Cornell Law Review

Volume 97
Issue 5 *July 2012*

Article 7

The Goldilocks Approach: Financial Risk and Staged Regulation

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THE GOLDILOCKS APPROACH: FINANCIAL RISK AND STAGED REGULATION

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Financial firms engage in a wide range of private conduct. New rules that address financial risk can regulate elements of that conduct, but not all conduct or all the factors that affect conduct. There is, therefore, a real concern that new regulation will have unanticipated consequences, particularly in a system as complex as the financial markets. The result may be new risks or a shift in risk taking away from regulated conduct—responses that regulators can anticipate but may not be able to accurately predict or control.

This Article cautions against the rush to adopt new financial risk regulation without first assessing its broader impact on risk taking. Attempting to do so with limited information may be difficult. For illustration, it touches on three areas where new regulation may result in new (or greater) risks: bank capital requirements, a financial transaction tax, and disclosure in the credit default swap market.

A better approach may be to introduce new regulation in stages—what I refer to as the "Goldilocks approach." Increasingly, regulators should be authorized to phase in or forego new regulation over time as it becomes clear, through experience, what the likely impact will be. At its heart, the Goldilocks approach relies on real options to develop new rules. Through staging, regulators can acquire additional information on the impact of new rules on conduct and, as necessary, adjust those rules to reflect any unanticipated consequences—perhaps a more effective approach to implementing regulation than efforts to finalize new rules from the outset.

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† Professor of Law, Cornell Law School. I appreciate the helpful comments, contributions, and insight provided by Adam Feibelman, Claire Hill, James Hill, Christine Klein, Tom Lin, Elizabeth Nowicki, Francesco Parisi, Rob Rhee, Roberta Romano, Daniel Schwarcz, Daniel Sokol, Fred Tung, and participants in the *Cornell Law Review* and Clarke Business Law Institute Symposium: Financial Regulatory Reform in the Wake of the Dodd-Frank Act, the Brooklyn Law School symposium on "The CFPB After a Year," the Tulane University Law School faculty workshop, the University of Florida Levin College of Law faculty workshop, and the University of Minnesota Law School Law and Economics Seminar, as well as the valuable research assistance provided by Daniel Bakey and Matthew Stichinsky. Any errors or omissions are my own.

INTRODUCTION

The history of U.S. financial regulation, in many respects, is a history of unanticipated consequences.[1] There are a number of well-known examples. Deposit insurance, for example, was introduced in order to minimize the risk of bank runs.[2] Yet, it also encouraged greater risk taking by bank managers who were no longer subject to the same scrutiny by now-guaranteed depositors.[3] Likewise, bank capital requirements were intended to raise capital levels against the risk of bank losses and the possibility of failure.[4] Early versions, however, were structured as simple capital-to-asset ratios that failed to distinguish between higher- and lower-credit assets, prompting some bank managers to make riskier investments.[5] Regulators later amended the capital requirements to reflect the relative riskiness of a bank's portfolio assets. Those with greater risk triggered higher capital requirements. Nevertheless, the relative risk-weightings did not always reflect the actual risks that banks incurred and, in some instances, may have

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1 In this Article, a regulation's "unanticipated consequences" refer to outcomes, unrelated to the regulation's principal purpose, that result from the influence of the regulation on regulated entities in ways the regulators did not anticipate. *See infra* notes 33–41 and accompanying text. It may be difficult to predict, with certainty, the results of a particular set of new rules, partly due to the inability to know how they will affect conduct under the existing circumstances. *See* ROBERT K. MERTON, ON SOCIAL STRUCTURE AND SCIENCE 175–77 (Piotr Sztompka ed. 1996); *see also* FRANK H. KNIGHT, RISK, UNCERTAINTY AND PROFIT 201–02 (1921) (noting that people react to what they infer about the future, not what they perceive about the past).

2 *See* Charles K. Whitehead, *Reframing Financial Regulation*, 90 B.U. L. REV. 1, 14–15 (2010); *see also infra* note 44 and accompanying text.

3 *See* ALAN GART, REGULATION, DEREGULATION, REREGULATION: THE FUTURE OF THE BANKING, INSURANCE, AND SECURITIES INDUSTRIES 18, 168–69 (1994); Stephen A. Buser et al., *Federal Deposit Insurance, Regulatory Policy, and Optimal Bank Capital*, 35 J. FIN. 51, 52 (1981) (discussing other mechanisms which the Federal Deposit Insurance Corporation (FDIC) uses to control risk taking in the absence of pressure from depositors); Gerard Gennotte & David Pyle, *Capital Controls and Bank Risk*, 15 J. BANKING & FIN. 805, 806 (1991) (discussing the distributional effects of FDIC insurance); Susan Rose-Ackerman, *Deregulation and Reregulation: Rhetoric and Reality*, 6 J.L. & POL. 287, 298–99 (1990) (noting that financial deregulation exacerbated the moral hazard effects of FDIC insurance).

4 *See* Whitehead, *supra* note 2, at 25–26; *see also infra* notes 51–52 and accompanying text (discussing capital requirements and their unintended consequences in more depth).

5 *See* Malcolm C. Alfriend, *International Risk-Based Capital Standard: History and Explanation*, FED. RES. BANK RICHMOND ECON. REV., Nov./Dec. 1988, at 28, 30; Gennotte & Pyle, *supra* note 3, at 807; Daesik Kim & Anthony M. Santomero, *Risk in Banking and Capital Regulation*, 43 J. FIN. 1219, 1220 (1988); Michael Koehn & Anthony M. Santomero, *Regulation of Bank Capital and Portfolio Risk*, 35 J. FIN. 1235, 1243–44 (1980); Ronald E. Shrieves & Drew Dahl, *The Relationship Between Risk and Capital in Commercial Banks*, 16 J. BANKING & FIN. 439, 456 (1992); *see also infra* notes 53–54 and accompanying text (noting that capital requirements likely led to greater bank risk taking).

prompted banks to assume even greater risks.[6] In each case, a result of new regulation designed to reduce risk in one area was the need to regulate new risk in another.

This Article cautions against the rush to adopt new financial risk regulation,[7] in the wake of the recent financial crisis, without the ability to first assess its broader impact on risk taking.[8] Banks and other

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6 *See* Roberta Romano, For Diversity in the International Regulation of Financial Institutions: Rethinking the Basel Architecture 36–51 (Nov. 13, 2011) (unpublished manuscript), *available at* http://cms1.runtime.com/null/Romano,+R+-+Fall+11+WS?exclusive=filemgr.download&file_id=61422&showthumb=0; *see also infra* note 67 and accompanying text.

7 In general, financial risk regulation restricts the amounts and types of risk bearing that a financial intermediary can assume. *See* Robert Charles Clark, *The Soundness of Financial Intermediaries*, 86 YALE L.J. 1, 15–18, 23–24 (1976) (discussing reasons for the regulation of financial intermediaries in particular); Howell E. Jackson, *Regulation in a Multisectored Financial Services Industry: An Exploratory Essay*, 77 WASH. U. L.Q. 319, 352–59 (1999); Jonathan R. Macey & Geoffrey P. Miller, *Bank Failures, Risk Monitoring, and the Market for Bank Control*, 88 COLUM. L. REV. 1153, 1155, 1165 (1988). These regulations may act directly through requirements that circumscribe the riskiness of the intermediary's portfolio assets and its capital structure, as noted earlier. They may also regulate indirectly through transaction taxes, disclosure requirements, or rules regarding net worth, capital, or surplus that effectively cap a firm's risk-taking activities. *See* Charles K. Whitehead, *What's Your Sign?—International Norms, Signals, and Compliance*, 27 MICH. J. INT'L L. 695, 721–25 (2006) (discussing the Basel Accord). Together, the rules moderate the amount of risk that an intermediary can incur, in part, by restricting the asset and liability sides of its balance sheet. *See* Clark, *supra*, at 47.

8 New financial regulation is often reactive—focusing, after the fact, on sealing up leaks in the financial system exposed by a crisis, a shift in the markets, or other change that threatens financial market stability. *See* Erik F. Gerding, *The Next Epidemic: Bubbles and the Growth and Decay of Securities Regulation*, 38 CONN. L. REV. 393, 418–24 (2006) (describing the tendency of reactive regulation to follow financial crises); Jerry W. Markham, *Banking Regulation: Its History and Future*, 4 N.C. BANKING INST. 221, 221 (2000) (describing bank regulation as "a set of accumulated responses to a long history of financial crises, scandals, happenstance, personalities and compromises"); Heidi Mandanis Schooner, *Regulating Risk Not Function*, 66 U. CIN. L. REV. 441, 480–81 (1998) (finding that "our regulatory structure has generally been reactive to market events, thus focusing on existing products and activities"). Overreaction may result in new rules that fail to properly regulate financial risk taking. *See infra* notes 212–14 and accompanying text (addressing concerns that new rules may overestimate the financial risks they are intended to regulate). Members of the Committee on Capital Markets Regulation (CCMR), an independent committee of financial experts, share this view with respect to the Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111–203, 124 Stat. 1376 (2010) (codified in scattered sections 7, 12, 15, 18, 22, 31, and 41 of U.S.C. (Supp. IV 2010)). *See* Letter from CCMR to Senators Christopher Dodd and Richard Shelby and Representatives Barney Frank and Spencer Bachus, The Pace of Rulemaking Under the Dodd-Frank Act (Dec. 15, 2010), *available at* http://www.capmktsreg.org/pdfs/2010.12.15_Rulemaking_Timeline_Letter.pdf (cautioning against a rulemaking process that appears to be more concerned with speed than quality). Regulators have also cautioned against hasty regulation. *See* Klaus C. Engelen, *The Post-Subprime Regulation Scramble: The Regulators and Market Players Pick Up the Pieces*, INT'L ECON., Winter 2008, at 62, 68; *see also* Luca Enriques, *Regulators' Response to the Current Crisis and the Upcoming Reregulation of Financial Markets: One Reluctant Regulator's View*, 30 U. PA. J. INT'L L. 1147, 1155 (2009) (noting that "excessive reregulation today is the best guarantee of effective pressure towards deregulation tomorrow"). A similar caution applies to deregulation. As Susan Rose-Ackerman has observed,

financial firms engage in a wide range of private conduct that is not publicly observable.[9] New rules can regulate elements of that conduct—but not all conduct or all the factors that affect that conduct.[10] There is, therefore, a real risk that new rules will have unanticipated consequences, particularly in a system as complex as today's financial markets.[11] Depending on how market participants react, the new rules may be less effective than expected or result in a shift in risk taking away from the regulated activity—potentially benefiting some actors at the expense of others.[12]

> Deregulation of one area of the economy may itself produce the need for more regulation someplace else. In moving toward a more competitive situation in one dimension, bottlenecks and market imperfections in other dimensions may become newly relevant. . . . In short, deregulation in one area often requires new regulation and oversight someplace else.

Susan Rose-Ackerman, *Defending the State: A Skeptical Look at "Regulatory Reform" in the Eighties*, 61 U. COLO. L. REV. 517, 520, 522 (1990) (discussing airline deregulation). Consequently, while this Article's primary focus is on new financial risk regulation, its proposal on staging regulation, *see infra* Part II, may also apply to deregulation.

9 *See infra* notes 34–35 and accompanying text.

10 *See* J.B. Ruhl & James Salzman, *Mozart and the Red Queen: The Problem of Regulatory Accretion in the Administrative State*, 91 GEO. L.J. 757, 814 (2003) ("The unintended consequences of a rule thus emerge from the complex interactions between the full set of rules and the human behaviors they motivate."); *see also infra* note 37 and accompanying text.

11 Interaction between new and existing rules may also have unanticipated consequences. Federal agencies, as a result, have been directed to assess the cumulative effects of regulation, including "[c]areful consideration, in the analysis of costs and benefits, of the relationship between new regulations and regulations that are already in effect." Cass R. Sunstein, Adm'r, Office of Mgmt. and Budget, Memorandum for the Heads of Executive Departments and Agencies, Cumulative Effects of Regulation 2 (Mar. 20, 2012), *available at* http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/cumulative-effects-guidance.pdf.

12 *See infra* notes 38–41 and accompanying text. This Article's principal focus is on the potential unintended consequences of new financial risk regulation and how new rules can prompt outcomes that regulators do not anticipate. The concern is also applicable to new regulation in other areas. *See, e.g.*, Kathleen Q. Abernathy, *My View from the Doorstep of FCC Change*, 54 FED. COMM. L.J. 199, 204–05 (2002) (describing the decision of FCC Commissioner Abernathy to keep federal communications regulations to a minimum); Michael J. Bean, *Overcoming Unintended Consequences of Endangered Species Regulation*, 38 IDAHO L. REV. 409, 415 (2002) (asserting that an unanticipated consequence of the Endangered Species Act is that landowners seek to preclude such species from using their property); Steve P. Calandrillo, *Responsible Regulation: A Sensible Cost-Benefit, Risk Versus Risk Approach to Federal Health and Safety Regulation*, 81 B.U. L. REV. 957, 964 n.19 (2001) (noting the potential unintended consequences of drinking-water quality standards); Michael Heise, *The Unintended Legal and Policy Consequences of the No Child Left Behind Act*, 86 NEB. L. REV. 119, 124–32 (2007) (describing unanticipated consequences of the No Child Left Behind Act); William P. Marshall, *The Last Best Chance for Campaign Finance Reform*, 94 NW. U. L. REV. 335, 342–46 (2000) (describing the potential consequences of campaign-finance regulation); William H. Rodgers, Jr., *Where Environmental Law and Biology Meet: Of Pandas' Thumbs, Statutory Sleepers, and Effective Law*, 65 U. COLO. L. REV. 25, 57–58 (1993) (discussing environmental law's "sleepers" or "provisions with consequences exceeding the formal legislative vision"); Cass R. Sunstein, *Political Equality and Unintended Consequences*, 94 COLUM. L. REV. 1390, 1390–91 (1994) (offering examples of unintended consequences from minimum wage laws, pollution regulation, government monitoring of the release of information, and

Consider the example of automobile safety regulation. The National Highway and Traffic Safety Administration sets design standards for new vehicles sold in the United States.[13] The first safety standards included requirements regarding front-lap seatbelts, energy-absorbing steering columns, and penetration-resistant windshields.[14] In 1975, Sam Peltzman argued that the new standards had failed to reduce fatalities even though occupant deaths had declined.[15] The safety benefits, he claimed, were offset by increased risk taking by drivers who were now more protected, raising the risk of injury to others, especially pedestrians. Rather than reducing risk, the new requirements had simply shifted it from drivers to nonoccupants.[16]

Peltzman's study sparked a heated debate.[17] One analysis found different results based on modest changes to Peltzman's model,[18] and others failed to find compensating behavior when drivers used seatbelts.[19] Still, Peltzman's conclusions also found substantial support. Nondrivers, for example, were found to face an increased risk of death following the debut of mandatory air bags,[20] and seatbelt effec-

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campaign finance regulation). Consequently, this Article's proposal on staging new regulation, *see infra* Part II, may have application beyond the financial markets.

13 *See* National Traffic and Motor Vehicle Safety Act (NTMVSA), 15 U.S.C. § 1392 (1988 & Supp. V 1993) (repealed 1994) (recodified at 49 U.S.C. § 30111 (2006)) (requiring the Secretary of Transportation to establish automobile safety standards). The NTMVSA was created to "reduce traffic accidents and deaths and injuries resulting from traffic accidents." 49 U.S.C. § 30101. It directed the Secretary of Transportation to issue motor vehicle safety standards that "shall be practicable, meet the need for motor vehicle safety, and be stated in objective terms." *Id.* § 30111(a). The Secretary's general authority to issue safety standards under the NTMVSA was, in turn, delegated to the National Highway and Traffic Safety Administrator. *See* 49 C.F.R. § 1.50(a) (2011).

14 *See* Ashley W. Warren, *Compliance with Governmental Regulatory Standards: Is It Enough to Immunize a Defendant from Tort Liability?*, 49 BAYLOR L. REV. 763, 795 (1997).

15 *See* Sam Peltzman, *The Effects of Automobile Safety Regulation*, 83 J. POL. ECON. 677, 677, 681, 717 (1975).

16 *See id.* at 700.

