of systemically important banks and other financial institutions, coupled with concerns about the fragility of short-term debt, have also motivated proposals for structural reforms that would simplify banking. These proposals include Adam Levitin's call for "narrow banking"[160] and Morgan Rick's plan for licensing of private money creation.[161] These and other ambitious structural proposals are typically justified on the basis that they could effectively eliminate systemic risk.

On one level, these proposals evidence a growing consensus that dynamism, complexity, and unknowns are significant threats to financial stability. On a more fundamental level, however, these proposals reflect a failure to fully acknowledge how these dynamics combine to undercut the effectiveness of financial regulation. From the development of checking accounts in the 19th century, to the emergence of money market mutual funds in the late 1970s, to the market-based intermediation of the 2000s, the history of finance in the United States is the history of financial regulation and regulatory arbitrage. While the term "shadow banking" many have only been coined after the last crisis, the pattern of financial crises, followed by substantive regulatory reform, spurring the

---

[159] Eric Posner & E. Glen Weyl, *Cost-Benefit Analysis of Financial Regulations: A Response to Criticisms*, 124 YALE L.J. FORUM 246 (2015); Omarova; Awrey].

[160] [Robert E. Litan, WHAT SHOULD BANKS DO? (Brookings Inst. Press, Sept. 1, 1987); Kay; Adam Levitin

[161] Morgan Ricks, THE MONEY PROBLEM (U. Chi. Press, 1st ed., March 8, 2016).

emergence of new forms of financial intermediation and, ultimately, leading to new crises is thus as old as financial regulation itself.[162] Accordingly, there is little in our historical experience to suggest that these new proposals for substantive reform will not succumb to the same pattern—thus driving further structural change, increasing complexity, and yet more unknowns. At the same time, these dynamics are likely to mean that regulators and market participants will lack vital information needed to identify and manage future crises.[163] This, in turn, drives home the reality that today's regulatory reforms are unlikely to prevent the next crisis—and may very well cause it.

Given this historical pattern, one of the most remarkable features of the sweeping post-crisis reforms introduced under the Dodd-Frank Act was how much they focused on the substance of financial regulation. From multi-layered capital adequacy requirements, to mandatory central clearing for derivatives, to the complexities[164] of the Volcker Rule[165], the vast majority of these reforms targeted perceived substantive failures, rather than improving the processes by which financial regulation is made. Predictably, these reforms have largely taken the form of detailed prescriptive rules that take the complexity of the current regulatory regime as a given: thus adding additional layers of complexity to an already complex regulatory rulebook. Accordingly, as Andy Haldane and Vasileios Madouros have observed: "the regulatory response to the crisis has largely been based on the level of thinking that created it. The Tower of Basel, like its near-namesake the Tower of Babel, continues to rise."[166] As a result, these reforms do little to acknowledge the myriad of ways that dynamism, complexity, and unknowns will combine over time to undermine their effectiveness.[167] Making matters worse, some of the reforms accentuate the very dynamics that lead to the Crisis—imposing new costs that will inevitably invite arbitrage-driven structural change, thereby aggravating systemic complexity, and undermining financial stability.

All this is not to suggest that the substance of financial regulation is unimportant. Dynamism, complexity, and unknowns—along with the interactions among them—all have substantive implications, which we may well explore further in future work. Yet these dynamics also mean that substance alone is insufficient. As we have seen, substantive regulation will almost inevitably trigger changes in the financial system. Over time, these changes will erode the effectiveness of this regulation. They may also have significant implications in terms of the most desirable substance of regulation. Even in a static state,

---

[162] Hugh Rockoff, *It Is Always the Shadow Banks: The Failures that Ignited America's Greatest Financial Panics* (Apr. 29, 2016) (unpublished manuscript) (on file with author).

[163] As one of us has written about previously, information gaps may accentuate fragility and impede timely and proportionate government responses. Kathryn Judge, *Fragmentation Nodes: A Study in Financial Innovation, Complexity and Systemic Risk*, 64 STANFORD L. REV. 101 (2012).

[164] See Robin Greenwood et al, *Strengthening and Streamlining Bank Capital Regulation*, BROOKINGS PAPERS ON EON. ACTIVITIES (Sept. 2017), https://www.brookings.edu/wp-content/uploads/2017/09/6_greenwoodetal.pdf. (explaining how the post-crisis rules impose multiple capital constraints and the drawbacks of doing so).

[165] [See supra Part I._.]

[166] Andrew G. Haldane, Exec. Dir., & Mr Vasileios Madouros, Economist, Bank of Eng., Speech at the Federal Reserve Bank of Kansas City's 366th economic policy symposium: *The changing policy landscape, The Dog and Frisbee* (Aug. 31, 2012), https://www.bis.org/review/r120905a.pdf.

