

KEYNOTE ADDRESS

TOWARDS MORE SUSTAINABLE AND LESS CRISIS-DRIVEN FINANCIAL REGULATION

STEVEN L. SCHWARCZ*

INTRODUCTION

Most regulatory reform after the global financial crisis represents politically motivated reactions to that crisis. The Dodd-Frank Act, for example, puts much weight on reforming mortgage financing. It's unlikely, though, that the next financial crisis will result from subprime mortgage lending. Indeed, because the financial system is constantly changing, future financial crises are unlikely to resemble, and may have very different causes than, past crises.

We're currently shifting, for example, to shadow banking, which has been estimated as \$67 trillion worldwide.¹ In shadow banking, dis-intermediated modes of financing—including money-market mutual funds, securitization, hedge funds, and repo financing—are replacing traditional bank lending. We need to develop a financial regulatory framework that can anticipate, or at least respond to, future financial crises and a dynamically changing financial system. Traditionally, financial regulation has been tethered to the financial architecture at the time the regulation is promulgated. The Dodd-Frank Act, for example, focuses heavily on the complex mortgage-backed securities and derivatives that are believed to have been triggers of the financial crisis. The Glass-Steagall Act limited the ability of commercial banks to engage in securities underwriting, which was thought to have “fueled the rampant stock speculation preceding the 1929 Crash and

* Stanley A. Star Professor of Law & Business, Duke University School of Law; Founding Director, Duke Global Financial Markets Center. E-mail: schwarz@law.duke.edu. This Keynote Address is copyright © 2014 and is based in part on portions of the author's forthcoming article, “Regulating Financial Change: A Functional Approach.” Support has been provided in part by a gift to Duke Law School from the Eugene T. Bost, Jr. Research Professorship of The Cannon Charitable Trust No. 3.

1. See FIN. STABILITY BD., GLOBAL SHADOW BANKING MONITORING REPORT 3 (2012), http://www.financialstabilityboard.org/publications/r_121118c.pdf (estimating shadow banking's worldwide assets as \$67 trillion in 2011).

contributed to subsequent bank failures.”² The Federal Reserve’s Regulations G, U, T, and X limited margin lending (lending to enable borrowers to purchase publicly traded stock, with the loans secured by the purchased stock), in response to concerns that such lending similarly encouraged stock speculation.³ And the Commodity Exchange Act responded to complaints “that futures traders were manipulating and ‘fixing’ market prices.”⁴

That type of grounded regulation has value as long as it is constantly updated to adapt to changes in the financial architecture.⁵ But without continuous monitoring and updating, financial innovations will escape regulation, and outmoded regulation might inadvertently have unanticipated consequences.

In certain contexts, continuous monitoring and work may be feasible. Witness the ongoing monitoring and updating of the Uniform Commercial Code (UCC), undertaken by the American Law Institute and the Uniform Law Commission.⁶ Being primarily the province of federal law, however, financial regulation is subject to the dysfunctions of Congress—and so, at least in the near future, we cannot depend on reliable, continuous monitoring or updating.

In thinking about regulating our dynamically changing financial system, it may be more useful to focus on the system’s functions rather than on the changing structure of the system that performs those functions. When I was trained as an aerospace engineer, we called this a “black-box” approach, which involves examining the functionality of a process or application without worrying about the details of its internal structure. This approach facilitates the analysis of a highly complex or unknown structure.⁷ To that end, let’s first consider how “microprudential” regulation could be designed to make the financial system function more efficiently. Thereafter, let’s consider the problem of systemic risk—the risk that the failure of financial markets or firms undermines the very ability of the financial system (or parts thereof) to function, thereby harming the real economy by increas-

2. Don More, Note, *The Virtues of Glass-Steagall: An Argument Against Legislative Repeal*, 1991 COLUM. BUS. L. REV. 433, 436 (1991).

3. Lynn A. Stout, *Why the Law Hates Speculators: Regulation and Private Ordering in the Market for OTC Derivatives*, 48 DUKE L.J. 701, 730 (1999).

4. Lynn Stout, *Derivatives and the Legal Origins of the 2008 Credit Crisis*, 1 HARV. BUS. L.J. 1, 17 (2011).

5. Cf. PERRY MEHLING, *THE NEW LOMBARD STREET: HOW THE FED BECAME THE DEALER OF LAST RESORT* 4–5 (2011) (arguing that because economics and finance “largely ignore the sophisticated mechanism that operates to channel cash flows . . . to meet cash commitments,” they have not “been particularly well suited for understanding the [global financial crisis] during which the crucial monetary plumbing broke down . . .”).