17 *See, e.g.*, Paul W. MacAvoy, *The Regulation of Accidents*, *in* AUTO SAFETY REGULATION: THE CURE OR THE PROBLEM? 83, 85–87 (Henry G. Manne & Roger LeRoy Miller eds., 1976); Richard R. Nelson, *Comments on Peltzman's Paper on Automobile Safety Regulation*, *in* AUTO SAFETY REGULATION: THE CURE OR THE PROBLEM?, *supra* at 63, 63–67; H.C. Joksch, *Critique of Sam Peltzman's Study: The Effects of Automobile Safety Regulation*, 8 ACCIDENT ANALYSIS & PREVENTION 129, 129 (1976); Mark Kelman, *On Democracy-Bashing: A Skeptical Look at the Theoretical and "Empirical" Practice of the Public Choice Movement*, 74 VA. L. REV. 199, 239–45 (1988); Leon S. Robertson, *A Critical Analysis of Peltzman's "The Effects of Automobile Safety Regulation,"* 11 J. ECON. ISSUES 587, 587–88 (1977); Leon S. Robertson, *Automobile Safety Regulations and Death Reductions in the United States*, 71 AM. J. PUB. HEALTH 818, 818 (1981).

18 *See* John D. Graham & Steven Garber, *Evaluating the Effects of Automobile Safety Regulation*, 3 J. POL'Y ANALYSIS & MGMT. 206, 207 (1984).

19 *See, e.g.*, Alma Cohen & Liran Einav, *The Effects of Mandatory Seat Belt Laws on Driving Behavior and Traffic Fatalities*, 85 REV. ECON. & STAT. 828, 828 (2003) (finding that nonoccupant fatalities did not rise with increased use of seatbelts).

20 *See* Steven Peterson et al., *Are Drivers of Air-Bag-Equipped Cars More Aggressive? A Test of the Offsetting Behavior Hypothesis*, 38 J.L. & ECON. 251, 252 (1995); *see also* Robert S. Chirinko & Edward P. Harper, Jr., *Buckle Up or Slow Down? New Estimates of Offsetting Behavior*

tiveness was found to be most strongly correlated with benefits to the driver, with a much weaker relationship to nonoccupant safety.[21] Instances of aggressive and inattentive driving also rose as safety conditions improved.[22] Even studies that found a decline in fatalities acknowledged the presence of some compensating conduct among drivers.[23]

Whether or not one agrees with Peltzman, the premise that changes in regulation can shift risky conduct in unanticipated ways is consistent with concerns raised in the financial markets.[24] For illustration, this Article describes the following three areas where new regulation may result in new (or greater) risk taking.

- First, the effect of raising bank capital requirements is unclear. Managers who are risk averse may choose to trade profits for decreased risk so that an increase in capital will cause a drop in risk taking. Alternatively, managers may choose to maximize a bank's expected profits without regard to risk. New capital regulation, in that case, may impose greater costs on banks and cause managers to shift investments into higher-yielding, riskier portfolios.[25]
- Second, proponents argue that a new financial transaction tax (FTT) on securities trading will reduce "noise" trading and improve the quality of information revealed by market prices. The result, they claim, will be a drop in volatility that, in turn, lowers the cost of raising new capital. Others argue that an FTT will adversely affect market makers in addition to noise traders and speculators. As a result, imposing a new tax may drive up the cost of market making and reduce liquidity. A drop in liquidity can increase price volatility and, in turn, raise the cost of capital.[26]

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and Their Implications for Automobile Safety Regulation, 12 J. POL'Y ANALYSIS & MGMT. 270, 291 (1993) (estimating that air bags may reduce occupant fatalities by 19.1% and raise nonoccupant fatalities by 20%).

21 *See* Glenn Blomquist, *A Utility Maximization Model of Driver Traffic Safety Behavior*, 18 ACCIDENT ANALYSIS & PREVENTION 371, 374 (1986).

22 *See* Thomas L. Traynor, *The Peltzman Hypothesis Revisited: An Isolated Evaluation of Offsetting Driver Behavior*, 7 J. RISK & UNCERTAINTY 237, 238 (1993).

23 *See* ROBERT W. CRANDALL ET AL., REGULATING THE AUTOMOBILE 68–74 (1986); Robert W. Crandall & John D. Graham, *Automobile Safety Regulation and Offsetting Behavior: Some New Empirical Estimates*, 74 AEA PAPERS & PROC. 328, 330 (1984); *see also* MARTIN FRIEDLAND ET AL., REGULATING TRAFFIC SAFETY 122 (1990) (noting that where safety benefits are apparent to drivers, risk compensation behavior seems more plausible); Kelman, *supra* note 17, at 240 (acknowledging that while the magnitude of a behavioral shift would not offset engineering gains, "one would expect that the *direction* of the shift in behavior would be as Peltzman predicts").

24 *See, e.g.*, TIM HARFORD, ADAPT: WHY SUCCESS ALWAYS STARTS WITH FAILURE 188–90 (2011) (describing the role that credit derivatives played in the 2008 financial crisis).

25 *See infra* Part I.A.

26 *See infra* Part I.B.

- Finally, studies of the credit markets indicate that, in general, the effect of greater transparency on market liquidity is neutral or positive. Since investors have more information, improved disclosure also results in a greater ability to negotiate lower trading costs. The same may not be true for credit default swaps (CDS). Dealers argue that requiring greater disclosure around CDS trading may impede their ability to hedge CDS risk. Competitors may trade ahead of their hedging activity, causing prices to rise and increasing a dealer's CDS costs. Greater costs may then be passed on to customers—such as banks and other regulated entities—who will become less able to rely on CDS to help manage credit risk.[27]

As these examples illustrate, it can be difficult to prospectively assess the impact of new regulation on the financial markets. Private actors can be expected to minimize regulatory cost, potentially in ways that are less obvious to detect. The result may be a rise in new risks or a shift in risk taking—responses that regulators can anticipate but may not be able to accurately predict or control.[28]

This Article argues that a better approach to new financial risk regulation is to introduce it in stages—what I refer to as the "Goldilocks approach."[29] Regulators should be authorized to phase-in or forego additional regulation over time as it becomes clear, through experience, what the likely impact will be.

At its heart, the Goldilocks approach relies on real options to introduce new regulation. The use of real options in the transactional world is based on the insight that it can be valuable for managers to adjust their strategies based on new information they acquire over time rather than commit to a rigid approach initially.[30] The choice of regulation, of course, is not irreversible. A poor decision, or a new rule with unanticipated consequences, can be reversed at a later stage—but, potentially, at significant expense. By staging implementation, regulators can develop additional information on the effect of new rules on market conduct, potentially at lower cost than a subsequent change in regulation. In that respect, a staged approach may be less costly than efforts to finalize new rules from the outset.[31] Staging, in fact, may permit regulators to implement more effective regulation—choosing new rules that have a greater likelihood of an optimal outcome, even if they are less likely than others to be

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27 *See infra* Part I.C.

28 *See infra* notes 34–43 and accompanying text.

29 *See infra* note 150 and accompanying text.

30 *See infra* notes 150–57 and accompanying text.

31 *See infra* notes 158–90 and accompanying text.

achieved, so long as regulators can adjust their strategy at low cost based on the knowledge they acquire during the staging process.[32]

Part I describes the potential for unanticipated consequences. It offers three examples—bank capital regulation, an FTT, and disclosure in the CDS market. They illustrate the potential for rules intended to limit risky conduct to result instead in a shift in risk or an increase in risk taking. The conduct of market participants may change either directly in response to new regulation or indirectly due to the effect of new regulation on factors that affect conduct.

Part II describes the Goldilocks approach—implementing new financial regulation in stages. Uncertainty around new rules can draw their value into question. The key is whether new rules can be introduced that address the risks they are designed to regulate while minimizing potentially negative side effects. Attempting to do both in a vacuum may be difficult in light of the complexity of the financial system. For that reason, new risk regulation may benefit from staging—providing regulators with new information on the effect of regulation on market conduct as it is phased in and, as necessary, permitting regulators to adjust the rules to reflect any unanticipated consequences.

I

RISK REGULATION AND UNANTICIPATED CONSEQUENCES

It should be no surprise that, in an increasingly complex financial system,[33] regulating risk can have unanticipated consequences. Banks and other financial firm managers engage in a wide range of activities in order to maximize profits[34] and minimize the risk of loss of employment due to firm failure.[35] Regulation addressing those activities is typically framed in broad terms—for example, "increasing stability" or "minimizing systemic risk"—but, in substance, it is often embodied in rules that specify or limit particular conduct. The new rules set the

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32 *See infra* notes 159–63 and accompanying text.

33 *See* HARFORD, *supra* note 24, at 184–86; Dan Awrey, *Complexity, Innovation and the Regulation of Modern Financial Markets*, 2 HARV. BUS. L. REV. (forthcoming 2012), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1916649; Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 WASH. U. L. REV. 211, 213–15 (2009) (describing some of the causes and effects of financial market complexity).

34 *See* Whitehead, *supra* note 2, at 11–12; *see also* Lucian A. Bebchuk & Holger Spamann, *Regulating Bankers' Pay*, 98 GEO. L.J. 247, 255 (2010) (describing bank executives' incentives to engage in excessive risk taking).

35 A bank's shareholders have an incentive to increase bank risk taking in order to maximize value. The incentives of bank managers will depend on the degree to which their interests align with shareholders. Managers whose wealth is bank-specific may have less interest in risk taking. Those whose interests are more closely aligned with shareholders—for example, through ownership of stock or stock options—may be more interested in incurring risk. *See* Anthony Saunders et al., *Ownership Structure, Deregulation, and Bank Risk Taking*, 45 J. FIN. 643, 644–45 (1990).

terms of that conduct, with a view to achieving the broader public purpose for which the rules were created.[36] What they do not do is regulate all conduct or the web of private arrangements, in and outside the firm, that influence conduct and may be difficult for outsiders to observe.[37]

In the credit card industry, for example, price is comprised of a number of elements, including the terms on which credit cards and related products are sold. Newly introduced limits on credit card pricing in 2010 resulted in bank efforts to adjust fees in order to maximize profits. Some banks in response announced new fees on debit cards in 2011.[38] Thus, the result of regulation that lowered consumer charges (and profitability) in one area was higher charges in another. The same motivation can cause private actors, armed with superior knowledge of their own activities, to adjust their conduct in order to minimize the cost of regulation,[39] often in ways that are difficult to detect.[40] The shadow banking system, for example, arose in response to rules that increased the cost to a bank of maintaining assets on its

36 As Lori Synder Bennear and Cary Coglianese have described, regulation essentially is comprised of four components: a command, a target, the consequences of compliance or noncompliance, and the regulator. *See* Lori Snyder Bennear & Cary Coglianese, *Flexible Environmental Regulation*, *in* THE OXFORD HANDBOOK OF U.S. ENVIRONMENTAL POLICY 3 (Sheldon Kamieniecki & Michael E. Kraft, eds.) (forthcoming 2012) (unpublished manuscript), *available at* http://ssrn.com/abstract=1998849. Using that taxonomy, regulation's broad framing is its "target," and the specification or limitation on conduct is its "command."

37 *See* MERTON, *supra* note 1, at 177; Awrey, *supra* note 33, at 50–51.

38 *See* Tara Siegel Bernard & Ben Protess, *Banks to Make Customers Pay Debit Card Fee*, N.Y. TIMES, Sept. 30, 2011, at A1; *see also* Oren Bar-Gill & Elizabeth Warren, *Making Credit Safer*, 157 U. PA. L. REV. 1, 47–48 (2008) (discussing the use of new penalty fees for late payments). The banks later dropped their plans to increase debit card fees in the face of significant public outcry. *See* Dan Fitzpatrick & Robin Sidel, *BofA Retreats on Debit Fee, Citing Uproar*, WALL ST. J. (Nov. 1, 2011), http://online.wsj.com/article/SB10001424052970204528204577011813902843218.html.

39 *See* Michael S. Knoll, *The Ancient Roots of Modern Financial Innovation: The Early History of Regulatory Arbitrage*, 87 OR. L. REV. 93, 96 (2008) (describing the very early use of put-call parity to avoid usury laws); Frank Partnoy, *Financial Derivatives and the Costs of Regulatory Arbitrage*, 22 J. CORP. L. 211, 227 (1997).

40 *See* Harvey Averch & Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECON. REV. 1052, 1068 (1962); Awrey, *supra* note 33, at 53–55.

balance sheet.[41] In that case, regulation became less effective as a result of the shift in risky conduct to outside the regulated entity.[42]

To illustrate the potential of new rules to increase or shift risk, set forth below are three examples of risk regulation and their potential consequences. The first relates to bank capital requirements. Higher capital requirements are designed to improve an individual bank's stability, but they may also cause an increase in risk taking. Regulation, in that case, may directly induce a shift in conduct.

The second example arises from proposals for a new FTT. A hike in stock market trading costs can lower "noise" trading and minimize volatility, but it can also lower market liquidity, magnifying the impact on share price of trading by the remaining investors (and, in turn, increasing volatility). The effect on risk, in that case, may be indirect—an overall increase in volatility that increases the risk borne by all market participants.

The final example arises from new disclosure requirements for CDS trading. Enhanced transparency in the CDS market may have direct and indirect consequences. Greater transparency can directly lower trading costs as well as the level of risky transactions. It may,

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41 *See* Whitehead, *supra* note 2, at 25–28. As former Citigroup Chairman and CEO Charles Prince told Representative Barney Frank, off-balance-sheet financing was necessary because on-balance-sheet financing "would have put Citigroup at a disadvantage with Wall Street investment banks that were more loosely regulated and were allowed to take far greater risks." *See* Nelson D. Schwartz & Julie Creswell, *What Created This Monster?: Yes, the Markets Can Bite Back*, N.Y. TIMES, Mar. 23, 2008 (Sunday Business), at 1. By 2007, the shadow banking system had total assets of roughly $6.5 trillion—compared to $4 trillion for the then five major securities firms and $6 trillion for the top five U.S. bank holding companies. *See* Timothy F. Geithner, President and Chief Executive Officer, Fed. Reserve Bank of N.Y., Reducing Systemic Risk in a Dynamic Financial System, Remarks at the Economic Club of New York (June 9, 2008), *available at* http://www.newyorkfed.org/news events/speeches/2008/tfg080609.html; *see also* Gary Gorton, Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007 25–29 (May 9, 2009) (Yale Univ. & Nat'l Bureau of Econ. Research), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1401882 (computing the ratios of off-balance-sheet activity to on-balance-sheet activity at these top firms and describing the ratios' likely impact).

42 Factors beyond (but potentially related to) shareholder and manager interests in profitability may also affect outcomes. Thus, for example, the effects of similar banking rule changes across countries may have significantly different outcomes based, in part, on differences in the competitive and legal environments in which the banks operate. Increases in deposit insurance are associated with higher risk taking by banks that operate in market-based, common-law countries, but are associated with lower risk taking among banks that operate in bank-based civil law countries. *See* Kathryn L. Dewenter et al., Do Banking Regulations Have Uniform Effects? Evidence from Changes in Deposit Insurance 27–28 (Dec. 2011) (unpublished manuscript), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1969701. Likewise, the effect of capital regulation on a bank's risk taking may depend on franchise values and market concentration in the country where it is operating. *See* Patrick Behr et al., *Market Structure, Capital Regulation and Bank Risk Taking*, 37 J. FIN. SERVICES RESEARCH 131, 154–55 (2010); *see also infra* notes 49–50 and accompanying text (describing the potential impact of the decline in bank charter values on management risk taking).

however, also cause CDS dealers to adjust how they manage risk, potentially increasing the cost of CDS trades. At higher cost, customers may become less able to rely on CDS to manage risk. New or greater risks, therefore, may indirectly result from greater disclosure in the CDS market.

In each case, the effect of new regulation depends on how market participants respond, which turns, in part, on private conduct that may not be apparent to regulators.[43] The result can be an unanticipated increase in risk or shift in risk taking to other parts of the financial markets. That outcome can be costly, arguing for the introduction of a new rulemaking process that permits regulators to reflect more complete information on market response as new rules are implemented.

A. Risk-Based Capital

Government-directed insurance helps assure customers of the safekeeping of their cash and assets held in custody by financial intermediaries. Insurance guarantees that customers will be made whole, irrespective of the intermediary's financial health or the reason for a default, up to specified levels. For banks, for example, the FDIC protects general depositors against losses up to $250,000.[44] Insurance, however, creates a risk of moral hazard because banks have an interest in assuming more risk if insurance or other protection minimizes any resulting losses.[45] With the FDIC bearing a portion of the risk, shareholder value can improve to the extent that greater leverage (lower capital) boosts the probability of higher returns.[46] Balanced against risk taking are the risk-reducing incentives of bank managers who ex-

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43 *See* JEAN-JACQUES LAFFONT & JEAN TIROLE, A THEORY OF INCENTIVES IN PROCUREMENT AND REGULATION 1–3 (1993).