[167] Notably, this holds even when a rule can be justified in the first instance given the incomplete information available to policy makers when adopting these reforms.

complexity and unknowns make identifying the optimal form and content of regulation extremely difficult. Importantly, effective processes address both of these challenges: enabling policy makers to continuously monitor these changes, better understand the underlying causal dynamics, and gather and disseminate information about what regulatory approaches work and which do not. Effective processes—based on transparency, engagement, and consultation—also play an key role in endowing substantive regulation with legitimacy. Put bluntly, without good processes, the combination of dynamism, complexity, and unknowns mean it is very unlikely that we will see effective or legitimate substantive regulation.

b. The Limits of Incremental Procedural Reforms

The limits of substantive regulation point us in the direction of reforms to the existing procedural framework. This Part examines some of the incremental reforms that have or could be made to this framework to reduce the mismatch between finance and financial regulation. It also considers some of the ideas that have been proposed or are presently at work in other domains that could help bridge this gap. This examination shows how some existing proposals and rules can be reframed as helping to address the regulatory challenges posed by the dynamism, complexity, and unknowns of modern finance. More importantly, however, this examination reveals that such incremental reforms unlikely to have a significant impact without more wholesale changes in the way we think about financial regulation. In Part V, we therefore sketch out our vision for a more holistic approach to financial regulation and identify the more radical reforms to existing institutions and processes necessary to institutionalize this approach.

1. *Data Standardization*

One avenue that would seem to have promise in tackling the challenges posed by dynamism, complexity, and unknowns is for policymakers to take better advantage of technological advancements in the realm of data collection and analysis. A lack of comprehensive real-time information was identified not only as one of the underlying causes of the Crisis, but also—and crucially—one of the reasons why both market participants and regulators were slow to understand and respond to it. Higher levels of data standardization could improve help improve information generation, management, and analysis for both market participants and regulators and facilitate the transfer of information between them—thus reducing information gaps. Standardization might also help cut through complexity. Accordingly, while data standardization by no mean eliminates these dynamics, it is exactly the type of modest reform that could nevertheless yield meaningful improvements. The current state of play with respect to data standardization is therefore interesting and important.

In the wake of the Crisis, there have been a number of initiatives designed to leverage new technologies to collect and analyze data and to standardize data standards across different regulatory authorities and jurisdictions. A prominent example is the legal entity identifier (LEI) initiative. An LEI is a 20-character, alpha-numeric code that connects to key reference information about legal entities participating in financial transactions. Each LEI contains information about an entity's ownership structure and thus answers the

questions of 'who is who' and 'who owns whom'. Over a longer time horizon, this information could be integrated with unique product identifiers (UPIs) linked to key reference information about individual financial products—from basic equity and debt, to derivatives, and other more exotic instruments—thus answering the question of 'who owns what'. LEIs and UPIs would then work in tandem: with the former capturing information about the counterparties to each financial transaction, and the latter the salient details of the transactions themselves.[168]

In theory, these and other new technologies, along with data standards more generally, hold out a number of potentially significant benefits. As a preliminary matter, more granular and standardized data can help regulators aggregate, manipulate, and compare firm-level data with the objective of identifying potential microprudential risks. This data can then be aggregated to enable regulators to better identify and monitor potential time series and cross-sectoral risks and evaluate their potential macroprudential impact. More effective use of new technologies, along with more comprehensive data standardization, would thus give regulators more lead time to design effective, efficient, and appropriately tailored ways of addressing these risks. For the same reasons, it would also improve crisis management: helping to avoid future Lehman-type debacles. Lastly, data standardization facilitates data sharing across regulatory authorities and jurisdictions. Together, technology and data standards can thus be viewed as the key building blocks of a more accurate and complete map of the myriad of complex and dynamic interactions within the financial system. In turn, this map can enhance regulators' understanding, leading to better regulation and a more resilient financial system.

There is no doubt that some considerable progress has been made in employing technology and data standards to cut through the dynamism, complexity, and unknowns of the financial system.[169] At the same time, this progress has been "slow, hard won, and, in many areas, illusive."[170] There are several reasons for the relatively modest pace of reforms in this area: including entrenched collective action problems, positive externalities, governance, and other incentive problems.[171] This frames an important point. Data standardization does not seem like a particularly big change—especially when compared against its significant and largely incontrovertible benefits. So why haven't when seen more progress in the wake of the Crisis? At least part of the answer, in our view, is that the benefits of technology and data standardization only become fully apparent once we adopt a deeper, more holistic understanding of financial regulation. Until this understanding takes root, we are therefore unlikely to see real impetus for reform.