6. The Uniform Law Commission’s official name is The National Conference of Commissioners on Uniform State Laws (NCCUSL).

7. Cf. Kai Lyu, *Framing a Theoretical Paradigm to Understand the Modern Financial System: Synthesizing Functions and Laws* (Mar. 1, 2014 draft) (forthcoming doctoral dissertation, Chinese University of Hong Kong) (on file with author) (also taking a functional approach).

ing the cost of capital or decreasing its availability. Regulation intended to protect the financial system as a “system” is commonly referred to as “macroprudential” regulation.

I. MICROPRUDENTIAL REGULATION

How can we design regulation to make the financial system function more efficiently? I’ll first examine the functions of the financial system from an economic standpoint. Thereafter, I’ll examine from the standpoint of a legal scholar how regulation could be designed to increase the efficiency of those functions.

A. *The Functions of the Financial System*

The financial system has several economic functions. The principal function is capital provision, allocation, and deployment (hereinafter, “funding”); that is, the process of aggregating funds from multiple investors and then transferring the funds to firms that can productively use it.⁸ Banks, for example, engage in funding by borrowing money from depositors and (other) investors and then lending the money to firms. Markets are used for funding when issuers sell securities to investors and then either (1) directly use the money (e.g., a firm issuing its own commercial paper or bonds); or (2) more indirectly, transfer the money in structured financing transactions through special-purpose entities (SPEs) to the firm ultimately using the money (usually in exchange for financial or other assets that will be the source of investor repayment).

Economists also identify a range of other functions of the financial system, which tend to center around risk management, behavior monitoring, and information processing.⁹ The risk-management function includes diversifying investment risk in order to maximize the amount of investment. Different investors have different risk tolerances. Optimal diversification will attract both high-risk investors who want high rates of return to compensate for the risk, and lower-risk investors who are satisfied with lower rates of return. Risk management can occur in many ways, including the issuance of securities with senior and subordinated payment priorities and third-party credit supports such as monoline insurance-company surety bonds and other forms of hedging, including credit-default swaps.

The behavior-monitoring function focuses on reducing agency costs. Investors want to align the interests of those firms and their managers, such as by incentivizing managers through the issuance of stock options. Inves-

8. See Robert C. Merton & Zvi Bodie, *A Conceptual Framework for Analyzing the Financial Environment*, in *THE GLOBAL FINANCIAL SYSTEM* 3, 5 (Dwight B. Crane et al. eds., 1995) (discussing the provision, allocation, and deployment of financial capital).

9. Cf. Lyu, *supra* note 7 (synthesizing economic views on the functions of the financial system).

tors sometimes also impose contractual covenants on firms responsible for repayment to help ensure that those firms do not engage in excessively risky activities.

The information-processing function concerns reducing information asymmetry between investors and issuers of securities. Investors and issuers cannot efficiently agree on pricing (e.g., the interest rate on the securities) unless there is full informational transparency. Whereas relationship-banking traditionally helped to ensure that bank lenders knew their customers, market-based financing depends more on the disclosure of information to investors on a transaction-by-transaction basis. That's not efficient when investors individually don't have enough at stake to justify the necessary due diligence. For debt securities, credit ratings help to reduce information asymmetry through an economy of scale; but recent experience suggests that rating agencies—especially in the face of increasing complexity—may sometimes be unable to fully understand and assess the risks.¹⁰

B. Designing Functional Regulation

Next, consider how regulation could be designed to increase the efficiency of the functions described above (“functional regulation”). In general, markets are efficient absent market failures; hence, the purpose of financial regulation is to correct market failures.¹¹ What are the market failures that impede these financial system functions?

To answer that, consider each function. In designing regulation to make funding more efficient, we should focus on whether any market failures impede the ability of the financial system to aggregate funds from multiple investors or to transfer aggregated funds to firms that can productively use it. In designing regulation to make risk management more efficient, we should focus on whether any market failures impede the ability of the financial system to provide risk-diversified products and investments. In designing regulation to make behavior monitoring more efficient, we should focus on whether any market failures impede the ability of the financial system to align the interests of principals and their agents. And in designing regulation to make the information-processing function more efficient, we should focus on whether any market failures impede the reduction of information asymmetry.