44 *See Your Insured Deposits*, FDIC, http://www.fdic.gov/deposit/deposits/insured/basics.html (last visited Apr. 9, 2012). Banks can also access Federal Reserve funds to temporarily cover shortfalls in liquidity in the event of substantial withdrawals. *See* Mark E. Van Der Weide & Satish M. Kini, *Subordinated Debt: A Capital Markets Approach to Bank Regulation*, 41 B.C. L. REV. 195, 204–05 (2000).

45 *See* Patricia A. McCoy, *The Moral Hazard Implications of Deposit Insurance: Theory and Evidence*, *in* 5 CURRENT DEVELOPMENTS IN MONETARY AND FINANCIAL LAW 417, 423–25 (2008); Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401, 417 (1983); Richard S. Grossman, *Deposit Insurance, Regulation, and Moral Hazard in the Thrift Industry: Evidence from the 1930's*, 82 AM. ECON. REV. 800, 802–03 (1992); Franklin Allen & Douglas Gale, *Capital Adequacy Regulation: In Search of a Rationale* 4–6 (Wharton Fin. Insts. Ctr., Working Paper No. 03–07, 2002), *available at* http://fic.wharton.upenn.edu/fic/papers/03/0307.pdf.

46 *See* Douglas W. Diamond & Philip H. Dybvig, *Banking Theory, Deposit Insurance, and Banking Regulation*, 59 J. BUS. 55, 59 (1986); Shrieves & Dahl, *supra* note 5, at 441. Banks are required to pay the FDIC an insurance premium. *See* Alan J. Marcus & Israel Shaked, *The Valuation of FDIC Deposit Insurance Using Option-Pricing Estimates*, 16 J. MONEY CREDIT & BANKING 446, 447–48 (1984).

pect to minimize their nondiversifiable employment risk.[47] Historically, shareholders have also been interested in protecting against the loss of a bank's charter—its ability, with limited competition, to take deposits and extend loans[48]—although charter values have eroded in light of recent changes in the financial markets.[49] Neither incentive

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47 *See* Saunders et al., *supra* note 35, at 644; *see also* Yakov Amihud & Baruch Lev, *Risk Reduction as a Managerial Motive for Conglomerate Mergers*, 12 BELL J. ECON. 605, 615 (1981) (discussing competing incentives for bank managers in the merger context).

48 *See* Michael C. Keeley, *Deposit Insurance, Risk, and Market Power in Banking*, 80 AM. ECON. REV. 1183, 1184–86 (1990); Alan J. Marcus, *Deregulation and Bank Financial Policy*, 8 J. BANKING & FIN. 557, 557–58 (1984); *see also* Robert A. Bennett, *A Banking Puzzle: Mixing Freedom and Protection*, N.Y. TIMES, Feb. 19, 1984, at F1 (describing the likely effect of the easing of restrictions on bank charters).

49 *See* Whitehead, *supra* note 2, at 16–20. For example, money market funds (MMFs) provide the functional equivalent of deposit taking by banks. *See* Jonathan R. Macey, *Reducing Systemic Risk: The Role of Money Market Mutual Funds as Substitutes for Federally Insured Bank Deposits* 6, 8 (Yale Law Sch. John M. Olin Ctr. for Studies in Law, Econ., & Pub. Policy, Research Paper No. 422, 2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1735008 (noting that the needs and expectations of MMF investors and commercial depositors are roughly the same and tracking the functional similarity between the two); *see also* Arthur E. Wilmarth, Jr., *The Transformation of the U.S. Financial Services Industry, 1975–2000: Competition, Consolidation, and Increased Risks*, 2002 U. ILL. L. REV. 215, 239–42 (2002) (describing the structure and evolution of MMFs, their comparative advantages over traditional bank deposits, and congressional attempts to put banks on an equal footing with MMFs). Finance companies lend to business and retail borrowers, relying on MMFs for funding by selling them short-term commercial paper. *See* JANE W. D'ARISTA & TOM SCHLESINGER, THE PARALLEL BANKING SYSTEM, BRIEFING PAPER #37, at 7–14 (1993) (noting that the commercial paper market is the essential link between the borrower and depositor aspects of MMF activity). MMFs, in turn, offer investors the convenience of a bank account with nominally higher returns than bank deposits. *See* FRANKLIN R. EDWARDS, THE NEW FINANCE: REGULATION & FINANCIAL STABILITY 73–74 (1996); *see also* Tamar Frankel, *The Scope and Jurisprudence of the Investment Management Regulation*, 83 WASH. U. L.Q. 939, 943 (2005) (noting that MMFs, which were not subject to the interest rate caps placed on banks, were able to offer their customers higher interest rates and traditional banking services). Unlike bank deposits, MMF accounts are normally not protected by federal government insurance (although the Treasury Department created a temporary program to guarantee MMF account balances following the run on MMFs in the fall of 2008). *See* Press Release, U.S. Dep't of Treasury, Treasury Announces Temporary Guarantee Program for Money Market Funds (Sept. 29, 2008), *available at* http://www.treasury.gov/press-center/press-releases/Pages/hp1161.aspx; *Insured or Not Insured?*, FDIC, http://www.fdic.gov/consumers/consumer/information/fdiciorn.html (last visited Apr. 15, 2012). Instead, investors historically relied on regulations that limited portfolio assets to short-term, highly liquid, and relatively low-risk debt instruments. *See* 17 C.F.R. § 270.2a-7(c)(3) to (4) (2011) (outlining criteria relating to portfolio quality and diversification that MMFs must satisfy); *see also* INV. CO. INST., REPORT OF THE MONEY MARKET WORKING GROUP 31–39 (2009), *available at* http://www.ici.org/pdf/ppr_09_mmwg.pdf (describing the regulation of MMFs). Investors also relied on the implicit assurance that an MMF's managers would prevent the fund's assets from falling below par, $1 per share. *See* Leslie Wayne, *Investors Lose Money In 'Safe' Fund*, N.Y. TIMES, Sept. 28, 1994, at D1 (listing fifteen MMFs whose advisors covered shortfalls rather than allow fund share prices to fall below $1). Together, MMFs and finance companies began to mirror the traditional balance that banks strike, resulting in a substantial shift in liquid household assets from the banking sector to the capital markets and a decline in bank charter value. *See* EDWARDS, *supra*, at 73–74; D'ARISTA & SCHLESINGER, *supra*, at 3–4, 7–14. Notwithstanding that decline, greater capital requirements may themselves limit the ability of newcomers to enter the market and, thereby, increase the

assures that banks will not incur significant risk, and the decline in charter value may further reduce a bank manager's interest in acting prudently.[50] Capital requirements, therefore, assist regulators by setting a minimum capital cushion that banks must maintain relative to the risky assets in which they can invest. A bank must raise an amount of equity capital (or its equivalent) based on the value of its risky assets, thereby limiting its leverage and the size of its balance sheet.[51] In that respect, capital requirements and other portfolio limitations are similar to bond covenants that restrict managers from incurring risks that may benefit a bank's shareholders at its creditors' expense.[52]

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value of an existing bank's charter. *See* Luigi Zingales, *The Costs and Benefits of Financial Market Regulation* 24 (Eur. Corp. Governance Inst. Law, Working Paper No. 21/2004, April 2004), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=536682.

50 *See* Francisco González, *Bank Regulation and Risk-Taking Incentives: An International Comparison of Bank Risk*, 29 J. BANKING & FIN. 1153, 1181–82 (2005); Keeley, *supra* note 48, at 1185–86; Marcus, *supra* note 48, at 565; Shrieves & Dahl, *supra* note 5, at 443–44.

51 *See* Anat R. Admati et al., *Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is* Not *Expensive* 12–13 (Rock Ctr. for Corp. Governance, Stanford Univ., Working Paper No. 86, 2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1669704. A description of the original risk-based capital requirements appears in GART, *supra* note 3, at 120–30. In addition to enhancing bank stability, capital requirements protect against the impact of a bank failure on depositors, the possibility of a bank run and, in light of the systemic importance of banks, the resulting harm to the real economy. *See* THE JOINT FORUM, RISK MANAGEMENT PRACTICES AND REGULATORY CAPITAL: CROSS-SECTORAL COMPARISON 10–11, 31, 34–38 (2001), *available at* http://www.bis.org/publ/joint04.pdf (describing the Basel Accord standards for supervising banks); Whitehead, *supra* note 2, at 25, 39–40; Franklin Allen & Richard Herring, *Banking Regulation Versus Securities Market Regulation* 4–7 (Wharton Fin. Insts. Ctr., Working Paper No. 01-29, 2001), *available at* http://knowledge.wharton.upenn.edu/ papers/1174.pdf; Stephen Morris & Hyun Song Shin, *Financial Regulation in a System Context* 2 (Brookings Papers on Econ. Activity, Working Paper, 2008), *available at* http://www.brookings.edu/economics/bpea/~/media/Files/Programs/ES/BPEA/2008_fall_bpea_papers/2008_fall_bpea_morris_shin.pdf; Anil K. Kashyap et al., Rethinking Capital Regulation 12, 16–18 (Sept. 2008) (unpublished manuscript), *available at* http://www.kc.frb.org/publicat/sympos/2008/KashyapRajanStein.09.15.08.pdf. One unanticipated side product of capital regulation has been an increase in the procyclicality of the credit markets. *See* CONG. OVERSIGHT PANEL, 111TH CONG., SPECIAL REP. ON REGULATORY REFORM 26–27 (2009), *available at* http://cop.senate.gov/documents/cop-012909-report-regulatory-reform.pdf. When the economy is strong, a borrower's default risk is likely to be remote, minimizing the amount of capital each bank must raise against prospective loss. When it sours, however, risk-based requirements can put pressure on each bank to strengthen its capital cushion at the same time, thereby reducing its incentive to lend and, in the aggregate, increasing economic instability. *See* MARKUS BRUNNERMEIER ET AL., THE FUNDAMENTAL PRINCIPLES OF FINANCIAL REGULATION 13–15 (2009); George G. Pennacchi, *Risk-Based Capital Standards, Deposit Insurance, and Procyclicality*, 14 J. FIN. INTERMEDIATION 432, 433 (2005); Rafael Repullo & Javier Suarez, *The Procyclical Effects of Bank Capital Regulation* 2 (Working Paper, 2009), *available at* http://www.cemfi.es/~suarez/repullo-suarez09.pdf. Proposals have been made to create countercyclical capital regulation—raising capital levels when the economy is strong and lowering them during a downturn to soften the impact of a decline in lending when the markets weaken. *See, e.g.*, BRUNNERMEIER ET AL., *supra*, at 31–35.

52 *See* Michael C. Keeley & Frederick T. Furlong, *A Reexamination of Mean-Variance Analysis of Bank Capital Regulation*, 14 J. BANKING & FIN. 69, 70 (1990); *see also* Dan Galai & Ronald W. Masulis, *The Option Pricing Model and the Risk Factor of Stock*, 3 J. FIN. ECON. 53, 54

During the 1970s, bank capital declined precipitously, prompting U.S. regulators to require banks and bank holding companies to satisfy explicit minimum capital standards.[53] Banks were required to maintain capital in amounts equal to or greater than a fixed percentage of assets. Bank capital ratios rose as a result, but so did bank failures, partly because the requirements failed to take account of the assets' riskiness in a bank's portfolio.[54]

Raising a bank's capital requirements can increase the cost of extending loans and reduce a bank's profitability.[55] Thus, permitting banks to compete without restriction risked depressing capital levels further—potentially resulting in an increase in financial system risk. Regulators, in response, needed to level the playing field. Global standards were developed partly so that banks in one country would not be disadvantaged relative to banks in another. The Basel Capital Accord (Accord), first adopted in 1988,[56] called for regulators to impose a minimum capital level on internationally active banks pegged at eight percent of risk-weighted assets.[57] The Accord fostered cooperation among competing players—principally U.S., U.K., and Japanese regulators and banks—by committing them to a global standard.[58] In

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(1976) (using the capital-asset pricing model to describe the relationship between return to shareholders and debtholders).

53 *See* GART, *supra* note 3, at 118–20; SECRETARIAT OF THE BASEL COMM. ON BANKING SUPERVISION, THE NEW BASEL CAPITAL ACCORD: AN EXPLANATORY NOTE 11 (2001), *available at* http://www.bis.org/publ/bcbsca01.pdf.

54 The history of U.S. bank capital regulation leading up to the Basel Capital Accord in 1988 is summarized in GART, *supra* note 3, at 118–20, and Alfriend, *supra* note 5, at 28–30; *see also supra* notes 4–5 and accompanying text.

55 *See* Stavros Gadinis, *The Politics of Competition in International Financial Regulation*, 49 HARV. INT'L L.J. 447, 500–01 (2008).

56 *See id.* at 503. The Accord's evolving approach to managing bank risk is summarized in James Fanto, *Anticipating the Unthinkable: The Adequacy of Risk Management in Finance and Environmental Studies*, 44 WAKE FOREST L. REV. 731, 736–37 (2009). Subsequent accords—the Basel II and Basel III accords—are described in Hal S. Scott, *Reducing Systemic Risk through the Reform of Capital Regulation*, 13 J. INT'L ECON. L. 763, 765–73 (2010), and WALTER W. EUBANKS, CONG. RESEARCH SERV., R41467, THE STATUS OF THE BASEL III CAPITAL ADEQUACY ACCORD 1–13 (2010), *available at* http://www.fas.org/sgp/crs/misc/R41467.pdf.

57 *See* Patricia A. McCoy, *Musings on the Seeming Inevitability of Global Convergence in Banking Law*, 7 CONN. INS. L.J. 433, 439 (2001). The Accord was adopted by the Basel Committee on Banking Supervision. The Basel Committee is comprised of regulators from the world's principal financial markets. Its purpose is to foster international cooperation on supervisory standards, practices, and guidelines for banks. Committee decisions are made by consensus, and the Committee's pronouncements are nonbinding on members. Nevertheless, the Basel Committee has strongly influenced the gradual convergence in global banking regulation and supervision. Chief among its successes has been the creation of uniform bank capital requirements, embodied (as amended from time to time) by the Accord. *See* Whitehead, *supra* note 7, at 720–25.

58 *See* Enrico Colombatto & Jonathan R. Macey, *A Public Choice Model of International Economic Cooperation and the Decline of the Nation State*, 18 CARDOZO L. REV. 925, 935–44 (1996); Gadinis, *supra* note 55, at 502–03. The conflict that existed among national regulators and between regulators and banks is summarized in ETHAN B. KAPSTEIN, GOVERNING THE GLOBAL ECONOMY: INTERNATIONAL FINANCE AND THE STATE 113–28 (1994).

addition, the Accord's risk-based requirements attempted to sensitize a bank's capital levels to the riskiness of its investment portfolio.[59] National banks, for example, are subject to risk-based standards that vary the amount of capital a bank must maintain relative to the risk it bears—in effect, requiring banks with riskier portfolios to raise larger capital cushions.[60]

In light of widespread adoption of risk-based capital requirements and recent increases under the Accord,[61] one would expect substantial agreement on their benefits as a regulatory tool. There is, in fact, a significant division over the effect of capital requirements on bank conduct and, in particular, over whether they are likely to decrease or increase a bank's risk taking. This difference reflects, among other things, competing views of the goals and incentives of bank managers.[62]

Under one view, managers who are risk averse may choose to trade off profits for decreased risk.[63] In that case, an increase in capital requirements may be consistent with reduced risk taking.[64] Small bank managers may be inclined to reduce risk when faced with strictly

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59 *See* Colombatto & Macey, *supra* note 58, at 938–39.

60 *See* 12 C.F.R. pt. 3, apps. A(1)(a), B(1)(a) (2011); *see also* 12 C.F.R. pt. 225, app. A(I) (2011) (explaining that these requirements are applicable to bank holding companies as well).