2. Stress Testing

One of the most important Crisis-era regulatory innovations is "stress testing". Stress testing involves the use of hypothetical scenarios involving significant economic and financial shocks to measure a bank's health and identify potential weaknesses on its balance sheet. The first stress tests were conducted by the Federal Reserve in 2009 to determine whether

---

[168] Armour et al., *supra* note [?], ch. 28.
[169] [Derivatives example].
[170] Richard Berner & Kathryn Judge, *The Data Standardization Challenge*, COLUMBIA L. AND ECON. WORKING PAPER NO. 598 (January 27, 2019), 4.
[171] Id.

the largest bank holding companies held sufficient capital. Today, these stress tests involve two separate but complementary processes: the Dodd-Frank mandated stress tests (DFAST) and the Comprehensive Capital Analysis and Review (CCAR). Where these tests reveal significant weaknesses, banks may be prohibited from making distributions to shareholders, thereby increasing their capital. These tests share some of the characteristics long associated with bank supervision, including their forward-looking approach to assessing a bank's risk management capabilities. In contrast to supervision, however, which is a highly confidential process, the stress test process leads ultimately to meaningful public disclosures. Additionally, although still requiring a degree of judgment, the stress testing process is not nearly as broad or discretionary as supervision traditionally has been.

The fact that stress testing become commonplace in the wake of the Crisis might seem to suggest a growing appreciation of dynamism and unknowns, as these forward-looking exercises can illuminate weaknesses and other dynamics not readily identified in more traditional approaches to supervision or capital regulation. In ways, they have helped. Most notably, by effectively making capital requirements more responsive to the unique risks a bank has assumed, and how they may play out when things go very wrong, they introduce helpful dynamism into the prudential regulatory regime for the largest U.S. banks.

However, the way the results of these stress test have been framed suggests that, rather promoting a more nuanced understanding of what can and cannot known, they may instead be feeding hubris akin to that which delayed recognition of the last crisis.[172] When announcing the results of the 2017 tests, for example, then-Governor Jerome Powell announced: "This year's results show that, even during a severe recession, our large banks would remain well capitalized…. This would allow them to lend throughout the economic cycle, and support households and businesses when times are tough."[173] Other leading figures have rightfully questioned these conclusions. Former Treasury Secretary Lawrence Summers recently opined that the fact "that recent stress tests estimate that if GDP drops 6.25 percent, unemployment doubles, the stock market halves, and real estate falls by 25 to 30 percent, then capital losses would be insufficient to trigger 'prompt corrective action … is … more of a comment on the inadequacies of the stress test procedures, than on the soundness of the banks."[174]

Ultimately, the stress tests are just that—a test, one that relies heavily on models and assumptions that inevitably fail to capture the full range of dynamics that will be at play in the thick of the next recession or financial crisis. Accordingly, while there is no doubt that these tests represent an important new tool for addressing dynamism and unknowns, the notion that they could eliminate these challenges rather than illuminate their true scale suggests an ongoing failure to appreciate that constant change, complexity, and unknowns are inherent to finance today. What is more, these tests do not make banks themselves less complex, and dynamism and unknowns remain pervasive even after the stress testing process. This is not a fault of stress testing itself. Rather, it reflects the fundamental tension

---

[172] Paul Krugman, *The 2008 Financial Crisis as Seen From the Top*, N.Y. TIMES (April 16, 2019),
[173] Press Release, *Federal Reserve Board Releases Results of Supervisory Bank Stress Tests*, FED. RES., June 2017, https://www.federalreserve.gov/newsevents/pressreleases/bcreg20170622a.htm.
[174] Lawrence H. Summers, *Larry Summers: 5 suggestions for avoiding another banking collapse*, WASH. POST, May 22, 2017, https://www.washingtonpost.com/news/wonk/wp/2017/05/22/larry-summers-5-suggestions-for-avoiding-another-banking-collapse/?noredirect=on&utm_term=.08135b761dec (crediting his colleague Jeremy Bulow with first making this point).

between a dynamic and complex financial system characterized by significant unknowns and the static rule-based system that still serves as the backbone of financial regulation.

3. *Automatic Sunset Clauses*

Financial regulation often has the appearance of single shot game: with policy makers identify a perceived substantive failure, going through some process of engagement and deliberation, and then designing and implementing a rule aimed at eliminating this failure. This is especially the case at the domestic level, where significant regulatory reforms are often only implemented in response to significant scandals or crises. The problem, of course, is that the dynamism of finance means that regulation adopted at any particular moment in time may not be optimal at any future point. Moreover, complexity and unknowns—together with our own priors and competing objectives—may mean that regulation fails to advance desired objectives right from the start. This is especially the case for crisis-driven regulation: where our incomplete understanding of the problem, together with the political, economic, and other exigencies of the crisis, often mean that regulation misses the intended target.[175]

Scholars have long been interested in this dysfunctional pattern of crisis-driven regulation and have proposed a range of different mechanisms for addressing it. One of the most prominent proposals, advanced by Professor Roberta Romano, is to impose automatic review and "sunset" clauses on regulation adopted in response to a financial crisis. In effect, these clauses would mandate the review and reconsideration of the legislative and regulatory response to a crisis at some future point in time. This would be coupled with the automatic repeal of this regulation unless the review satisfied policymakers of its efficacy. As Romano observes, sunset clauses are in part a response to the dynamism of the financial system and the existence of pervasive unknowns. Specifically, automatic reviews theoretically enable lawmakers to incorporate new learning about the causes of a crisis, the (unintended) consequences of crisis-driven reforms, and any changes to the structure of the financial system over the period following the crisis.[176] They could also force reconsideration of the types of regulation that are appropriate in an environment that is less charged and perhaps more objective than the political economy that pervades immediately after a crisis or scandal.[177]