1. Designing Regulation to Make Funding More Efficient

In designing this regulation, consider whether any market failures impede the ability of the financial system to aggregate funds from multiple

10. Although some allege that the rating-agency failures are also due to conflicts of interest.

11. See PAUL A. SAMUELSON & WILLIAM D. NORDHAUS, *ECONOMICS* 756 (15th ed. 1995) (defining market failure as “[a]n imperfection in a price system that prevents an efficient allocation of resources”).

investors or to transfer aggregated funds to firms that can productively use them. I have not yet identified specific market failures that impede these functions. More generally, though, these functions may be subject to rationality failure. Even in financial markets, humans have bounded rationality. That, in turn, can undermine the reliability of pricing,¹² on which aggregating and transferring funds necessarily depends.¹³

In areas of complexity, for example, we tend to overrely on heuristics—broadly defined as simplifications of reality that allow us to make decisions in spite of our limited ability to process information. Modern finance has become so complex that the financial community routinely relies on heuristic-based customs, such as determining creditworthiness of securities by relying on formalistic credit ratings and assessing risk on financial products by relying on simplified mathematical models. This reliance can backfire, though, such as when investors rely on credit ratings that are no longer accurate, or when members of the financial community assess risk using simplified models that have become misleading.

Market participants also follow the herd in their investment choices and are prone to panic. Furthermore, due to availability bias, they are unrealistically optimistic when thinking about extreme events with which they have no recent experience, devaluing the likelihood and potential consequences of those events.¹⁴ It will be a fascinating challenge to consider how, if at all, regulation could reduce rationality failure or address its consequences.¹⁵

2. *Designing Regulation to Make Risk Management More Efficient*

In designing this regulation, consider whether any market failures impede the ability of the financial system to provide risk-diversified products and investments. In another context, I've identified at least one possible market failure. If risk is too widely dispersed, it can become marginalized

12. Cf. ROMAN FRYDMAN & MICHAEL D. GOLDBERG, *BEYOND MECHANICAL MARKETS: ASSET PRICE SWINGS, RISK, AND THE ROLE OF THE STATE* 94 (2011) (observing that “barring informational asymmetries and other market failures, markets populated by rational individuals *are stable*, in the sense that they set prices to fluctuate randomly around intrinsic value[]” (emphasis added) (internal quotations omitted)).

13. Cf. Katharina Pistor, *On the Theoretical Foundations for Regulating Financial Markets* 2 (June 2012 draft), available at http://works.bepress.com/katharina_pistor/11 (observing that a current critique of the efficient market hypothesis, positing that markets accurately reflect prices, is that market actors are not “rational, autonomous actors [but are] instead beset by herd behavior”). Another factor that can undermine the reliability of pricing is the “Imperfect Knowledge Constraint”: the fact that “information about the past or present does not equal knowledge about the future.” *Id.* at 7. Because microprudential regulation cannot correct this market failure, it is an example of a microprudential regulatory failure that could have systemic consequences—such as pricing mortgage-backed securities off models that rely on past housing prices.

14. Iman Anabtawi & Steven L. Schwarcz, *Regulating Systemic Risk: Towards an Analytical Framework*, 86 NOTRE DAME L. REV. 1349, 1366–67 (2011).

15. Cf. Steven L. Schwarcz & Lucy Chang, *The Custom-to-Failure Cycle*, 62 DUKE L.J. 767 (2012) (engaging that question).

such that rational market participants individually lack the incentive to monitor it.¹⁶ Undermonitoring caused by this incentive failure appears to have contributed, at least in part, to the global financial crisis.¹⁷ So the regulatory challenge here is to design incentives for adequate monitoring.

3. *Designing Regulation to Make Behavior Monitoring More Efficient*

In designing this regulation, consider whether any market failures impede the ability of the financial system to align the interests of principals and their agents. Scholars have long studied inefficiencies resulting from conflicts of interest between managers and owners of firms. There is, however, a much more insidious principal-agent failure—the intra-firm problem of secondary-management conflicts. The nub of the problem is that secondary managers are almost always paid under short-term compensation schemes, misaligning their interests with the long-term interests of the firm.¹⁸

Complexity exacerbates this problem by increasing information asymmetry between technically sophisticated secondary managers and the senior managers to whom they report. For example, as the VaR (value-at-risk) model for measuring investment-portfolio risk became more accepted, financial firms began compensating secondary managers not only for generating profits, but also for generating profits with low risks, as measured by VaR.¹⁹ Secondary managers turned to investment products with low VaR risk profiles, like credit-default swaps that generate small gains but only rarely have losses. They knew, but did not always explain to their superiors, that any losses that might eventually occur would be huge.²⁰