61 Basel III contains several important changes for banks' capital structures. Among them, the minimum amount of common equity, as a percentage of risk-weighted assets, will increase from 2% to 3.5% by January 1, 2013, eventually rising to 4.5% on January 1, 2015. *See* BASEL COMM. ON BANKING SUPERVISION, BASEL III: A GLOBAL REGULATORY FRAMEWORK FOR MORE RESILIENT BANKS AND BANKING SYSTEMS 12–17, 27–28 (2011) [hereinafter BASEL COMM., GLOBAL REGULATORY FRAMEWORK], *available at* http://www.bis.org/publ/bcbs189.pdf. Total Tier 1 capital, which consists primarily of common equity and retained earnings, will rise from 4% to 6% during the same period. *See id.* at 12–17, 28. Basel III also contains an additional 2.5% "buffer" that banks must maintain for use during times of financial stress to be phased in between January 1, 2016, and January 1, 2019, bringing the total equity requirement to 7%. *See id.* at 54–57. In addition, Basel III aims to improve the quality of the banks' capital base as well as strengthen capital requirements in relation to various risks to which banks are exposed. *See id.* at 2–4.

62 *See* Isabel Argimon & Jenifer Ruiz-Valenzuela, *The Effects of Regulatory Stringency and Risk Sensitivity on Banks*, 12 J. BANKING REG. 144, 146–47 (2011).

63 *See* Joseph P. Hughes et al., *Are Scale Economies in Banking Elusive or Illusive?: Evidence Obtained by Incorporating Capital Structure and Risk-Taking into Models of Bank Production*, 25 J. BANKING & FIN. 2169, 2188 (2001); Kim & Santomero, *supra* note 5, at 1220–21 (assuming risk aversion in developing a model and describing its effects); Koehn & Santomero, *supra* note 5, at 1236 (making a similar assumption in developing a separate model and noting that the assumption is justified in academic literature); Tom Theobald, *For Better Banks, Risk Management's Money*, WALL ST. J., July 7, 1992, at A14 (discussing the effects of management's equity stake in the bank in determining risk aversion).

64 *See* Frederick T. Furlong & Michael C. Keeley, *Bank Capital Regulation and Asset Risk*, FED. RES. BANK S.F. ECON. REV., Spring 1987, at 20, 30–31. This assumes that the weights used to measure risk are an accurate gauge of portfolio riskiness. *See* Jean-Charles Rochet, *Capital Requirements and the Behaviour of Commercial Banks*, 36 EUR. ECON. REV. 1137, 1161 (1992) (comparing credit- and market-based risk weighting).

enforced regulatory capital standards.[65] Likewise, managers at well-capitalized banks—who may prefer lower levels of risk taking—may also choose to reduce portfolio risk, or increase capital, after new risk-based capital regulation is introduced.[66]

Alternatively, a bank's managers may choose to maximize the bank's expected profits without regard to risk. Capital regulation, in that case, may impose greater costs on banks and, in turn, cause bank managers to shift investments into higher-yielding, riskier portfolios.[67] In addition, banks with higher capital levels are less likely to be pressured on which assets they select.[68] Managers, in that case, may have greater discretion in making risky investments as one means to mitigate the greater costs of higher capital levels.[69] Increased risk taking, however, is not inevitable. Even for value-maximizing banks, a higher capital requirement may reduce risk taking when failure to do so would force a drop in leverage (increase in capital) or contraction of a profitable portfolio.[70]

In fact, both outcomes—risk reduction and risk increase—are consistent with a 1998 study by Paul Calem and Rafael Rob, which found that banks react differently to capital regulation depending on their capital positions and the particular regulatory requirements.[71] Specifically, using a cross section of bank data from 1984 to 1993, Calem and Rob found a U-shaped relationship tied to changes in capital position and risk taking.[72] Severely undercapitalized banks were likely to take on significant risk—a moral hazard problem—whose cost was largely borne by the FDIC, as deposit insurer.[73] Risk-taking

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65 *See* Joseph P. Hughes & Loretta J. Mester, *Evidence on the Objectives of Bank Managers* 24 (Wharton Fin. Insts. Ctr., Working Paper, No. 94–15, 1994), *available at* http://fic.wharton.upenn.edu/fic/papers/94/9415.pdf.

66 *See* Kevin Jacques & Peter Nigro, *Risk-Based Capital, Portfolio Risk, and Bank Capital: A Simultaneous Equations Approach*, 49 J. ECON. & BUS. 533, 542–43 (1997).

67 *See* Jürg Blum, *Do Capital Adequacy Requirements Reduce Risks in Banking?*, 23 J. BANKING & FIN. 755, 756–57 (1999); Gennotte & Pyle, *supra* note 3, at 820; Saunders et al., *supra* note 35, at 653; *see also supra* notes 4–5 and accompanying text.

68 *See* Thomas D. Jeitschko & Shin Dong Jeung, *Do Well-Capitalised Banks Take More Risk? Evidence from the Korean Banking System*, 8 J. BANKING REG. 291, 293 (2007).

69 *See id.*; Shrieves & Dahl, *supra* note 5, at 455; *see also* Hughes & Mester, *supra* note 65 (providing empirical evidence supporting this hypothesis).

70 *See* Furlong & Keeley, *supra* note 64, at 27–28; Frederick T. Furlong & Michael C. Keeley, *Capital Regulation and Bank Risk-Taking: A Note*, 13 J. BANKING & FIN. 883, 887–89, 891 (1989); *see also* Raj Aggarwal & Kevin T. Jacques, *The Impact of FDICIA and Prompt Corrective Action on Bank Capital and Risk: Estimates Using a Simultaneous Equations Model*, 25 J. BANKING & FIN. 1139, 1156 (2001) (noting that regulatory pressure brought about through enforcement of prompt corrective-action standards helped reduce portfolio risk levels); Gennotte & Pyle, *supra* note 3, at 820 (advocating greater regulatory scrutiny following an increase in bank capital requirements in light of the incentives to increase risk).

71 *See* Paul Calem & Rafael Rob, *The Impact of Capital-Based Regulation on Bank Risk-Taking*, 8 J. FIN. INTERMEDIATION 317, 318–20 (1999).

72 *See id.* at 319, 329–30.

73 *See id.* at 320; *see also supra* notes 46, 67 and accompanying text.

incentives, however, declined as capital increased, partly because banks bore the full cost of a loss of capital if FDIC insurance was not triggered.[74] Risk taking increased again at higher capital levels as bank managers, whose banks were now sufficiently protected against insolvency, chose to invest in riskier assets in order to offset higher costs.[75] Consequently, for capital regulation to be effective, Calem and Rob argued that banks should simply be required to hold enough capital to minimize the risk of moral hazard (the bottom of the "U"), as too little or too much capital increased incentives to incur risk, albeit for different reasons.[76]

Thus, even though capital standards have been fine-tuned, they continue to have unanticipated consequences. That is, in part, because the effect of capital requirements on risk taking depends on how bank managers respond, and regulators have not been able to fully assess the impact of regulation on how banks allocate capital internally.[77] New rules may not fully reflect the private arrangements that affect managers, suggesting the need to better calibrate those rules to management conduct.

B. Trading Costs

A financial transaction tax, or FTT, imposes a tax on transactions in financial instruments, including the transfer of securities through stock exchanges, the over-the-counter markets, or otherwise.[78] The European Commission has issued a draft directive that would institute a common FTT as a means to discourage risky trading activities,[79] and

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74 *See* Calem & Rob, *supra* note 71, at 320, 330; *see also supra* notes 63–66, 70 and accompanying text.

75 *See* Calem & Rob, *supra* note 71, at 320, 330–31; *see also supra* notes 67–69 and accompanying text.

76 *See* Calem & Rob, *supra* note 71, at 346–47, 349–50.

77 *See* Kevin T. Jacques & Lakshmi Balasubramanyan, *Risk Weights in Regulatory Capital Standards: Is It Necessary to "Get It Right"?* 29–31 (Ind. State Univ. Networks Fin. Inst., Working Paper, No. 2011-WP-23, 2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1940038.

78 *See* EUR. COMM'N, PROPOSAL FOR A COUNCIL DIRECTIVE ON A COMMON SYSTEM OF FINANCIAL TRANSACTION TAX AND AMENDING DIRECTIVE 2008/7/EC 6–8 (2011), *available at* http://ec.europa.eu/taxation_customs/resources/documents/taxation/other_taxes/financial_sector/com(2011)594_en.pdf [hereinafter EC PROPOSAL] (describing various possible structures which an FTT might take in the European Union). The FTT has its roots in a transaction tax proposed by John Maynard Keynes as a means to combat short-term speculation. *See infra* note 96. A similar tax was proposed by James Tobin in order to curb speculation in the currency markets by "throw[ing] some sand in the wheels"—the so-called Tobin Tax. *See* James Tobin, Professor, Yale Univ., A Proposal for International Monetary Reform, Presidential Address at the 1978 Conference of the Eastern Economic Association (1978), *in* 4 E. ECON. J. 153, 154–55 (1978).

79 *See* EC PROPOSAL, *supra* note 78, at 2–3. With the exception of the United States, most of the world's major financial markets at one time have had a significant securities transaction tax. *See* Robert Pollin et al., *Securities Transaction Taxes for U.S. Financial Markets*, 29 E. ECON. J. 527, 534–36 (2003). An FTT was proposed, but not adopted, in the United

France has already increased its FTT on most stock transfers.[80] By contrast, the International Monetary Fund staff rejected an FTT proposal in 2010 over concern, among other things, that it would diminish valuable trading without dampening the market volatility often associated with risky transactions. The result, they feared, could be an increase in market risk.[81]

Key to assessing an FTT's value is its effect on market conduct. Like bank risk capital, there is significant division over the likely outcome.[82] On the one hand, by increasing cost, an FTT could discourage short-term traders from engaging in high-volume, speculative transactions.[83] On the other hand, an FTT could increase the cost (and lower the amount) of beneficial activities—such as market mak-

States in 2009. *See* Let Wall Street Pay for the Restoration of Main Street Act of 2009, H.R. 4191, 111th Cong. (2009); Burton G. Malkiel & George U. Sauter, *A Transaction Tax Would Hurt All Investors*, WALL ST. J. (Dec. 8, 2009), http://online.wsj.com/article/SB10001424052748703558004574579903734883292.html.

80 *See* Memorandum from Gibson, Dunn & Crutcher LLP, French Transfer Tax Reform Immediately Applicable to Transfer of Shares of Listed and Non-Listed Companies 1 (Jan. 20, 2012), *available at* http://www.gibsondunn.com/publications/Documents/FrenchTransferTaxReformApplicable-TransferofShares-Listed-NonListedCompanies.pdf.

81 *See* INT'L MONETARY FUND, A FAIR AND SUBSTANTIAL CONTRIBUTION BY THE FINANCIAL SECTOR: FINAL REPORT FOR THE G-20 19–21 (2010), *available at* http://www.imf.org/external/np/g20/pdf/062710b.pdf. For a definition of volatility, see *infra* note 91.

82 *See* Paul G. Mahoney, *Is There a Cure for "Excessive" Trading?*, 81 VA. L. REV. 713, 729, 732–36 (1995).

83 *See infra* notes 94–97 and accompanying text.

ing[84]—causing a drop in liquidity[85] and, potentially, an increase in the cost of capital-raising.[86]

Favoring an FTT is its potential to reduce "noise" in the marketplace. Proponents argue that a subset of investors trades on "noise"—meaning they lack the fundamental information on which to make an informed assessment of expected returns but choose to trade anyway.[87] By contrast, informed traders hold rational expectations about future share prices and, although they may sometimes err, those lapses should be random and, over time, the traders should learn from their mistakes.[88] Under those circumstances, according to one account, rational traders should sell shares to (buy shares from) noise traders, who consistently overestimate (underestimate) share values—

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84 *See infra* note 171 and accompanying text. A market maker is prepared to trade securities for its own account on either side of the market—in other words, it is willing to be both a buyer and seller of the securities. A customer can sell securities to the market maker at its bid price and purchase securities at its ask price. If there are more buyers than sellers, or vice versa, the market maker must adjust its inventory to accommodate customer demand, as well as change the prices at which it is willing to buy and sell securities in order to rebalance order flow. *See* Sanford J. Grossman & Merton H. Miller, *Liquidity and Market Structure*, 43 J. FIN. 617, 617–18 (1988); Maureen O'Hara & George S. Oldfield, *The Microeconomics of Market Making*, 21 J. FIN. & QUANTITATIVE ANALYSIS 361, 361 (1986). Market making facilitates capital-raising by providing investors with liquidity, which is done by ensuring there is always a market for the securities. *See* Hans R. Stoll, *Alternative Views of Market Making*, *in* MARKET MAKING AND THE CHANGING STRUCTURE OF THE SECURITIES INDUSTRY 67, 81–82 (Yakov Amihud et al. eds., 1985); Thomas S.Y. Ho & Anthony Saunders, *The Determinants of Bank Interest Margins: Theory and Empirical Evidence*, 16 J. FIN. & QUANTITATIVE ANALYSIS 581, 582–83 (1981) (using the similarities between market makers and other financial intermediaries to develop a model of bank margins); *see also* Darrel Duffie, *The Failure Mechanics of Dealer Banks* 2–4 (Bank for Int'l Settlements, Working Paper No. 301, 2010), *available at* http://www.bis.org/publ/work301.pdf (discussing the problems that plague large dealer banks, especially in their role as intermediaries).

85 Liquidity, in the capital markets, generally refers to the ability to convert an asset into cash without a significant change in price. A short-term fixed-income instrument may be liquid because it will convert to cash (mature) in the near future. Likewise, an asset's liquidity can be determined by how easily it can be sold in the market. For example, if Alpha Corp. has only two million shares outstanding, each trading at a price of $10 per share, there is only $20 million of stock that market participants can buy or sell. Large transactions in Alpha Corp. stock are likely to significantly affect its price compared to a more liquid stock, like IBM shares, over one billion dollars of which are traded each day. *See* Roger Clews & David Lodge, *Liquidity from a Central Banker's Perspective*, *in* LIQUIDITY BLACK HOLES: UNDERSTANDING, QUANTIFYING AND MANAGING FINANCIAL LIQUIDITY RISK 65, 65–69 (Avinash D. Persaud ed., 2003).

86 *See infra* notes 98–108 and accompanying text.

87 Specifically, noise traders include those with farfetched theories about how the stock market works as well as more casual investors like "dentists and doctors in the Midwest and the retired individuals in the Sunbelt, for whom 'following' their favorite stocks is a favorite pastime." Joseph E. Stiglitz, *Using Tax Policy To Curb Speculative Short-Term Trading*, 3 J. FIN. SERVICES RES. 101, 105 (1989).

88 *See* Franklin R. Edwards, *Taxing Transactions in Futures Markets: Objectives and Effects*, 7 J. FIN. SERVICES RES. 75, 77 (1992) (noting that such traders trade on the basis of fundamentals and that, where they dominate the market, stock prices are rational).

profiting as share prices fall (rise) to reflect the shares' fundamental values.[89]

Over time, one would expect informed traders to profit at the expense of their noisy counterparts. In a market dominated by information traders, share prices should also tend to move toward fundamental values, as rational arbitrageurs offset the effect of noise traders on share price.[90] The problem is that risk-averse, rational arbitrageurs, with finite time horizons, may not have sufficient interest in betting over the long term against noise traders. Noise trading increases stock price volatility—and, without knowing the extent of the noise trading or how long it will last, greater volatility raises the risk that informed traders will lose money on arbitrage transactions.[91] Moreover, by introducing greater risk into share prices, noise traders can continue to trade profitably even when their counterparts possess better information.[92] As a result, the quality of the information revealed by share prices may decline and, to that extent, the greater volatility may lower efficiency in the capital markets.[93]

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89 *See* Fischer Black, *Noise*, 41 J. FIN. 529, 532–33 (1986).

90 *See* Edwards, *supra* note 88.

91 *See* J. Bradford De Long et al., *Noise Trader Risk in Financial Markets*, 98 J. POL. ECON. 703, 705, 712–13 (1990) [hereinafter De Long et al., *Noise Trader Risk*]; J. Bradford De Long et al., *The Size and Incidence of the Losses from Noise Trading*, 44 J. FIN. 681, 681 (1989) [hereinafter De Long et al., *Losses from Noise Trading*]. In general, volatility is a measure of the variation in price of a financial instrument over time. Volatility, therefore, has much to recommend it as a proxy for risk. *See* PETER L. BERNSTEIN, AGAINST THE GODS: THE REMARKABLE STORY OF RISK 260–61 (1996). An asset that has a wide distribution of possible returns also has a greater probability of losses (or gains) than an asset with a narrow distribution. *See* Richard A. Booth, *The Uncertain Case for Regulating Program Trading*, 1994 COLUM. BUS. L. REV. 1, 14–15 (1994); Lawrence Harris, *The Dangers of Regulatory Overreaction to the October 1987 Crash*, 74 CORNELL L. REV. 927, 928–32 (1989); G. William Schwert, *Stock Market Volatility*, FIN. ANALYSTS J., May–June 1990, at 23, 24–27. In addition, stock market volatility can affect the real economy—slowing consumer and business spending and increasing the cost of capital as public confidence in the economy weakens. *See* Sean Becketti & Gordon H. Sellon, Jr., *Has Financial Market Volatility Increased?*, FED. RES. BANK KANSAS CITY ECON. REV., June 1989, at 17, 18.