Given the obvious parallels between Romano's and our concerns, examining why we do not see automatic sunset clauses as a solution, or even a helpful step in the right direction, further illuminates the nature of the challenges we face. The first challenge is that while turning a single shot game into a two-shot game may help facilitate post-adoption learning and assessment, it does little to respond to the nature or pace of change within the financial

---

[175] John C. Coffee, *The Political Economy of Dodd-Frank: Why Financial Reform Tends to be Frustrated and Systemic Risk Perpetuated*, 97 Cornell L. Rev. 1019 (July 2012); Roberta Romano, *Regulating in the Dark*, YALE L & ECON. RESEARCH PAPER NO. 442 (2012).

[176] Roberta Romano, *Regulating in the Dark*, YALE L & ECON. RESEARCH PAPER NO. 442 (2012), 2; see also Roberta Romano, *The Sarbanes-Oxley Act and the Making of Quack Corporate Governance*, 114 YALE L.J. 1521 (2005).

[177] Roberta Romano, *The Sarbanes-Oxley Act and the Making of Quack Corporate Governance,* 114 YALE L. J. 1521, 1600-01 (arguing that sunsets would "mitigate the problem of quasi-permanent regulatory blunders produced by emergency legislation that burdens financial markets, thereby impeding capital development and growth, without any discernible compensating benefit").

system in the longer run. Along the same vein, while unknowns may be particularly problematic for crisis-driven regulation, they are also highly problematic for financial regulation adopted under far less volatile political and economic conditions. Nor does it address the challenge—that we too must address—that regulated entities do not necessarily want constant change; a sticky regime of slightly suboptimal rules may actually produce fewer inefficiencies and lower costs than constant efforts to update and optimize the regulatory rulebook. This is particularly true given that a recognized cost of the vetogate design is the opportunity for logrolling. Our biggest concern, however, is the net effect on regulation. Especially once we factor in the regulatory sine curve, automatic sunsets would only serve to reinforce the deregulatory bias already build into financial regulation. A default rule of less regulation cannot assure smarter regulation. This is not to rule out sunsets as a tool that may, at times, be warranted—but it does suggest that it they cannot suffice as a response to the core challenges posed by the combination of dynamism, complexity, and pervasive unknowns.

4. Experimentalism

Other scholars have focused on the way regulation is already changing in other fields in response to many of the same challenges facing financial regulation. One of the more important contributions in this vein comes from Charles Sabel and William Simon, who have both observed and advocated for "experimentalism" as an important way of dealing with uncertainty and other unknowns.[178] The experimentalist framework that Sabel and Simon identify as on the rise has a hub and spoke structure that combines discretion and reporting at the hubs with ongoing revision of the rules in response to new learning. In theory, this type of iterative process can yield real gains in environments—like finance—where specifying the desired outcome, or the best way to achieve it, is difficult to do ex ante but where some centralized mechanism is necessary to coordinate, disseminate, monitor, and enforce regulatory requirements.[179] We very much embrace much of their analysis regarding the challenges facing regulation and the importance of factors like a particular type of pragmatism and empiricism in confronting those challenges. Indeed, the notion of governance mechanisms designed to "compensate for the absence of ex ante knowledge" and promote "rapid, deliberate learning from parallel and collaborative exploration of new risks and possibilities" resonates strongly in light of the challenges posed by the dynamism, complexity, and unknowns of modern finance.[180]

A closer inspection helps explain not only the limits of experimentalism in this context but also the magnitude of the challenge in finding effective mechanisms for regulating finance. Among other requirements, experimentalism necessitates giving some degree discretion to local authorities or regulated firms. Yet in order to avoid abuse of this discretion, it must be grounded in shared objectives and a degree of mutual trust. It is worth

---

[178] Charles F. Sabel & William H. Simon, *Democratic Experimentalism*, COLUMBIA PUB. L. RESEARCH PAPER NO. 14-549 (June 2017). See also Charles F. Sabel and Jonathan Zeitlin, EXPERIMENTALIST GOVERNANCE IN THE EUROPEAN UNION: TOWARDS A NEW ARCHITECTURE, (OUP Oxford, Reprint ed. 2010), https://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199560530.001.0001/oxfordhb-9780199560530-e-12

[179] [See parallels with Julia Black's work].

[180] [References what is now fn 182] at 2.

noting in this regard that trust is often lacking between regulators and market participants, and within the regulatory community itself—especially in the wake of a scandal or crisis.

Consider, for example, the flexibility that the IRB approach under Basel II gave to the largest banks to use their own risk management systems to establish the amount of capital that they were required to hold. The aim was to overcome the inherent coarseness and backwardness of standardized capital requirements.[181] Although not fully implemented when the Crisis hit, the IRB approach has been viewed by many as a significant contributor to its depth. The U.S. investment banks and largest European banks that were using this approach were among those who fared the worst when the conditions soured. In direct response to these failures, Basel III scales back on the use of IRB, and U.S. lawmakers have gone even further.