In theory, firms can solve this principal-agent failure by paying managers, including secondary managers, under longer-term compensation schemes (e.g., compensation subject to clawbacks or deferred compensation based on long-term results). In practice, however, that solution would confront a collective action problem—firms that offer their secondary managers longer-term compensation might not be able to hire as competitively as firms that offer more immediate compensation. Because good secondary managers can work in financial centers worldwide, international regulation may be needed to help solve this collective action problem.

16. See generally Steven L. Schwarcz, *Marginalizing Risk*, 89 WASH. U. L. REV. 487 (2012).

17. *Id.*

18. See Steven L. Schwarcz, *Conflicts and Financial Collapse: The Problem of Secondary-Management Agency Costs*, 26 YALE J. ON REG. 457 (2009).

19. See, e.g., PHILIPPE JORION, *VALUE AT RISK: THE NEW BENCHMARK FOR MANAGING FINANCIAL RISK* 568 (3d ed. 2006).

20. Schwarcz, *supra* note 18, at 460.

4. *Designing Regulation to Make the Information-processing Function More Efficient*

In designing this regulation, consider whether any market failures impede the reduction of information asymmetry. Complexity is the main cause of this information failure.²¹ Financial markets and products are already incredibly complex, and that complexity is certain to increase.²²

Complexity is undermining disclosure, which since the securities laws of the 1930s has been the chief regulatory tool to reduce information asymmetry.²³ The Dodd-Frank Act puts great stock in the idea of improving disclosure, but its efficacy will be limited. Some financial structures are getting so complex that they are effectively incomprehensible. Furthermore, it may well be rational for an investor to invest in high-yield complex securities without fully understanding them.

Moreover, even perfect disclosure would be insufficient to mitigate information failures that cause systemic risk. Individual market participants who fully understand the risk will be motivated to protect themselves but not necessarily the financial system as a whole. A market participant may well decide to engage in a profitable transaction even though doing so could increase systemic risk, because, due at least in part to corporate limited liability, much of the harm from a possible systemic collapse would be externalized onto other market participants as well as onto ordinary citizens impacted by an economic collapse. I will discuss this later in the context of macroprudential regulation.²⁴

Complexity also makes it difficult for regulators to understand, and thus effectively regulate, financial products and markets. The complexity of these products and markets sometimes challenges experts at even the most sophisticated financial firms.²⁵ The extraordinary income gap between financial industry employees and their regulatory counterparts—I've recently

21. See generally Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 WASH. U. L. REV. 211 (2009).

22. Profit opportunities are inherent in complexity, due in part to investor demand for securities that more precisely match their risk and reward preferences. Regulatory arbitrage increases complexity as market participants take advantage of inconsistent regulatory regimes both within and across national borders. And new technologies continue to add complexity not only to financial products but also to financial markets.

23. See, e.g., Cynthia A. Williams, *The Securities and Exchange Commission and Corporate Social Transparency*, 112 HARV. L. REV. 1197, 1209–35 (1999).

24. See *infra* note 28 and accompanying text.

25. Cf. Steven L. Schwarcz, *Disclosure's Failure in the Subprime Mortgage Crisis*, 2008 UTAH L. REV. 1109, 1113 (2008) (arguing that although the disclosure documents describing complex asset-backed securities generally complied with federal securities law, investors did not fully understand those securities or their risks); Schwarcz, *supra* note 21, at 243 (observing that even the most sophisticated investors lost money in the financial crisis).

shown that gap is more than two-to-one²⁶—makes it likely that regulators will be even more challenged to understand the complexity.

This creates a new type of information asymmetry. Scholars traditionally have studied information asymmetries between regulators and the regulated by focusing almost exclusively on information acquisition and product-development lag time.²⁷ That focus is limited to regulators *obtaining* information. In contrast, the income gap creates an information asymmetry that results from differences in intellect and abilities between regulators and the regulated. That focus goes not to obtaining information; instead, it goes to the ability of financial regulators to *process* the information, once obtained.

I believe that complexity is the greatest future challenge to designing effective financial regulation.