92 *See* De Long et al., *Losses from Noise Trading*, *supra* note 91, at 694; De Long et al., *Noise Trader Risk*, *supra* note 91, at 713. As a result, noise trading can fuel a speculative asset bubble. *See* José A. Scheinkman & Wei Xiong, *Overconfidence and Speculative Bubbles*, 111 J. POL. ECON. 1183, 1184, 1186 (2003). Note, however, that it is equally likely that noise traders will pursue unprofitable strategies at a loss. *See* Robert Bloomfield et al., *How Noise Trading Affects Markets: An Experimental Analysis*, 22 REV. FIN. STUD. 2275, 2300 (2009).

93 *See* Lawrence H. Summers & Victoria P. Summers, *When Financial Markets Work Too Well: A Cautious Case for a Securities Transactions Tax*, 3 J. FIN. SERVICES RES. 261, 264–69 (1989); Bin Gu & Lorin M. Hitt, Transaction Costs and Market Efficiency 85, 86 (2001) (Twenty-Second Int'l Conference on Info. Sys.) (unpublished manuscript), *available at* http://opim.wharton.upenn.edu/~lhitt/tcme.pdf. Note that the empirical basis for finding "excessive" market volatility has been questioned. *See* Mahoney, *supra* note 82, at 725–26. Historically, individual share price volatility, *see* John Y. Campbell et al., *Have Individual Stocks Become More Volatile? An Empirical Exploration of Idiosyncratic Risk*, 56 J. FIN. 1, 3 (2001), and the frequency of large one-day price movements, *see* Becketti & Sellon, *supra* note 91, at 28, have grown, although overall market volatility has remained largely unaf-

FTT proponents argue that a transaction tax will disproportionately affect short-term noise traders who trade frequently (and so will incur a higher expense).[94] Noise traders, therefore, will trade less, reducing the amount of speculative trading in the marketplace.[95] The result should be a drop in volatility as prices increasingly reflect the shares' long-term fundamental values.[96] Lower volatility should then lower the cost of raising capital since investors will be more certain of the price at which they can resell their holdings.[97]

FTT opponents note that a new tax will impact market makers by increasing their cost of doing business, in addition to affecting noise traders and speculators. Driving up the cost of market making may indirectly affect liquidity for all market participants.[98] Broadly defined, a market maker's costs can be divided into three categories: order processing costs (such as taxes and transfer fees), inventory costs (such as the costs of hedging), and execution costs (including the risk that a market maker is trading with a customer who has more information than it does).[99] Higher taxes will increase a market maker's processing costs directly.[100] In addition, if trading volumes decline, market makers will have fewer transactions over which to

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fected, *see* Campbell et al., *supra*, at 3. Nevertheless, there are a number of factors that may influence volatility, and it is unclear to what extent any increase in volatility is due to noise trading. *See id.* at 37–40.

94 *See* Stiglitz, *supra* note 87, at 105–06.

95 *See* Scheinkman & Xiong, *supra* note 92, at 1186–87.

96 *See* Avanidhar Subrahmanyam, *Transaction Taxes and Financial Market Equilibrium*, 71 J. BUS. 81, 83–84, 107 (1998). This argument has its roots in Keynes' analysis of stock markets and speculation. In *The General Theory of Employment Interest and Money*, Keynes wrote that, in the New York markets, "the influence of speculation . . . is enormous. . . . Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation." JOHN MAYNARD KEYNES, THE GENERAL THEORY OF EMPLOYMENT INTEREST AND MONEY 158–59 (1936). The tendency toward speculation, Keynes argued, was the natural outcome of a liquid investment market. Thus, in order to limit speculation, an FTT should be introduced as one means to minimize broad public access to the stock markets. *Id.* at 159–60.

97 *See* Stiglitz, *supra* note 87, at 108–09. Not all noise trading, however, is bad. If everyone has the same information, there is no reason for one party to sell and the other to buy the same shares at the same price. A trading market is unlikely to develop in that case. *See* Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 AM. ECON. REV. 393, 393 (1980). Noise trading improves liquidity by making market prices less efficient. A stock's price becomes an inexact estimate of its fundamental value. Information traders, consequently, have an incentive to buy and sell shares based on the information they possess and from which they can now privately profit. *See* Black, *supra* note 89, at 531–32; Bloomfield et al., *supra* note 92, at 2277.

98 For a description of what a market maker does, see *supra* note 84 and accompanying text.

99 *See* Bruce M. Collins & Frank J. Fabozzi, *A Methodology for Measuring Transaction Costs*, FIN. ANALYSTS J., Mar.–Apr. 1991, at 27, 27–28; G. William Schwert & Paul J. Seguin, *Securities Transaction Taxes: An Overview of Costs, Benefits and Unresolved Questions*, FIN. ANALYSTS J., Sept.–Oct. 1993, at 27, 32.

100 *See* Bloomfield et al., *supra* note 92.

spread fixed costs, potentially increasing their per-transaction fees.[101] An FTT can also increase the costs of hedging: market makers that use derivatives or other financial instruments to manage portfolio risk may become subject to higher trading costs.[102] In addition, if the FTT is successful, it will drive noise traders from the marketplace. As a result, market makers may need to hold securities in inventory for longer periods, increasing their exposure to changes in share price. Moreover, by limiting speculation, an FTT raises the probability that market makers will trade with informed customers.[103] The greater risk that a market maker is buying or selling shares based on less information than its counterparts will cause some market makers to quote a wider bid–ask spread—the price at which they are prepared to buy and sell securities—in effect, raising the price at which they are willing to make a market.[104]

The resulting rise in market-making costs would be expected to affect most transactions, principally by lowering liquidity and increasing price volatility. Yet, not all securities would be affected equally. Even if uniformly applied, an FTT would have a disproportionate effect on securities that trade more frequently (such as shares included in an actively traded stock index).[105] An FTT, therefore, may cause some prices to decline relative to fundamental values, widening the bid–ask spread, in order for the securities to remain an attractive investment.[106] Higher costs can also lower trading volumes and, as a result, reduce market liquidity.[107] Lower levels of liquidity, in turn, can cause individual trades to have a greater impact on price, as well as increase market volatility—explaining the positive relationship between transaction costs and market volatility that some researchers have observed.[108]

Thus, as with increases in bank capital, the likely impact of an FTT on market participants is ambiguous. FTT proponents argue that

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101 The precise effect on trading volume is unclear. If trading volume continues to be substantial, as FTT proponents argue, the incremental cost to market makers may not be significant. *See* Stiglitz, *supra* note 87, at 110 (arguing that the market would not be significantly thinner, especially for widely-traded stocks).

102 *See* Schwert & Seguin, *supra* note 99.

103 *See id.* Note that, since an FTT would apply equally to all market actors, it could also reduce trading activity equally among noise and informed traders. *See* Bloomfield et al., *supra* note 92, at 2278.

104 *See* Harris, *supra* note 91, at 930–31.

105 *See* Schwert & Seguin, *supra* note 99, at 31–33.

106 *See* Yakov Amihud & Haim Mendelson, *Asset Pricing and the Bid-Ask Spread*, 17 J. FIN. ECON. 223, 224 (1986).

107 *See* Subrahmanyam, *supra* note 96, at 82–83.

108 *See* Christopher J. Green et al., *Regulatory Lessons for Emerging Stock Markets from a Century of Evidence on Transactions Costs and Share Price Volatility in the London Stock Exchange*, 24 J. BANKING & FIN. 577, 580–81, 591 (2000); Harald Hau, *The Role of Transaction Costs for Financial Volatility: Evidence from the Paris Bourse*, 4 J. EUR. ECON. ASS'N 862, 886–88 (2006).

a nominal tax[109] will drive out speculators with little or no negative consequences for market liquidity and volatility.[110] Others argue that even a small increase in trading costs will have a substantial impact.[111] Yet, without knowing the effect of an FTT on conduct, or whom it will affect more,[112] it is less than clear what the likely outcome will be.[113]

C. Credit Default Swaps

A credit default swap, or CDS, is a derivative contract that typically permits one counterparty to buy or sell from the other all or a portion of the credit risk tied to a loan or bond. The CDS customer pays the "writer" of the swap a periodic fee in exchange for receiving a contingent payment upon the occurrence of a credit event. If a credit event takes place—such as the borrower's insolvency—the CDS writer typically must pay the counterparty an amount sufficient to make it whole or purchase the referenced loan or bond at par.[114]

The CDS market has grown substantially in the last decade,[115] partly in response to the demand for instruments to help lenders manage their credit exposure[116] and minimize the cost of complying

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109 *See* Pollin et al., *supra* note 79, at 527–28 (discussing the effects of a 0.5 percent tax).

110 *See, e.g.*, Stiglitz, *supra* note 87, at 110–12. *But see* Stephen A. Ross, *Commentary: Using Tax Policy to Curb Speculative Short-Term Trading*, 3 J. FIN. SERVICES RES. 117, 118 (1989) (arguing that the purported upside of decreased volatility is ill-defined and possibly paternalistic).

111 *See* Ramon P. DeGennaro & Cesare Robotti, *Financial Market Frictions*, FED. RES. BANK ATLANTA ECON. REV., Third Quarter 2007, at 1, 13; *see also* Andrew W. Lo et al., *Asset Prices and Trading Volume Under Fixed Transactions Costs*, 112 J. POL. ECON. 1054, 1056 (2004) (citing several studies reaching this conclusion).

112 *See* Frank M. Song & Junxi Zhang, *Securities Transaction Tax and Market Volatility*, 115 ECON. J. 1103, 1105 (2005).

113 *See* Edwards, *supra* note 88.

114 *See* William K. Sjostrom, Jr., *The AIG Bailout*, 66 WASH. & LEE L. REV. 943, 947–49 (2009); *see also* MORTON GLANTZ, MANAGING BANK RISK: AN INTRODUCTION TO BROAD-BASE CREDIT ENGINEERING 531–49 (2003) (describing and comparing various types of credit derivatives, including CDS); Blythe Masters & Kelly Bryson, *Credit Derivatives and Loan Portfolio Management*, *in* HANDBOOK OF CREDIT DERIVATIVES 43, 43–85 (Jack Clark Francis et al. eds., 1999) (same). CDS, in substance, are economically similar to term insurance policies written against the credit downgrade of the referenced borrower. *See* Stephen J. Lubben, *Credit Derivatives and the Future of Chapter 11*, 81 AM. BANKR. L.J. 405, 411–12 (2007); Frank Partnoy & David A. Skeel, Jr., *The Promise and Perils of Credit Derivatives*, 75 U. CIN. L. REV. 1019, 1050 (2007).

115 By June 2008, an estimated $62 trillion in notional amount of CDS were outstanding, up from $900 billion in 2000. *See* Gretchen Morgenson, *First Comes the Swap. Then It's the Knives.*, N.Y. TIMES, June 1, 2008, at BU1.

116 *See* Bernadette Minton et al., *How Much Do Banks Use Credit Derivatives To Reduce Risk* 3–5, 21 (Ohio State Univ., Fisher Coll. Bus., Working Paper No. 2006-03-001, 2006), *available at* http://ssrn.com/abstract=785364; David Mengle, Head of Res., Int'l Swaps & Derivatives Ass'n, Presentation at the Financial Markets Conference of Fed. Reserve Bank of Atlanta: Credit Derivatives: An Overview, at 2 (May 15, 2007), *available at* http://www.frbatlanta.org/news/conferen/07fmc/07FMC_mengle_present.pdf (unpublished PowerPoint).

with regulatory capital requirements,[117] as well as in response to the interest by some investors in outright risk taking.[118] Beginning in the 1980s, bank lenders syndicated loans in order to help manage their credit risk exposure, spurring growth in the private credit market and secondary trading in loan assets.[119] This approach, however, required investors to purchase interests in the loans themselves—committing working capital as well as taking on the credit risk of the borrowers, which limited the universe of prospective investors. CDS offered an attractive alternative. Credit derivatives could separate the funding obligation of a loan or bond from its credit risk. Thus, by using a CDS, a bank could buy or sell all or a portion of a borrower's credit risk without transferring the loan or bond itself, typically enabling it to more efficiently manage and diversify its credit exposure.[120] In addition, CDS have improved liquidity in the bond market: dealers who make a market in bonds can manage their credit risk using CDS, enabling them to continue to actively deal.[121]

Since the CDS market has been largely private and since some borrowers are reluctant to see interests in their loans sold to others, it is unclear how often lenders use derivatives to hedge credit risk. To date, the CDS market has remained concentrated among a small group of large banks,[122] which may reflect the limited number of reference entities against which swaps are written, making that market

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117 *See* Robert F. Schwartz, *Risk Distribution in the Capital Markets: Credit Default Swaps, Insurance and a Theory of Demarcation*, 12 FORDHAM J. CORP. & FIN. L. 167, 175 (2007) (describing function and use of CDS).

118 *See* Kathryn Chen et al., *An Analysis of CDS Transactions: Implications for Public Reporting* 2 (Fed. Res. Bank N.Y., Staff Report No. 517, 2011), *available at* http://www.newyorkfed.org/research/staff_reports/sr517.html; *see also* Darrell Duffie, *Innovations in Credit Risk Transfer: Implications for Financial Stability* 4–5 (Bank for Int'l Settlements, Working Paper No. 255, 2008), *available at* http://www.bis.org/publ/work255.pdf (outlining the credit risk transfer activity of several large banks).

119 *See* Charles K. Whitehead, *The Evolution of Debt: Covenants, the Credit Market, and Corporate Governance*, 34 J. CORP. L. 641, 656–57 (2009).

120 *See* JOHN B. CAOUETTE ET AL., MANAGING CREDIT RISK: THE NEXT GREAT FINANCIAL CHALLENGE 311–12 (1998); GLANTZ, *supra* note 114, at 532; Angus Duncan, *Loan-Only Credit Default Swaps: The March to Liquidity*, COM. LENDING REV., Sept.–Oct. 2006, at 15, 15–16; *see also* Hamish Risk, *Loan Credit-Default Swaps Surge as Hedge Funds Hunger for Yield*, BLOOMBERG (Aug. 22, 2006), http://www.bloomberg.com/apps/news?pid=20601087&sid=a4fg_8Gw37Fw&refer=home (noting that "[w]hen investors can't get the loans, they're increasingly using credit-default swaps"). *But see* Minton et al., *supra* note 116, at 7 (noting that many banks were reluctant to use CDS at first and that classic bank lending still dwarfs CDS trading).

121 *See Oversight Hearing on Bond Market Regulation Before the S. Comm. on Banking, Hous. & Urban Affairs*, 108th Cong. 6 (2004), *available at* http://banking.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=029e4232-9b89-45d6-9404-37f220bb0175 (statement of Micah S. Green, President, Bond Market Association).

122 *See* Minton et al., *supra* note 116, at 2–4, 7.

less relevant to small lenders.[123] Nevertheless, trading in credit derivatives has continued to grow, and there are indications that the use of credit derivatives to diversify credit risk has become more common.[124]

Section 727 of the Dodd-Frank Act[125] amended the Commodity Exchange Act by inserting section 2(a)(13), which requires swap price and volume data to be reported "as soon as technologically practicable after the time at which the swap transaction has been executed"[126] and "in such form and at such times as the [Commodity Futures Trading] Commission determines appropriate to enhance price discovery."[127] The Commodity Futures Trading Commission (CFTC) was also directed to implement rules that, among other things, "take into account whether the public disclosure will materially reduce market liquidity."[128] Under the new rules, swap transactions must be reported to a swap data repository, which must make the information publicly available as soon as technologically practicable.[129] Reports for certain block trades and large notional swap transactions are subject to a reporting delay based on the type of market participant, the method of execution, and the asset class traded.[130]

There has been some debate over the likely effect of public trade reporting on the CDS market. Market participants argue that public disclosure, even if delayed, may put them at risk from competitors

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123 *See* Benedikt Goderis et al., *Bank Behaviour with Access to Credit Risk Transfer Markets* 8–9 (Bank of Fin. Res., Discussion Paper No. 4, 2007), *available at* http://www.bof.fi/NR/rdonlyres/801B7C28-819B-4A72-877A-0926F00563D1/0/0704netti.pdf. The CDS industry introduced new market trading conventions in 2009 (referred to as the "Big Bang Protocol") in order to standardize and potentially increase trading in most single-name CDS products. *See generally Big Bang Protocol: Frequently Asked Questions*, INT'L SWAPS AND DERIVATIVE ASS'N, http://www.isda.org/bigbangprot/bbprot_faq.html (last visited Apr. 15, 2012).