Viewed in this light, the emphasis on detailed prescriptive rules in Basel III reflects a backlash against the type of delegated discretion underpinning the IRB approach. In effect, this approach assumed that, with some oversight, banks could be treated as partners in efforts to manage risks. That is not an assumption that lawmakers are likely to embrace again anytime soon. This distrust also extends to the members of the Basel Committee itself. Indeed, the battles at Basel grow in part out of a distrust that individual countries will adequately police banks within their bounds; Congress and the public believe regulators are overly predisposed to go soft on banks and have time and again after crises imposed new checks on regulatory discretion. Without shared incentives and some modicum of good faith, experimentalism becomes difficult to implement.

The environment is changing some, and might change further, but there are other challenges for using experimentalism on a large scale as an answer to the unknowns and dynamism of finance. For experimentalism to succeed, the signals going from spoke to hub must, even if noisy, be probative of the outcomes one is seeking to achieve. Financial markets often don't work like that. One of the reasons that the embrace of IRB in Basel II failed so spectacularly is that most banks and regulators were focused on feedback mechanisms that measured risk during normal times. This contributed to an illusion of stability, one that qualitatively changed risk-taking behavior and the pricing of assets in ways that increased exposure to the tail risks not adequately accounted for in banks' risk models. The feedback, in other words, provided false assurance and signals that were contrary to the outcome that most mattered. There are also reasons to question whether constant updating is the best approach in many of the areas where uncertainty impedes regulatory efficacy in finance, or conversely whether such updating would occur in practice if the guidance is of the type that induces planning and reliance.

Putting these elements together, we see much to like in the spirit and design of experimentalism. On the consumer protection front, for example, such efforts may well be underway and to good effect and it could yet prove helpful with respect to issues of resilience. At this stage, however, close examination of why this model that works so well to

[181] This is not a perfect example of experimentalism, as generalized rules were not revised at the centralized body in light of ongoing learning and the aim was customization alongside collective learning. Nonetheless, when viewed in light of the role of supervisors in monitoring banks' internal processes and often carrying seemingly best practices from one institution to another, the overall regime embodies the core features of experimentalism. It was also adopted in a similar spirit, decentralizing control and providing some discretion to banks and their supervisors to enable ongoing learning and overcome difficulties ex ante specification.

address related challenges in other domains may not currently be helpful for finance serves primarily to highlight the nature and magnitude of the challenge.

V. Eastern Medicine

The previous section explored how we can constructively work around the edges of existing regulatory frameworks to reduce the mismatch between finance and financial regulation. It suggested that, despite our best efforts, this work may not bear much fruit. The upshot of this is that acknowledging complexity, dynamism, and unknowns at the core of finance may ultimately demand a more holistic approach to regulation, combined with more radical reforms to the structure and processes governing financial regulation.

a. Eastern Approaches as a State of Mind

[to come]

b. A Proposal for a State of the Financial Union

For over a century, public commissions, hearings, and investigations have played an important role in the trajectory of US financial regulation and in shaping the complex and often tumultuous relationship between Wall Street and Main Street.[182] Historically, these commissions, hearings, and investigations have often taken place in the immediate aftermath of major financial crises. In fact, each of the three biggest financial crises of the modern era—the Panic of 1907, the Great Crash of 1929, and the global financial crisis of 2007-09—have been followed by Congressional action giving public officials the power to investigate their underlying causes, identify the principal protagonists and, in most cases, develop a blueprint for regulatory reform.

Between 1857 and 1907, the US was gripped by no less than eight major banking crises.[183] In the absence of a fully-fledged central bank, responsibility for managing these crises fell largely to a small group of member-owned clearinghouses, along with private financiers such as J. Piermont Morgan.[184] It was the Panic of 1907—in which Morgan personally organized a private bailout of struggling New York trust companies—that ultimately spurred Congress to examine ways that the federal government might play a role in promoting financial and monetary stability.[185] To this end, Congress established the

---

[182] For a history of the role of Congressional commissions, hearings, and investigations and their role in US law and policy, see Arthur Schlesinger & Roger Bruns (eds.), CONGRESS INVESTIGATES: A DOCUMENTED HISTORY, 1792-1974 (1975).

[183] Charles Calomiris, Marc Flandreau & Luc Laeven, *Political Foundations of the Lender of Last Resort: A Global Historical Narrative*, NAT'L BUREAU OF ECON. RES. WORKING PAPER (September 18, 2015), 29 https://www0.gsb.columbia.edu/faculty/ccalomiris/papers/Political%20Foundations%20of%20the%20LOR .

[184] For a detailed history of these crises, see O.M. Sprague, HISTORY OF CRISIS UNDER THE NATIONAL BANKING SYSTEM (1910). See also Richard Timberlake, *The Central Banking Role of Clearinghouse Associations*, 16:1 J. OF MONEY, BANKING AND CREDIT 1 (1984) and Gary Gorton, *Clearinghouses and the Origins of Central Banking in the United States*, 45:2 J. OF ECON. HIST. 277 (1985).