II. MACROPRUDENTIAL REGULATION

Recall that macroprudential regulation refers to regulation that is intended to protect the financial system as a “system.” The financial system is indeed a system—a group of interrelated elements whose functioning as a whole is distinct from the functioning of its parts. Because of law’s integral part, the financial system can be characterized as a law-related system. In a law-related system, the purpose of regulation is “not only to prevent harmful *conduct* but also to avoid harmful *consequences*.”²⁸ To that end, regulation of the financial system, *qua system*, should have two goals: to prevent negative financial shocks from occurring by limiting the triggers of systemic risk and to mitigate the harm from financial shocks after they occur by limiting the transmission and impact of those shocks.

A. Ideal Macroprudential Regulation

Ideal macroprudential regulation would act *ex ante* by eliminating the triggers of systemic risk. For example, a classic trigger of systemic risk is a bank run, in which some depositors panic and converge on a bank in a

26. See Steven L. Schwarcz, *Intrinsic Imbalance: The Impact of Income Disparity on Financial Regulation*, 78 LAW AND CONTEMP. PROBS. issue no. 2 (forthcoming 2014, Columbia Law School symposium issue on “The Administrative Law of Financial Regulation”), available at <http://ssrn.com/abstract=2387020>.

27. See, e.g., Cary Coglianese, Richard Zeckhauser & Edward Parson, *Seeking Truth for Power: Informational Strategy and Regulatory Policymaking*, 89 MINN. L. REV. 277, 280–81 (2004); Henry T.C. Hu, *Misunderstood Derivatives: The Causes of Informational Failure and the Promise of Regulatory Incrementalism*, 102 YALE L.J. 1457, 1499 (1993) (arguing that regulators cannot keep up with the development of complex derivatives products because of the time lag); STEPHEN BREYER, REGULATION AND ITS REFORM 109 (1982) (arguing that “[t]he central problem of the standard-setting process and the most pressing task facing many agencies is gathering the information needed to write a sensible standard”).

28. Iman Anabtawi & Steven L. Schwarcz, *Regulating Ex Post: How Law Can Address the Inevitability of Financial Failure*, 92 TEX. L. REV. 75, 92 (2013) (emphasis added) (citing Robert Charles Clark, *The Soundness of Financial Intermediaries*, 86 YALE L.J. 1, 10–11, 23–26 (1976)).

“grab race” to withdraw their monies first. The standard regulatory solution is to prevent a depositor panic by providing government deposit insurance.

Policymakers should certainly try to limit the triggers of systemic risk. In designing macroprudential regulation, for example, they should examine the appropriate role of limited liability, especially for the small and decentralized firms (such as hedge funds) that dominate the shadow-banking sector, where equity investors tend to be active managers. Limited liability gives these investor-managers strong incentives to take risks that could generate outsize personal profits, even if that greatly increases systemic risk.

Realistically, however, we cannot eliminate all of the triggers of systemic risk because the financial system exhibits the characteristics of—and effectively comprises—a high-risk system that is susceptible to “normal accidents.”²⁹ Certain of the market failures that are the subject of imperfect microprudential regulation could even trigger systemic failures.³⁰ Furthermore, we often lack empirical evidence on regulatory cause and effect.

It therefore is virtually certain that the financial system will face systemic shocks from time to time. Any macroprudential regulatory framework should be designed to also act *ex post*, after a systemic shock is triggered, by breaking the transmission of the shock and limiting its impact. This approach also accords with chaos theory, which addresses the problem of inevitable systemic shocks in complex engineering systems.³¹ The most successful (complex) systems are those in which the consequences of failures are limited. In engineering design, for example, this can be done by decoupling systems through modularity that helps to reduce a chance that a failure in one part of the system will systemically trigger a failure in another part.³²

B. *Ex Post* Macroprudential Regulation

There are several ways that macroprudential regulation could be designed to break the transmission of systemic shocks and limit their impact. Let’s focus tonight on limiting the impact of systemic shocks on financial firms and markets.

29. Anabtawi & Schwarcz, *supra* note 14, at 1371, n.86, 1393–94.

30. See, e.g., Lyu, *supra* note 7 (providing an example of a microprudential regulatory failure that could have systemic consequences). Professors Gordon and Mayer additionally argue that cross-border harmonization of microprudential regulation is “potentially harmful for the cause of systemic stability for international finance.” Jeffrey Gordon & Colin Mayer, *The Micro, Macro and International Design of Financial Regulation* 21 (Columbia Law and Econ., Working Paper No. 422, 2012) (draft 2.2 of Mar. 28, 2012) (on file with author), available at <http://ssrn.com/abstract=2047436>.