124 *See* Viral V. Acharya & Timothy C. Johnson, *Insider Trading in Credit Derivatives*, 84 J. FIN. ECON. 110, 111 (2007); Duffie, *supra* note 118, at 4–5; Henry T.C. Hu & Bernard Black, *Debt, Equity and Hybrid Decoupling: Governance and Systemic Risk Implications*, 14 EUR. FIN. MGMT. 663, 682 (2008); Partnoy & Skeel, *supra* note 114, at 1034; DEBTWIRE, NORTH AMERICAN DISTRESSED DEBT MARKET OUTLOOK 2008 14 (2008), http://www.debtwire.com/library.marketview?DocID=1083.

125 Dodd-Frank Act § 727, Pub. L. No. 111-203, 124 Stat. 1376 (2010) (to be codified at 7 U.S.C. § 2) (amending the Commodity Exchange Act).

126 *Id.*

127 *Id.*

128 *Id.*

129 Real-Time Public Reporting of Swap Transaction Data, 77 Fed. Reg. 1182, 1201 (Jan. 9, 2012) (to be codified at 17 C.F.R. pt. 43).

130 *See id.* at 1216. The time delays range from fifteen minutes to forty-eight business hours. *See id.* at 1264–65. They are the same on an interim basis for all swaps within a particular category, regardless of size, until the CFTC determines appropriate minimum block sizes. *See id.* at 1216, 1247. The CFTC has also proposed criteria for determining swap categories, methodologies to set the appropriate minimum block sizes, and limitations on the public disclosure of certain swap transaction and pricing data. *See* Procedures to Establish Appropriate Minimum Block Sizes for Large Notional Off-Facility Swaps and Block Trades, 77 Fed. Reg. 15,460 (Mar. 15, 2012) (to be codified at 17 C.F.R. pt. 43).

who anticipate their need to hedge.[131] Those competitors may trade ahead of their hedging activity, causing market prices to move adversely to the hedger, potentially raising the cost of CDS trading and lowering liquidity.[132]

The view that greater transparency can negatively affect the credit markets, however, runs contrary to the accepted wisdom among politicians,[133] regulators,[134] and academics.[135] Moreover, it is inconsistent with research to date on the corporate bond market. Prior to 2002, corporate bonds traded principally in the over-the-counter market with limited public disclosure of any trading information. Beginning in 2002, all broker-dealers were required to report trade prices, quantities, and other information through the Trade Reporting and Compliance Engine (TRACE) system. The resulting transparency had a neutral or positive effect on bond liquidity and, since investors had more information, it also resulted in a greater ability to negotiate terms with dealers and lower trading costs.[136]

Greater transparency also had some notable side effects. Historically, dealers held an inventory of bonds in which they would make a

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131 *See* Katy Burne, *N.Y. Fed Study Suggests Swaps Overhauls Need to Be Nuanced*, WALL ST. J. (Sept. 27, 2011), http://online.wsj.com/article/SB10001424052970204813045765969 31512434352.html.

132 *See* Real-Time Public Reporting of Swap Transaction Data, 77 Fed. Reg. 1213 (discussing concerns about front running of large transactions); *see also supra* notes 98–108 and accompanying text (discussion of trading costs and liquidity).

133 For example, one of the express goals of the Dodd-Frank Act was to increase transparency in the derivatives market. *See* Press Release, H. Comm. Fin. Servs. - Democrats, Dodd-Frank Wall Street Reform and Consumer Protection Act (June 29, 2010), *available at* http://democrats.financialservices.house.gov/press/PRArticle.aspx?NewsID=1306 (noting that the Dodd-Frank Act "[r]equires data collection and publication through clearing houses or swap repositories to improve market transparency").

134 As CFTC Chairman Gary Gensler testified, "Some have legitimately debated whether [the] lack of transparency was a contributing factor to the financial crisis. I believe that . . . this lack of transparency did leave our financial system more vulnerable." Gary Gensler, Chairman, CFTC, Testimony to the Financial Crisis Inquiry Commission (July 1, 2010), *available at* http://www.cftc.gov/PressRoom/SpeechesTestimony/opagensler-48; *see also* Christopher Cox, Op-Ed., *Swapping Secrecy for Transparency*, N.Y. TIMES, Oct. 19, 2008, at WK12 (arguing that Congress needs to make the CDS market more transparent to help regulators uncover fraudulent practices).

135 *See, e.g.*, Andrew W. Lo, *Regulatory Reform in the Wake of the Financial Crisis of 2007–2008*, 1 J. FIN. ECON. POL'Y 4, 18 (2009) (arguing for substantial reforms of the CDS market, including increased transparency); Partnoy & Skeel, *supra* note 114, at 1047 (suggesting reforms such as making all credit derivative information free on the internet, requiring SEC filings of credit derivative information, creating a centralized credit derivative platform, and requiring companies to disclose credit derivative holdings in narrative form).

136 *See* Hendrik Bessembinder & William Maxwell, *Transparency and the Corporate Bond Market*, 22 J. ECON. PERSP. 217, 225–27 (2008); Amy K. Edwards et al., *Corporate Bond Market Transaction Costs and Transparency*, 62 J. FIN. 1421, 1422–23 (2007); Michael A. Goldstein et al., *Transparency and Liquidity: A Controlled Experiment on Corporate Bonds*, 20 REV. FIN. STUD. 235, 237–38 (2007).

market.[137] With TRACE, it was possible for competitors to know when a dealer held a substantial amount of a particular security. Those competitors, therefore, might trade ahead of the dealer's efforts to sell or hedge its bonds, causing prices to move against it. Dealers, therefore, became more reluctant to hold large bond inventories. For that reason, trading became more difficult after the TRACE system was introduced—bond traders now needed to contact multiple dealers in order to purchase a large quantity of bonds.[138] Dealers may have also become reluctant to trade as principals, placing customer orders on an agency basis in order to minimize their own risk and also lowering liquidity.[139]

Greater disclosure in the CDS market is likely to help level the playing field between investors and dealers. Yet, like the corporate bond market, it may push dealers toward adopting an agency business model.[140] In addition, greater disclosure may decrease liquidity due to its impact on dealer hedging. A recent study by the Federal Reserve Bank of New York found that, although there is a broad level of participation in the CDS market, most CDS do not trade frequently, underscoring the importance of market makers—who are willing to assume the risk of a less-traded asset and hold it for some time—in ensuring market liquidity.[141] The study also found that block trades between dealers and customers typically are not hedged quickly, with dealers often trading out of their risk a day or more after the original transaction.[142] Accordingly, CDS dealers—like their counterparts in the bond market—are concerned that public knowledge of a transaction will give competitors a chance to trade in advance of any hedging activity, potentially increasing the cost of hedging. Dealers, consequently, may become unable to manage their own risks in a cost-effective way. The New York Fed study, therefore, concluded that the resulting rise in hedging costs could lower market making, dampen CDS liquidity, and potentially raise CDS costs to customers.[143]

Thus, the effect of transparency on the CDS market is uncertain. Recognizing this, reporting delays under the new CFTC rules have been adopted on an interim basis for all swap transactions, regardless

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137 A description of market making and liquidity appears *supra* notes 98–108 and accompanying text.

138 *See* Bessembinder & Maxwell, *supra* note 136, at 223, 228–29.

139 *See id.* at 228; *see also* Gordon Gemmill, *Transparency and Liquidity: A Study of Block Trades on the London Stock Exchange Under Different Publication Rules*, 51 J. FIN. 1765, 1766–67 (1996) (noting that delayed publication does not improve liquidity).

140 *See* Katy Burne, *Reforms Have Swap Dealers and Brokers Considering Agency Model*, WALL ST. J. (Oct. 13, 2011), http://online.wsj.com/article/BT-CO-20111013-715009.html (available only to subscribers).

141 *See* Chen et al., *supra* note 118, at 10.

142 *See id.* at 16.

143 *See id.* at 16–18.

of amount, until the CFTC determines the appropriate minimum block sizes over which reporting will be delayed.[144] Those minimum block sizes will be based on data the CFTC obtains during an initial phase-in period,[145] with the expectation that roughly two-thirds of CDS transactions will be reported on a real-time basis, without delay.[146] Reflecting dealer concerns over anonymity, the CFTC has also proposed rules to help mask the total amount of a swap transaction that equals or exceeds the applicable minimum block size.[147]

Two potential outcomes are possible, both of which are consistent with experience in the bond market. The first predicts that transparency will enhance competition, forcing a decline in trading costs that benefits market participants. The second suggests that greater transparency—even if it provides customers with more bargaining leverage—may still result in higher trading costs as dealers offset the greater risk of hedging. For some dealers, the risk may be too high, resulting in a decline in CDS liquidity. A slowdown in the CDS market, in turn, may affect customers—such as banks and other regulated entities—that rely on CDS to help manage their credit risk.[148] Regulating CDS disclosure, therefore, leaves open a question beyond the

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144 *See* Real-Time Public Reporting of Swap Transaction Data, 77 Fed. Reg. 1182, 1215–16 (Jan. 9, 2012) (to be codified at 17 C.F.R. pt. 43). The CFTC noted that five commenters had recommended the adoption of "tiered time delays based on average daily trading volume or minimum block size," reflecting the potential impact of disclosure on trading and hedging. *See id.* at 1216. The CFTC acknowledged that it may be appropriate for less liquid swaps to become subject to longer time delays. *See id.* at 1218.

145 *See* Procedures to Establish Appropriate Minimum Block Sizes for Large Notional Off-Facility Swaps and Block Trades, 77 Fed Reg. 15,460, 15,466–67 (Mar. 15, 2012) (to be codified at 17 C.F.R. pt. 43).

146 *Id.* at 15,480. For the proposed methodology to calculate minimum block sizes for CDS, see 77 Fed Reg. at 15,479–80.

147 *Id.* at 15,490.

148 Bank of America has estimated that, in 2006, approximately 13% of the CDS market—equal to $3.2 trillion in notional amount—involved the net transfer of credit risk away from banks' loan portfolios. *See* Duffie, *supra* note 118. For banks, the benefits have been substantial—enabling them to manage and diversify credit risk at lower cost than before. *See* Katerina Simons, *Why Do Banks Syndicate Loans?*, NEW ENG. ECON. REV., Jan.–Feb. 1993, at 45, 45–47 (noting that loan syndications and other forms of secondary intermediation permit banks to reduce exposure to individual borrowers and reduce unwanted risk concentrations); Rebecca S. Demsetz, *Bank Loan Sales: A New Look at the Motivations for Secondary Market Activity* 22–23 (Fed. Res. Bank of N.Y., Staff Report No. 69, 1999), *available at* http://www.newyorkfedeconomists.org/research/staff_reports/sr69.pdf (noting that loan syndications and other credit risk transfers permit banks to diversify their holdings which, in turn, allows banks to realize benefits—including increased profitability—not available to less diversified banks). Borrowers are likely to have benefited as well. A portion of the gains can be passed on, for example, through increased lending limits or lower interest rates, resulting in an overall decline in a borrower's real cost of capital. *See* A. Burak Güner, *Loan Sales and the Cost of Corporate Borrowing*, 19 REV. FIN. STUD. 687, 713 (2006) (finding that corporate loans that are originated for sale have lower yields than traditional corporate loans because they have a lower cost of funding for banks than traditional loans); George G. Pennacchi, *Loan Sales and the Cost of Bank Capital*, 43 J. FIN. 375, 375–76, 393 (1988) (suggesting that the reduced finance and capital costs that banks can

CDS market: Will greater transparency affect other sectors of the financial system? Without knowing its effect on CDS market makers, it is difficult to anticipate what the full impact will be.

II
STAGED REGULATION AND THE GOLDILOCKS APPROACH

Uncertainty around new financial regulation can draw into question its value in minimizing risk. Each of the foregoing examples—bank risk taking, transaction taxes, and CDS disclosure—suggests that risk-related regulation can be valuable but may also have unanticipated outcomes. The key question is whether new rules can be introduced that effectively address the risks they are designed to regulate while minimizing the negative side effects. I refer to this balance as the "Goldilocks approach"—weighing new rules against new risks that potentially eclipse the regulatory benefits. Regulation, in the Goldilocks world, should not be too strong or too weak but should strike a balance that is "just right." Attempting to do so with limited information may be difficult in light of the growing complexity of the financial system. Better information is required. To the extent it addresses that need, new risk regulation, therefore, may benefit from staging rather than the introduction of a full array of new rules at once.

At its heart, the Goldilocks approach relies on a real options method of new regulation—staging new rules in order to provide regulators with additional information regarding their effect on market conduct and, as necessary, adjusting those rules to reflect any unanticipated consequences. Real options theory, in the transactional world, is based on the insight that investment opportunities can be analyzed as options that managers choose to exercise or forego. Rather than committing to, and incurring the related (and potentially irreversible) costs of, a particular strategy, managers can adjust their approach based on new information they acquire over time. Permitting new rules to be adjusted to reflect market feedback can assist in minimizing uncertainty over the rules' benefits, as well as lower the likelihood that regulation will be ineffective or result in unanticipated costs.[149]

Consider, for example, a firm's decision whether or not to invest in a new copper mining project. Assume that the real property is undeveloped, that the money used to purchase and develop the property is unrecoverable after it is spent, and that future returns on the production and sale of copper are uncertain. In general, to value the

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realize through loan sales permit them to lend to a greater number of borrowers, including riskier borrowers).

149 *See* Barbara Luppi & Francesco Parisi, *Optimal Timing of Legal Intervention: The Role of Timing Rules*, 122 HARV. L. REV. F. 18, 19–20 (2009), http://www.harvardlawreview.org/media/pdf/luppi_parisi.pdf.

project using a traditional discounted cash flow (DCF) analysis, the firm's managers would estimate the cash flow from future sales of copper and discount that estimate to its present value. The discount rate would reflect, among other things, the risk of the cash flow being realized (for example, due to future fluctuations in the world's copper price). The result would then be compared to the project's required expenditures, and, if positive, the firm would expect to increase its value by making the investment.[150]

The DCF analysis, while commonly used to assess new projects,[151] misses some important points. First, it bundles all stages of the project together as one. It fails to reflect the series of options available to the firm in developing the new mine and, as necessary, making mid-course corrections in its strategy.[152] From an options perspective, buying the property grants the firm the option to explore it; following exploration, new information gives the firm a better basis to decide whether or not to develop it; and investing in development provides the firm with the option to extract copper (and, going forward, the option to abandon the project if it becomes unprofitable).[153]

Second, because the project is a series of options, the firm can defer its investment or adjust its development in order to maximize profits.[154] Those options have value, which is typically not reflected in a DCF analysis,[155] so long as the firm can adjust its strategy (at relatively low cost) based on the new information it acquires.[156] Likewise, the firm's decision not to exercise an option—to postpone development of the project until a later date—has a cost. Delaying construction postpones the firm's realization of value, and that cost must be balanced against the benefit of waiting before moving to the project's next stage.[157]

Finally, using a DCF analysis, a firm that chooses between two projects may select the one with lower anticipated cash flows if there is a greater probability of receiving such cash flows. Doing so, however,

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150 *See* Timothy A. Luehrman, *Investment Opportunities as Real Options: Getting Started on the Numbers*, HARV. BUS. REV., Jul.–Aug. 1998, at 51, 52; Thomas A. Smith, *Real Options and Takeovers*, 52 EMORY L.J. 1815, 1821–22 (2003).

151 *See* Margaret E. Slade, *Valuing Managerial Flexibility: An Application of Real-Option Theory to Mining Investments*, 41 J. ENVTL. ECON. & MGMT. 193, 195 (2001).

152 *See* Tom Copeland & Peter Tufano, *A Real-World Way to Manage Real Options*, HARV. BUS. REV., Mar. 2004, at 90, 92.

153 *See* Slade, *supra* note 151, at 196–97.

154 This assumes that the firm exercises its options in a manner that maximizes value. It is possible that management will miscalculate when best to go forward—rather than, for example, waiting to gain further information about the project—and, as a result, fail to realize the options' full value. *See* Copeland & Tufano, *supra* note 152, at 91.