[185] These trust companies were lightly regulated deposit taking institutions that were not members of the New York clearinghouse. For a description of these trust companies, the New York clearinghouse, and

National Monetary Commission (NMC) to study the US banking system, compare it with the systems in the United Kingdom and Continental Europe, and develop recommendations for reform.[186] This was followed by an investigation of the House Committee on Banking and Currency, then under the chairmanship Arsne Pujo, into the so-called "money trust": the concentration of financial and economic power in the hands of J.P. Morgan and a small network of other Wall Street firms.[187]

Both the NMC and Pujo investigation would leave an indelible mark on the structure and regulation of the US financial system. For its part, the NMC started the US down the long and winding road toward the creation of the Federal Reserve System.[188] The Pujo investigation, meanwhile, "frightened the nation with its awesome, if inconclusive statistics on the power of Wall Street over the nation's economy"[189], thus paving the way for sweeping legislative reforms under the Federal Reserve Act of 1913, Clayton Antitrust Act of 1914, and Federal Trade Commission Act of 1914.[190] The Pujo investigation would also become etched in the public consciousness—and go on to inspire future generations of US policymakers[191]—following the publication of Louis Brandeis's popular and influential book, *Other People's Money*, which extensively and meticulously chronicled the investigation's findings.[192]

The impact of the Pujo investigation and Brandeis's exposé was still reverberating almost two decades later when the Senate Banking and Currency Committee launched an investigation into the conduct and practices within the US securities industry that had contributed to the Great Crash of 1929.[193] Best known for its determined chief counsel, Ferdinand Pecora, the subsequent hearings exposed a wide variety of Wall Street misdeeds: from undisclosed loans to senior bank officers, to clandestine pool operations designed to support the price of bank stocks, to deeply engrained conflicts of interest between commercial banks and affiliated securities dealers.[194] The Pecora hearings made national headlines[195] and shocked the nation with "its unseemly association of money and power".[196] The success of these hearings in capturing the public's attention has been attributed to

---

their role in the Panic of 1907, see Roger Lowenstein, AMERICA'S BANK: THE EPIC STRUGGLE TO CREATE THE FEDERAL RESERVE (2016), chapter 4.

[186] The complete collection of the NMC's publications is available from the Federal Reserve Bank of St. Louis, https://fraser.stlouisfed.org/series/1493.

[187] See *Report of the Committee Appointed Pursuant to House Resolutions 429 and 504 (1912-1913)*, Washington: Government Printing Office (February 28, 1913).

[188] For a history of the NMC and its influence in the design of the Federal Reserve System, see Lowenstein, *supra* note [?].

[189] Gabriel Kolko, *The Triumph of Conservatism* 220 (1963), cited in Mark Roe, *A Political Theory of American Corporate Finance*, 91 COLUMBIA L. REV. 10 (1991).

[190] See Andrew Hartlage, *Never Again, Again: A Functional Examination of the Financial Crisis Inquiry Commission*, 111 Mich. L. Rev. 1183, 1185 (2013).

[191] Including Ferdinand Pecora; see Roe, *supra* note [?], 38-39.

[192] See Louis Brandeis, OTHER PEOPLE'S MONEY: AND HOW THE BANKERS USE IT (1914).

[193] See Senate Resolution 84 (March 4, 1932), 72nd Congress. For a history of the Pecora hearings, see Michael Perino, THE HELLHOUND OF WALL STREET: HOW FERDINAND PECORA'S INVESTIGATION OF THE GREAT CRASH FOREVER CHANGED AMERICAN FINANCE (2010).

[194] See Report of the Committee on Banking and Currency Pursuant to Senate Resolution 84 (72nd Congress) and Senate Resolutions 56 and 97 (73rd Congress).

[195] Donald Ritchie, "The Pecora Wall Street Expose", in Schlesinger & Bruns, *supra* note [?], 2563.

[196] Ron Chernow, "Where is Our Ferdinand Pecora?", *New York Times* (January 5, 2009).

Pecora's "skill at collecting, analysing, and assimilating large quantities of data"[197], along with his "expert and often withering questions"[198] of the witnesses called to testify before the Committee. Pecora also benefited from impeccable timing.[199] The hearings took place at the nadir of the Great Depression. Charles Mitchell, the controversial chairman of National City Bank, testified a week after the governor of Michigan declared a state-wide bank holiday that triggered the banking crisis of 1933.[200] Unlike the Pujo investigation, Pecora also benefited from broad subpoena powers and the enthusiastic support of President Roosevelt.[201] The confluence of these factors kept the Pecora hearings in the public spotlight for over a year and helped galvanize support for Roosevelt's New Deal reforms.