31. See Schwarcz, *supra* note 2121, at 248–49 (focusing on the aspect of chaos theory regarding deterministic chaos in dynamic systems, which recognizes that the more complex the system, the more likely it is that failures will occur).

32. *Id.*

Financial regulation has long tried to limit the impact of shocks on traditional deposit-taking banks, usually by requiring them to comply with capital and solvency requirements. Since the financial crisis, laws like the Dodd-Frank Act are beginning to also require other systemically important financial institutions (“SIFIs”) to be subject to a range of capital and similar requirements. The extent to which these types of approaches will work, and their potential impact on efficiency, are open questions for SIFIs. Reducing a firm’s leverage, for example, can certainly enable the firm to withstand economic shocks and reduce its chance of failure. The Basel capital requirements, however, did not prevent the many bank failures resulting from the global financial crisis. Setting regulatory limits on leverage could also backfire because some leverage is good, but there is no optimal across-the-board amount of leverage that is right for every firm.³³

Another way that regulation could make SIFIs more robust is by requiring at least some portion of their debt to be in the form of so-called contingent capital. Contingent capital debt would automatically convert to equity upon the occurrence of pre-agreed events. Ring-fencing can also help to stabilize systemically important firms by requiring them to be more robust. For example, ring-fencing is sometimes used to make firms more internally viable by preventing the firm from engaging in risky activities and investing in risky assets. The so-called Volcker Rule, which imposes limitations on proprietary trading in order to prevent systemically important financial firms from investing in risky assets, exemplifies this approach.

Regulation could also help to stabilize systemically important financial markets, which are now as much a part of the financial system as firms,³⁴ by requiring them to be more robust. For example, increased speed in data transmission is generally associated with market efficiency, but the extreme speeds at which algorithmic trading takes place creates a danger of market collapse.³⁵ Circuit breakers can be helpful to mitigate the risk of collapse, suspending trading until investors can determine more realistic prices.

Regulation could further help to stabilize systemically important firms and markets by providing appropriate liquidity. Liquidity has traditionally been used, especially by government-central banks, to help prevent financial firms from defaulting.³⁶ Ensuring liquidity to stabilize systemically im-

33. Cf. Pistor, *supra* note 13, at 46 (observing that “imposing capital or reserve requirements can push market participants to find ways [including the use of derivatives] to formally comply while making sure that their disposable assets are in fact not much curtailed,” thereby creating “additional sources of liquidity risk [that can] remain[] largely unrecognized by financial intermediaries and regulators alike”).

34. Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 198–204 (2008).

35. COMMODITY FUTURES TRADING COMM’N & SEC. & EXCH. COMM’N, FINDINGS REGARDING THE MARKET EVENTS OF MAY 6 2010, at 14 (2010), <http://www.sec.gov/news/studies/2010/marketevents-report.pdf>.

36. Cf. Pistor, *supra* note 13, at 46 (observing that “while illiquidity may lead to default, it need not do so, at least not if short-term illiquidity problems can be effectively addressed”).

portant firms would follow this pattern, except that the source of the liquidity could at least be partly privatized by taxing those firms to create a systemic risk fund.

Privatizing the source of liquidity would likewise help to internalize externalities by addressing the dilemma that market participants are economically motivated to create externalities that could have systemic consequences.³⁷ Privatization would not only offset the cost to taxpayers of liquidity advances that are not repaid, but also (if structured appropriately) should reduce moral hazard by discouraging fund contributors—including those that believe they are “too big to fail”—from engaging in financially risky activities. The likelihood that systemically important firms will have to make additional contributions to the fund to replenish bailout monies should also motivate those firms to monitor each other and help control each other’s risky behavior.

It is not enough, however, to try to stabilize systemically important firms. Because financial markets can also be triggers and transmitters of systemic risk, liquidity can—and I believe, should—be used to also stabilize systemically important financial markets.³⁸

Thank you.

37. See Frydman & Goldberg, *supra* note 12 and accompanying text.

38. For example, in response to the post-Lehman collapse of the commercial paper market, the U.S. Federal Reserve created the Commercial Paper Funding Facility (CPFF) to act as a lender of last resort for that market, with the goal of addressing “temporary liquidity distortions” by purchasing commercial paper from highly rated issuers that could not otherwise sell their paper. The CPFF helped to stabilize the commercial paper market.