155 *See* Smith, *supra* note 150, at 1823.

156 *See* Yair Listokin, *Learning Through Policy Variation*, 118 YALE L.J. 480, 524–27 (2008); Cass R. Sunstein, *Irreversible and Catastrophic*, 91 CORNELL L. REV. 841, 859–60 (2006).

157 *See* Smith, *supra* note 150, at 1824; Luppi & Parisi, *supra* note 149, at 19–20.

may fail to take account of the benefits of options. At each stage, the money the firm invests in the project can be considered the purchase price of a related option. If the firm can switch strategies at low cost—in other words, if it can exercise its option to go forward or, at minimal cost, modify or forego the project—it may be more valuable for the firm to pursue a project with higher anticipated cash flows, even though there is a greater risk at the outset that they will not be realized. The firm will be able to adjust its management strategy, based on the new knowledge it acquires over time, to address prospective issues as they arise.[158]

Regulators often attempt to assess the impact of new rules on regulated activity as part of a cost-benefit analysis.[159] Like the DCF ap-

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158 *See* Listokin, *supra* note 156, at 525; Slade, *supra* note 151, at 202–03. In addition, once the firm decides to go forward with a stage of the project, it will give up the remaining value of the associated option. That loss should also be taken into account even though it is typically not included in a DCF valuation. *See* Kenneth J. Arrow & Anthony C. Fisher, *Environmental Preservation, Uncertainty, and Irreversibility*, 88 Q.J. ECON. 312, 319 (1974); Slade, *supra* note 151, at 196; Smith, *supra* note 150, at 1823.

159 *See* Listokin, *supra* note 156, at 500. Note that some federal agencies are required to assess the economic effects of significant new rules. The Office of Management and Budget (OMB), in Circular A-4, set out how those costs and benefits should be measured and reported. Circular A-4 from OMB to the Heads of Executive Agencies and Establishments (Sept. 17, 2003), *available at* http://www.whitehouse.gov/omb/circulars_a004_a-4. As independent regulatory agencies, however, federal financial regulators are not required under the Administrative Procedure Act, 5 U.S.C. §§ 551–559, 701–706, 1305, 3105, 3344, 4301, 5335, 5372, 7521 (2006), to conduct the same cost-benefit analysis when they adopt new regulations, *see* Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 21, 2011) (supplementing Executive Order 12,866 and setting forward general regulatory requirements); Exec. Order No. 13,258, 3 C.F.R. 204 (2002) (making minor changes to terms of Executive Order 12,866); Exec. Order No. 12,866, 58 Fed. Reg. 51,735, 51,737 (Oct. 4, 1993) (excluding from the rule "any authority . . . considered to be independent regulatory agencies, as defined in 44 U.S.C. 3502(10)"), although Executive Order 13,579 more recently has encouraged them to comply with Executive Order 13,563, *see* Exec. Order No. 13,579, 76 Fed. Reg. 41,587 (July 14, 2011). Some financial regulators are separately required to consider the impact, costs, and benefits of new rules but without a prescribed methodology. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-151, DODD-FRANK ACT REGULATIONS: IMPLEMENTATION COULD BENEFIT FROM ADDITIONAL ANALYSES AND COORDINATION 10–12 (2011), *available at* http://www.gao.gov/assets/590/586210.pdf. Federal financial regulators have represented to the Government Accountability Office (GAO) that they follow Circular A-4's guidance "in principle or spirit," *see id.* at 14, even though the GAO did find that regulators' policies did not fully follow the OMB's guidance during the early stages of implementing the Dodd-Frank Act, *see id.* at 14–18. More recently, the Inspector General of the Securities and Exchange Commission (SEC) criticized the SEC's cost-benefit review of new Dodd-Frank Act regulations, finding that the SEC sometimes used "multiple baselines [in its cost-benefit analyses] that [were] difficult to define or internally inconsistent." SEC, OFFICE OF INSPECTOR GEN., FOLLOW-UP REVIEW OF COST-BENEFIT ANALYSES IN SELECTED SEC DODD-FRANK ACT RULEMAKINGS, REPORT NO. 49, 23 (2012), *available at* http://www.sec-oig.gov/Reports/AuditsInspections/2012/499.pdf. In response, the SEC has developed internal guidance that directs its staff to undertake a more comprehensive economic analysis of new regulations during the rulemaking process. *See* Jessica Holzer & Andrew Ackerman, *SEC Addressing Gaps in Analysis*, WALL ST. J., Apr. 17, 2012, at C3. CFTC Commissioner Scott O'Malia has also been critical of the CFTC's "fail[ure] to meet basic standards in analyzing the costs and benefits of its rulemakings." Scott D. O'Malia,

proach, a cost-benefit analysis measures the direct benefits of new regulation without valuing options or the incremental learning that a staged approach can create. Suppose, for example, a regulator is faced with two alternative rules—each with different degrees of restriction. Assume that the "conservative" rule is less likely to raise unanticipated consequences but also is unlikely to be as effective as the "aggressive" rule, which has a greater chance of raising other issues. The regulator's choice, of course, is not irreversible. A poor decision, or a new rule with unanticipated consequences, can be reversed at a later stage—but, potentially, at substantial expense. That expense can include the sunk costs of implementing and complying with the prior rule, as well as the negative impact of poor regulation on the financial markets (and, potentially, the real economy).[160] At a high cost, it would make sense for the regulator to adopt the conservative rule—one with a lower risk of a negative outcome—even if the alternative potentially has better results. The conservative rule would minimize the risk of incurring those costs even though it may not be optimal.[161]

Dividing regulation into stages can help resolve this tension. Introducing a new rule over time can minimize uncertainty about its

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Comm'r, CFTC, Almost Certainly MSU (making stuff up), Remarks at the Eighth Annual Energy Trading Conference, Bauer College Global Energy Management Institute, University of Houston, Mar. 23, 2012, *available at* http://www.cftc.gov/PressRoom/Speeches Testimony/opaomalia-12. Those failures may partly reflect the basic difficulty of measuring the costs and benefits of new regulation in an evolving financial services industry. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-08-32, FINANCIAL REGULATION: INDUSTRY TRENDS CONTINUE TO CHALLENGE THE FEDERAL REGULATORY STRUCTURE 3–6 (2007), *available at* http://www.gao.gov/new.items/d0832.pdf. The result is that financial regulation often falls short of the rigorous analysis applied by other federal agencies. *See* Edward Sherwin, *The Cost-Benefit Analysis of Financial Regulation: Lessons from the SEC's Stalled Mutual Fund Reform Effort*, 12 STAN. J.L. BUS. & FIN. 1, 2 (2006); *see also* Letter from CCMR to Senators Timothy Johnson and Richard Shelby and Representatives Spencer Bachus and Barney, Lack of Cost-Benefit Analysis in Dodd-Frank Rulemaking (Mar. 7, 2012) [hereinafter CCMR Letter], *available at* http://capmktsreg.org/2012/03/lack-of-cost-benefit-analysis-in-dodd-frank-rulemaking/ (letter by independent committee of financial experts criticizing "the inadequacy of cost-benefit analysis in proposed and final rulemakings" under the Dodd-Frank Act). Recent initiatives have sought to narrow the disparity, although whether, as a practical matter, a cost-benefit analysis of financial regulation is possible remains to be seen. In September 2011, Senator Richard Shelby, the senior Republican on the Senate Committee on Banking, Housing and Urban Affairs, introduced the Financial Regulatory Responsibility Act of 2011, *see* Financial Regulatory Responsibility Act of 2011, S. 1615, 112th Cong. (2011), *available at* http://www.law.yale.edu/documents/pdf/cbl/S1615.pdf, which would prevent a federal agency from introducing any notice of proposed rulemaking until it has completed a "quantitative and qualitative assessment of all anticipated direct and indirect costs and benefits" of the proposed rule, *see id.* § 3(a)(4), and prohibit any agency from "publish[ing] a notice of final rulemaking if the agency . . . determines that the quantified costs are greater than the quantified benefits," *see id.* § 3(b)(4)(A).

160 *See* FRANCESCO PARISI & VINCY FON, THE ECONOMICS OF LAWMAKING 35–36 (2009) (describing the sunk costs of lawmaking).

161 *See* Listokin, *supra* note 156, at 527–29.

future costs and benefits so long as regulators can modify the rule to reflect concerns that arise with new information.[162] The result may be more effective—and targeted—regulation than under a traditional cost-benefit analysis.

A staged approach, however, may not be appropriate for all regulation. If regulators are uncertain how to address a particular risk, and there are two or more competing proposals to do so, it may be costly to stage the implementation of the first proposal and then, midstream, switch to a second. The less costly alternative, in that case, may be to adopt a regulation from the outset that is less likely to raise other problems even if it is also less likely to be as effective. The key is to determine the cost of staging relative to its benefits and compare the outcome to the alternatives.[163] With an FTT, for example, a regulator could initially implement a marginal FTT, or apply it to a subset of financial instruments, as part of a staging process. Staging would be appropriate if the regulator could then modify the FTT, at relatively low cost, with the experience it gains from introducing the initial tax, taking into account its impact (if any) on liquidity.[164]

Another example is the Volcker Rule.[165] The new Rule prohibits a banking entity[166] from "engag[ing] in proprietary trading" or "acquir[ing] or retain[ing] any equity, partnership, or other ownership interest in or sponsor[ing] a hedge fund or a private equity fund,"[167]

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162 *See* Sunstein, *supra* note 156, at 859.

163 *See* Listokin, *supra* note 156, at 489–90.

164 The potential problems of implementing a full FTT from the outset are described *supra* notes 98–108 and accompanying text.

165 Dodd-Frank Act, 12 U.S.C. § 1851 (Supp. IV 2010). The Volcker Rule reflects the populist view that during the period leading up to the financial crisis proprietary trading distracted banks from their fiduciary obligations to clients as well as from their core function of providing long-term credit to families and businesses. It was motivated, in part, by a desire to force banks to return to a traditional banking model—to create a static regulatory divide between commercial and investment banking, thereby insulating traditional bank functions, such as taking deposits and making loans, from proprietary trading. I describe the Volcker Rule, and issues surrounding its implementation, in more detail in Charles K. Whitehead, *The Volcker Rule and Evolving Financial Markets*, 1 HARV. BUS. L. REV. 39, 40–43 (2011).

166 "Banking entity" is defined in section 13(h)(1) of the Bank Holding Company Act of 1956. 12 U.S.C. § 1851 (2006 & Supp. IV 2010) (amended by section 619 of the Dodd-Frank Act). The term includes any insured depository institution (other than certain limited purpose trust institutions), any company that controls an insured depository institution, any company that is treated as a bank holding company for purposes of section 8 of the International Banking Act of 1978, *see* 12 U.S.C. § 3106, and any affiliate of any of the foregoing. 12 U.S.C. § 1851.

167 *Id.* § 1851(a). The Volcker Rule defines a "hedge fund" and a "private equity fund" broadly to be any entity "that would be an investment company, as defined in the Investment Company Act of 1940, but for section 3(c)(1) or 3(c)(7) of that Act, or such similar funds as the appropriate Federal banking agencies, the [SEC], [or] the [CFTC]" determine should be treated as a hedge fund or private equity fund. § 1851(h)(2) (citation omitted).

subject to certain exceptions and permitted activities.[168] Among the permitted activities, market making[169] is perhaps the most important. Drawing a line between prohibited trading and market making may be difficult to do in practice[170]—a potential problem in light of the importance of market making to capital-raising.[171] Investors contact

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168 Certain proprietary trading activities are still permitted under the Volcker Rule, § 1851(d)(1)—including trading in U.S. government securities, § 1851(d)(1)(A), market making, § 1851(d)(1)(B), and hedging to mitigate risk, § 1851(d)(1)(C)—although the full scope of permitted activities remains to be finalized. Also excluded from the Rule is proprietary trading conducted solely outside the United States by an entity not directly or indirectly controlled by a U.S. bank or systemically important firm. *See* § 1851(d)(1)(H). In addition, the Rule authorizes regulators to carve out trading activities if they "promote and protect the safety and soundness" of the firm and U.S. financial stability. § 1851(d)(1)(J). An otherwise permitted activity, however, is still prohibited if it will result in "a material conflict of interest" with clients or "a material exposure . . . to high-risk assets or high-risk trading strategies." § 1851(d)(2)(A)(i)–(ii). Permitted activities may be subject to additional capital requirements and other limitations if determined to be "appropriate to protect the safety and soundness" of the firms engaged in such activities. *See* § 1851(d)(3).

169 *See* § 1851(d)(1)(B).

170 As the notice of proposed rulemaking under the Volcker Rule describes:

> It may be difficult to distinguish principal positions that appropriately support market making-related activities from positions taken for short-term, speculative purposes. In particular, it may be difficult to determine whether principal risk has been retained because (i) the retention of such risk is necessary to provide intermediation and liquidity services for a relevant financial instrument or (ii) the position is part of a speculative trading strategy designed to realize profits from price movements in retained principal risk.

Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds, 76 Fed. Reg. 68,846, 68,869 (Nov. 7, 2011).

171 *See supra* note 84 and accompanying text. Market making is a response to the need in today's world for market and funding liquidity. *Market liquidity* refers to the ease by which an investor can sell a portfolio asset, like a stock or a bond. An asset's market liquidity is low when it becomes relatively difficult to raise money by selling the asset—where, in effect, there are sellers but relatively few buyers, resulting in a drop in sale price. Anticipating that risk, investors are more likely to demand a higher return on their investment; the greater the risk, the greater the overall cost of raising capital. *Funding liquidity* refers to the ability of investors and other market participants to finance their investment portfolios. Many investors use the assets they buy as collateral against short-term borrowings, often structured as sales and repurchases in the "repo" market. If an investor, for example, buys Asset A for 100, it can in effect post Asset A as collateral against a loan of 97. The remainder of the purchase price—referred to as a "haircut," in this example, of 3—must be financed using the investor's own capital, which is typically more expensive than repo. The size of the haircut is a reflection of the lender's ability to sell collateral if the borrower defaults. Thus, a decline in market liquidity is likely to increase the haircut. It also limits how much the investor can borrow and, therefore, its profitability—most likely prompting investors to demand a greater return on the assets they buy. *See* Markus K. Brunnermeier & Lasse Heje Pedersen, *Market Liquidity and Funding Liquidity*, 22 REV. FIN. STUD. 2201, 2201–07 (2009); Gorton, *supra* note 41, at 33–38. Stated differently, market and funding liquidity are two sides of the same coin. If market liquidity declines, the resulting rise in haircuts will lower the amounts available to buy new assets, in turn, prompting a further drop in market liquidity. This feedback loop is precisely what occurred during the 2008 financial crisis, resulting in a rapid decline in market and funding liquidity. *See* Brun-

market makers, such as banks, daily to trade billions of dollars of financial instruments. As a result, banks may acquire inventory and maintain risk exposures in order to meet (or anticipate) customer demand. Proprietary traders, likewise, accumulate positions with the expectation of profiting from future transactions. Both involve principal trading with customers or counterparties, where the firm may gain or lose as a result of short-term changes in asset price.[172]

Proposed regulations to implement the Volcker Rule set out the criteria a banking entity must meet in order for its market-making activities to be permissible. Those criteria turn, in part, on quantitative measures that each bank must maintain and report.[173] In addition, the regulations define the key characteristics of permissible market making,[174] although they recognize that the precise nature of those activities will vary depending, in part, on the financial instruments being traded and the location and liquidity of the relevant market.[175] The regulations are complex,[176] and implementing them is likely to

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nermeier & Pedersen, *supra*, at 2203–05. Short of crisis, however, the relationship between market and funding liquidity can still limit the amount of new capital that is available to end users—those who rely on the capital markets to raise funds—or increase the overall cost of funding. More to the point, investors purchase securities on the basis of there being an adequate secondary market for resale, which largely depends on market-making activities. Unless an alternative source of liquidity appears, a decline in market making is likely to increase portfolio risk and either reduce returns to investors or increase the issuers' cost of capital, or both. *See* Darrell Duffie, *Market Making Under the Proposed Volcker Rule* 18–19 (Rock Ctr. for Corp. Governance, Working Paper Series No. 106, 2012), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1990472.