In hindsight, the influence of the Pecora hearings on the structure and regulation of the US financial services industry can be observed across at least two dimensions. First, while the Committee's final report did not include any specific policy recommendations, several members of Pecora's staff played a direct role in the design of the Securities Acts of 1933 and 1934 that laid the foundations for federal oversight of US securities markets.[202] Second, the unsavoury conduct and pervasive conflicts of interest revealed by Pecora were important political drivers of several specific New Deal reforms: including the prohibition against loans to bank officers, the expansion of the power of federal authorities to remove bank directors and, most importantly, the structural separation of commercial and investment banking under the Glass-Steagall Act.[203] By shining a spotlight on Wall Street's complex and opaque inner workings, the Pecora hearings thus played an important role in shaping what would become the central pillars of US securities and banking regulation for most of the 20th century.

The Pecora hearings were viewed by many as a model for the Financial Crisis Inquiry Commission (FCIC) authorized by Congress to identify and analyse the causes of the recent Crisis.[204] However, while the FCIC's final report garnered significant media attention—even spending two weeks on the *New York Times* Best Sellers List—the comparisons would essentially end there. Despite being comprised of commissioners "with national recognition and significant depth of experience in such fields as banking, regulation of markets, taxation, finance, economics, consumer protection, and housing"[205] who "reviewed millions of pages of documents, interviewed more than 700 witnesses, and held 19 days of public hearings"[206], the FCIC's final report was heavily criticized for not revealing any new information about the causes of the Crisis.[207] The FCIC was also plagued by

---

[197] Ritchie, *supra* note [?], 2569.

[198] Chernow, *supra* note [?].

[199] See Perino, *supra* note [?].

[200] Id.

[201] Ritchie, *supra* note [?], 2256.

[202] Although both Pecora and his staff were reportedly "bitterly disappointed" with the final result; Ritchie, *supra* note [?], 2576 (reproducing an editorial written by a member of Pecora's staff).

[203] Calomiris, *supra* note [?], 552-553; Roe, *supra* note [?], 38-39, and Perino, *supra* note [?].

[204] See for example, Chernow, *supra* note [?].

[205] Fraud Enforcement and Recovery Act of 2009, PUB. L. NO. 111-21, § 5(B)(2)(A), 123 STAT. 1617, 1626.

[206] FINAL REPORT OF THE NATIONAL COMMISSION ON THE CAUSES OF THE FINANCIAL AND ECONOMIC CRISIS IN THE UNITED STATES (January 2011), xi.

[207] See for example, Annie Lowrey, "The Financial Crisis Reading List: Do We Really Need an Official Government Report Telling Us How We Got into This Mess?", *Slate* (December 16, 2010),

political infighting: with several commissioners ultimately deciding to produce two separate "dissenting opinions" to the final report.[208] And perhaps most importantly, the FCIC would play almost no role in shaping the post-crisis regulatory agenda. Indeed, less than a month after Congress authorized the creation of the FCIC, the Obama Administration released a white paper setting out its priorities for regulatory reform.[209] This white paper provided the blueprint for what would become the Dodd-Frank Wall Street Reform and Consumer Protection Act—which was passed almost six months before the statutory deadline for the release of FCIC's final report. In all likelihood, the FCIC will thus go down in history as a lost opportunity to reflect more deeply on the causes of the Crisis and how better regulation might help prevent the next one.

In both their successes and failures, the NMC, Pujo investigation, Pecora hearings, and FCIC hold out valuable insights into how we might improve the processes governing the formulation, evaluation, and reform of financial regulation. Perhaps most importantly, they suggest that—much like an annual physical—periodic examinations of the state of finance and financial regulation provide policymakers with an opportunity to evaluate recent developments, proactively identify potential risks, and address them before they threaten the stability of the financial system. This observation has a clear an important policy implication: rather than simply holding these examinations in the wake of financial crises, we should seek to make them a regular feature of financial regulation.

Returning to the processes through which the U.S. Dietary Guidelines are promulgated, an example of a more holistic approach to health promotion, could be another useful analogy.[210] The U.S. Dietary Guidelines are promulgated every five years by the Department of Health and Human Services (HHS) and Department of Agriculture (USDA).[211] They are used not only to provide guidance to Americans about the types of foods they should be eating and in what amounts, but also to inform an array of other federal, state, and local food policies, such as what can go into a subsidized student lunch.

Early in the process, the USDA and HHS pust together a Dietary Guidelines Advisory Committee consisting of doctors and public health officials with diverse specialties to review the previous set of guidelines and make recommendations based on new research and evolving understandings. The 2015 Dietary Guidelines Advisory Committee, for example, spent nearly two years compiling a 400-plus page report summarizing research and making recommendations on a range of issues relevant to the Guidelines. The Committee largely took it upon itself to define the scope of its inquiry, and devoted significant attention to an array of issues beyond the types of foods Americans eat, addressing issues like the environment in which food is consumed, physical activity, and the

---

http://www.slate.com/articles/business/moneybox/2010/12/the_financialcrisis_reading-list.single.html ("Most all of the information going into the report has been public and pored over by economists, Wall Street types, and politicians for a couple of years already.").

[208] See Sewell Chan, "GOP Panelists Dissent on Cause of Crisis", *New York Times* (December 14, 2010).

[209] See White House Press Release, "President Obama to Announce Comprehensive Plan for Regulatory Reform" (June 17, 2009), https://obamawhitehouse.archives.gov/the-press-office/president-obama-announce-comprehensive-plan-regulatory-reform.

[210] See generally https://health.gov/dietaryguidelines/process.asp.

[211] 7 U.S.C. 5341 et seq.

ways different food choices affect the environment.[212] They also have significant support from federal staff to help them compile materials and put together their findings. The USDA and HHS then use the Committee's report along with sources, including input from industry and the public, to formulate the guidelines for the coming five years.

The Dietary Guidelines are different than financial regulation in numerous ways, and the process of putting together and revising those guidelines is not free from controversy. Food experts like Michael Pollan believe that the ability of the industry to sway the guidelines through close ties with the USDA continues to prevent the guidelines from making more forceful recommendation on topics like the hazards of meat consumption.[213] Nonetheless, the process has resulted in Guidelines that evolve in both substance and scope in according with learning. And the publication of the Committee's report means that members of the public and experts like Michael Pollan can more easily hold regulators to account when the Guidelines seem to put industry interests over the public's well-being. One way to integrate the model used for the Guidelines and the successes and failures of earlier financial market commissions would be for Congress could authorize the formation of a commission every ten years to examine and report on the health of the financial system—a *State of the Financial Union*.

This State of the Financial Union would serve two primary functions. First, the commission would serve as a focal point for efforts to improve data gathering and analysis within the fragmented US regulatory community. Like the NMC, the commission would frame questions for research, commission reports on various substantive topics, and engage with senior regulators, industry leaders, public advocacy groups, and other key stakeholders. Taking a page out of the Pecora hearings, the objective of this process would be to marshal a body of facts that would then enable the commission, lawmakers, and the wider public to meaningfully evaluate the contributions of finance to society, the stability of the financial system, and the role of regulation in advancing or undermining public policy objectives.

Second, a well-designed State of the Financial Union would enhance the legitimacy of the policy process. In an environment where most policy decisions are viewed as inherently political, the commission's approach of rigorously gathering and analysing data, engaging with a broad cross-section of stakeholders, and publicly reporting it findings could improve the level of public confidence in how financial regulation is made. The legitimacy of the policy process would be further enhanced by the fact that the commission's deliberations would generally not take place in the thick of the politically charged atmosphere that typically follows a major financial crisis, thus reducing concerns about the distortive impact of the regulatory sine curve and "quack" regulation. Lastly, by explicitly grounding the rationale for the State of the Financial Union in the dynamism, complexity, and unknowns of modern finance, the process would reinforce the view that—rather than signalling a policy failure—periodic re-examination, followed as necessary by thoughtful and measured regulatory reform, is a feature of a heathy financial system.

The ability of the commission to successfully perform these functions would hinge on several key variables. First, the commission would need to have a sufficient level of technical expertise to wade through a large volume of complex data, and to interrogate both the data

[212] Id.

[213] https://www.vox.com/2015/12/16/10227456/michael-pollan-interview

itself and the spin that senior regulators and industry representatives would inevitably attempt to put on it. Second, the commission would need to be sufficiently independent from the cut and thrust of day-to-day politics to avoid the type of ideological divisions that marred the effectiveness of the FCIC. By the same token, there may be a potential trade-off between the commission's independence, on the one hand, and both its democratic legitimacy and effectiveness in influencing the policy process, on the other. Lastly, the commission would need both the human, financial, and other resources to vigorously pursue it mandate. In this respect, one of the most obvious explanations for why the Pecora hearings had more of an impact than the FCIC was the huge disparity in the level of financial support they received from Congress.[214] Clearly, no single variable would guarantee the commission's success. Nevertheless, it is equally clear that only a highly expert, independent, and well-resourced commission can realize the inherent promise of a State of the Financial Union.

Ultimately, of course, the design and implementation a State of the Financial Union would demand that policymakers carefully consider a range of important questions. How should commissioners be selected? Should the commission have a fixed mandate, or should each new commission be tasked with a mandate that reflected the political and economic environment of the times? Should the commission have subpoena powers? Should it be responsible for making specific policy recommendations? What would be the relationship between the commission and the FSOC and OFR? And, perhaps most importantly, what could policymakers do to ensure that the State of the Financial Union was viewed by lawmakers, industry, and the public as an integral part of the policy process? Our objective here is not to explore these questions in any detail. Rather, it is simply to highlight that putting dynamism, complexity, and unknowns at the heart of our understanding of the financial system opens the door to a range of new and potentially worthwhile approaches to financial regulation.

[214] The total cost of the Pecora hearings was just over $250,000 which, when measured as a percentage of GDP, would have been equivalent to $52.8 million in 2009 dollars. In contrast, the total cost of the FCIC was $9.8 million; Hartlage, *supra* note [?], 1187.