172 *See* Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds, 76 Fed. Reg. at 68,869; *see also* FIN. STABILITY OVERSIGHT COUNCIL, STUDY & RECOMMENDATIONS ON PROHIBITIONS ON PROPRIETARY TRADING & CERTAIN RELATIONSHIPS WITH HEDGE FUNDS & PRIVATE EQUITY FUNDS 18–25 (2011) [hereinafter FSOC STUDY], *available at* http://www.treasury.gov/initiatives/Documents/Volcker%20sec%20%20619%20study%20final%201%2018%2011%20rg.pdf (noting that current market making often includes elements of proprietary trading and that, coupled with differences in market making for different assets and markets, delineating between permissible and impermissible trading is challenging).

173 *See* Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds, 76 Fed. Reg. at 68,869, 68,882–84. The Dodd-Frank Act directed the Financial Stability Oversight Council to undertake a study of the Volcker Rule, including recommendations regarding its implementation, which was published on January 18, 2011. *See* Dodd-Frank Act, § 1851(b)(1); *see also* FSOC STUDY, *supra* note 172, at 8–9 (describing the statutory mandate and objectives of the FSOC Study). A key recommendation was the use of quantitative metrics to aid regulators in distinguishing impermissible proprietary trading from permitted activities and to facilitate the comparison of trading activity across different banks. *See id.* at 37. Metrics will also help banking entities comply more easily with the Volcker Rule, but in addition, they are likely to require banks to change how they do business in order to comply with the regulators' definition of permitted activities. *See id.* at 5–6.

174 *See* Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds, 76 Fed. Reg. at 68,890–91.

175 *See id.* at 68,871–72.

176 *See* James B. Stewart, *Volcker Rule, Once Simple, Now Boggles*, N.Y. TIMES, Oct. 22, 2011, at B1.

be expensive.[177] Regulators, moreover, are split over how best to finalize the Rule's requirements—prompting over 1,300 queries in the release proposing the new regulations, many of which reflect issues the regulators could not resolve among themselves.[178] Consequently, a staged approach to implementing the Rule—incorporating its impact on, for example, market making—may be more effective than efforts to finalize it from the outset. Introducing the Rule gradually may minimize the effect of any unanticipated consequences and, importantly, permit regulators to adjust the Rule's scope based on actual (rather than anticipated) market reaction.[179]

The Goldilocks approach is not without precedent. Regulators, from time to time, have implemented new regulations gradually in order to assess their impact on the financial markets.[180] For example,

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177 The FSOC Study notes that banks will be required to develop new regulatory and supervisory tools beyond their current risk management systems. *See* FSOC STUDY, *supra* note 172, at 31 (noting that current risk management frameworks, because they are designed principally to limit losses, will need to be redeveloped to prioritize compliance with the Volcker Rule's prohibitions). Regulators, as well, will need significant resources to hire and train staff with quantitative and market expertise, to develop and analyze data, and to review information in order to identify prohibited activities. *See id.* at 43–44. In addition, banks must collect and test new data, including metrics to assess industry-wide trading on a desk-by-desk basis, as well as compare bank trading with hedge fund and other proprietary operations. *See id.* at 42 (noting that regulators, by increasing the diversity of data points they survey and collect, will have a more accurate representation of the trading activities of banking entities).

178 *See* Ben Protess, *Volcker Rule Divides Regulators*, N.Y. TIMES (Oct. 16, 2011), http://dealbook.nytimes.com/2011/10/16/volcker-rule-divides-regulators/; Stewart, *supra* note 176.

179 In fact, as the markets evolve, the impact of the Volcker Rule is also likely to change. Regulators, the FSOC Study cautions, must be "flexible and dynamic" in implementing the Rule. FSOC STUDY, *supra* note 172, at 32. In addition, the Study notes, "markets, products and trading activity will continue to evolve," reflecting change in the financial markets over time. *Id.* at 26. Regulation will be ineffective if it fails to account for that change. As a result, the Study finds that the constant measurement and remeasurement of relevant metrics is vital. *Id.*

180 An iterative version of staging has also been promoted in environmental regulation. Referred to as "adaptive management," it provides for the continued monitoring of environmental systems that are subject to regulation and the evaluation and adaptation of the relevant rules to reflect their performance, the resulting outcomes, and changes in those systems. *See* J.B. Ruhl & Robert L. Fischman, *Adaptive Management in the Courts*, 95 MINN. L. REV. 424, 424–25, 427–36 (2010) (exploring judicial scrutiny of adaptive management plans and procedures). Monitoring and adjusting regulation over an extended period can be costly. Among other things, it requires a long-term commitment of human and financial resources as well as the ongoing monitoring by stakeholders of both new decisions and the decision-making process. *See* Holly Doremus, *Adaptive Management as an Information Problem*, 89 N.C. L. REV. 1455, 1478–79 (2011) (questioning the effectiveness of adaptive management when faced with information challenges); *see also* Alejandro E. Camacho, *Adapting Governance to Climate Change: Managing Uncertainty Through a Learning Infrastructure*, 59 EMORY L.J. 1, 74 (2009) (noting the importance of sustained funding). It may also be ineffective to the extent that monitoring fails to yield the information necessary for long-term learning and improvement. *See* Doremus, *supra*, at 1458–62; James E. Lyons et al., *Monitoring in the Context of Structured Decision-Making and Adaptive Management*,

regulators may choose to gradually phase in the Volcker Rule in order to grant banking entities sufficient time to conform to the Rule's new requirements. Yet, as presently proposed, the gradual phase-in does not expressly provide for modification of the Rule to reflect new information developed during the phase-in period,[181] although regulators could, of course, propose amendments to the new regulations if they think it necessary to do so.[182] The Basel III capital requirements[183] are also subject to a phase-in period.[184] Regulators intend a portion of the phase-in to permit a gradual transition to higher capital standards through earnings retention and raising capital.[185] Standards with which regulators have less experience, such as liquidity and leverage ratios, will also be phased in gradually, partly in order to observe their impact on the financial markets and address any unanticipated consequences.[186]

That approach, in fact, is what was adopted when the TRACE system was first introduced in the United States. Recall that, beginning in 2002, all broker-dealers were required to report trade prices, quantities, and other information regarding bond transactions through the TRACE system. Market participants were particularly concerned that the new reporting requirements could harm liquidity in the credit markets.[187] In response, as part of the rulemaking process, the Na-

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72 J. WILDLIFE MGMT. 1683, 1690–91 (2008) (analysis of monitoring in adaptive wetland management). Although adaptive management and staging share a common feature—both address decision making in the face of incomplete knowledge—the Goldilocks approach is less ambitious. Its focus is on staging at the time a new rule is implemented, with adjustments based on new knowledge the regulators obtain during the staging process. The time period for monitoring and feedback is more limited than under adaptive management—taking place when stakeholders are most focused on the new rules—and, therefore, the cost to regulators and stakeholders is likely to be less significant. *See infra* notes 208–09 and accompanying text.

181 *See* Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds, 76 Fed. Reg. 68,846, 68,848, 68,854 (Nov. 7, 2011); *see also* Conformance Period for Entities Engaged in Prohibited Proprietary Trading or Private Equity Fund or Hedge Fund Activities, 76 Fed. Reg. 8265, 8266–67 (Feb. 14, 2011) (noting that the conformance period exists primarily to allow banks time to adjust their operations to the demands of the rule).

182 *See, e.g.*, Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds, 76 Fed. Reg. at 68,883–84 (noting that regulators will use the conformance period to study the design and utility of measures required by the new Volcker Rule regulations, and if necessary, propose changes to the reporting requirements).

183 *See supra* note 56 and accompanying text.

184 *See* BASEL COMM., GLOBAL REGULATORY FRAMEWORK, *supra* note 61, at 10 & Annex 4.

185 *See id.* at 10.

186 *See id.* at 10, 63; Stefan Walter, Sec'y Gen., Basel Comm. on Banking Supervision, Speech on Basel III and Financial Stability, 5th Biennial Conference on Risk Management and Supervision (Nov. 3–4, 2010), *available at* http://www.bis.org/speeches/sp101109a.htm; *see also* Romano, *supra* note 6, at 50 (noting that "imposing a lengthy transition is a way to hedge one's bets").

187 *See supra* notes 136–39 and accompanying text.

tional Association of Securities Dealers, Inc. (NASD), who were responsible for implementing the TRACE system, proposed a phase-in schedule that included input on transparency and liquidity issues from a newly created Bond Transaction Reporting Committee (BTRC).[188] Under the terms of the new rules, the NASD had the authority to determine how and at what pace to expand public dissemination of bond data, and it could do so based on the recommendations of the BTRC. Those recommendations reflected the experience with liquidity gained over time as the NASD implemented the new TRACE system rules.[189] As a result, the corporate bond markets became increasingly transparent. TRACE initially covered 500 bonds in July 2002, expanded to 4,600 bonds in April 2003 and 17,000 bonds in October 2004, and finally expanded to full coverage of virtually all corporate bonds—approximately 29,000 bonds—roughly two and one-half years after its launch.[190]

Roberta Romano[191] and John Coates[192] recently advocated the inclusion of mandatory "sunset" provisions in new financial regulation.[193] Under a sunset provision, a statute or rule would expire on a specified date unless it was reenacted[194] or, at the least, found by the relevant regulator to have benefits that outweigh its costs.[195] Depending on its length, a shorter sunset period may simply be an extended version of the Goldilocks approach. Both focus on evaluating new rules and incorporating postenactment information into new regulation—minimizing the risk of unanticipated consequences—without requiring (but not excluding) formal amendment by Congress or the regulators.[196]

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188 *See* Self-Regulatory Organizations; Order Approving Proposed Rule Change and Notice of Filing and Order Granting Accelerated Approval to Amendment No. 4 to the Proposed Rule Change by the National Association of Securities Dealers, Inc., Relating to the Creation of a Corporate Bond Trade Reporting and Transaction Dissemination Facility and the Elimination of Nasdaq's Fixed Income Pricing System, 66 Fed. Reg. 8131, 8133 (Jan. 29, 2001).

189 *See id.*

190 *See* Press Release, Fin. Indus. Regulatory Auth., NASD's Fully Implemented "TRACE" Brings Unprecedented Transparency to Corporate Bond Market (Feb. 7, 2005), *available at* http://www.finra.org/Newsroom/NewsReleases/2005/P013274.

191 *See* Roberta Romano, *Regulating in the Dark*, REVUE TRIMESTRIELLE DE DROIT FINANCIER: CORP. FIN. & CAPITAL MARKETS L. REV., 2011, at 172, 176–77.

192 *See Examining Investor Risks in Capital Raising: Hearing Before the Subcomm. on Secs., Ins., and Inv. of the Comm. on Banking, Hous., and Urban Affairs*, 112th Cong. 6–7 (2011) [hereinafter *Hearing*, Coates], *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1973258 (statement of John C. Coates, IV, Professor of Law and Economics, Harvard Law School).

193 Competing analyses of sunset provisions appear in Jacob E. Gersen, *Temporary Legislation*, 74 U. CHI. L. REV. 247, 249–98 (2007), and Rebecca M. Kysar, *Lasting Legislation*, 159 U. PA. L. REV. 1007, 1041–67 (2011).

194 *See* Romano, *supra* note 191, at 175–76.

195 *See Hearing*, Coates, *supra* note 192, at 6; Romano, *supra* note 191, at 177.

196 *See Hearing*, Coates, *supra* note 192, at 7; Romano, *supra* note 191, at 176.

Like the Goldilocks approach, a principal benefit of sunsetting is the ability to legislate (or relegislate) with new and more accurate information.[197] Both, however, raise many of the same concerns. Staging or sunsetting may be difficult if market participants view a particular version of a new rule as the status quo.[198] Likewise, both may increase the cost of doing business due to greater uncertainty over the nature and scope of the final rules.[199] There is also a chance that staging and sunsetting will create a series of lobbying opportunities by regulated firms, increasing the risk of regulatory capture.[200] In addition, the announcement that new regulations will be phased in over time (or potentially repealed) may increase risk-taking activity during the interim period. For example, a bank has an incentive to increase risk if it anticipates greater capital requirements in the future. Tougher requirements will limit the bank's ability to invest in risky, and potentially profitable, assets once those requirements are effective. The bank, therefore, may invest in risky assets today in an effort to increase the amount of capital it has against investments that can be made in the future once the new rules are in place.[201]

Under the Goldilocks approach, regulators could offset these concerns by including clear goals in the new rules and specifying that they may be modified (consistent with those goals) depending on new information the regulator develops during the phase-in process. The new rules should also detail the procedures through which new information is provided to the regulator and made available to the general public.[202] In addition, clearly articulating the criteria that a regulator

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197 *See Hearing*, Coates, *supra* note 192, at 7; Gersen, *supra* note 193, at 266–72; Romano, *supra* note 191, at 172–76 (describing how additional information may be useful in implementing the Dodd-Frank Act).

198 For an analysis of factors underlying status quo bias, see Daniel Kahneman et al., *Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias*, 5 J. ECON. PERSP. 193, 197–98 (1991).

199 *See* Romano, *supra* note 191, at 177. Sunsetting, in particular, may exacerbate uncertainty over new regulation since sunset periods are likely to be of longer duration than staging. Kysar, *supra* note 193, at 1063–65 (describing economic and social costs of the uncertainty created by legislation that contains a sunset provision).

200 *See* George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3, 3, 6–12 (1971) (arguing that private interests are likely to attempt to use public regulation as a source of profit by co-opting the legal regime). For a discussion of the concerns over regulatory capture by the financial services industry, see Brett McDonnell & Daniel Schwarcz, *Regulatory Contrarians*, 89 N.C. L. REV. 1629, 1643–44 (2011).

201 *See* Blum, *supra* note 67, at 755–57. The same distortion may result from regulation that is subject to a sunset provision. *See* Kysar, *supra* note 193, at 1045–46.

202 By detailing the process, the new regulation would minimize the potential for regulators and others to limit the timing, amount, and types of participation in the staging process by interested parties. *See* Alejandro E. Camacho, *Can Regulation Evolve? Lessons from a Study in Maladaptive Management*, 55 UCLA L. REV. 293, 309–23, 350–51 (2007) (criticizing the limited participation by stakeholders in Habitat Conservation Plans under the Endangered Species Act, in part due to the regulators' restrictive interpretation of their discretion in permitting such participation, and arguing for more detailed procedures).

uses to assess costs and benefits and the authority it has to adjust regulation in light of its consequences can help minimize the incremental risk of regulatory capture that staging may create.[203] An expert panel's ability to provide its own assessment of new regulation—independent of the regulator—may also act as a check against regulatory bias.[204] Like the TRACE system, the panel could create a formal record of its deliberations, also made publicly available, when assessing the new rules along the specified criteria.[205]

Parties who are interested in new regulation may have incentives to minimize the amount of information that regulators (or an expert panel) can collect. They may believe that, by limiting or controlling feedback, they can obtain more favorable treatment as the new rules are staged.[206] That possibility would need to be taken into account when deciding whether or not to stage new regulation. Market participants, however, are just as likely to be interested in revealing private information than risk being saddled with costly new rules. Deliberately adjusting behavior to influence the regulatory response can be expensive, particularly if other market participants take advantage of the change. With the Volcker Rule, for example, a firm that claims it is unable to make a market in particular securities may lose that business to others who choose to make a market in its place. Consequently, general market reaction to the new rules is likely to also be an important source of feedback.[207]

The Goldilocks approach has two clear advantages over sunsetting. First, unlike sunsetting, staging is more likely to take place when there continues to be a focus on the new rules, increasing the likelihood of a more meaningful review before the general public's atten-

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203 *See* Ruhl & Fischman, *supra* note 180, at 471–72 (noting the need for adaptive management plans to be "as detailed as practical").

204 That will depend, in part, on how independent the expert panel is from the regulators implementing the new rule. Greater independence and transparency may assist in developing more effective regulation. *See* McDonnell & Schwarcz, *supra* note 200, at 1632 (describing the role of "regulatory contrarians" in independently assessing regulators and regulatory initiatives).

205 Romano has made a similar recommendation in the context of sunsetting. *See* Romano, *supra* note 191, at 176.

206 *See* LAFFONT & TIROLE, *supra* note 43, at 499.

207 *See* Gersen, *supra* note 193, at 271–72, 277–78 (noting this tendency but also its practical limitations). This assumes that the feedback provided from staging will occur quickly enough to be taken into account as new rules are implemented. Like in the case of adaptive management, *see supra* note 180, the decision to stage new financial risk regulation should take into account the extent to which new information can become available to regulators during the staging process. *See* Doremus, *supra* note 180, at 1467–77 (describing the need to consider information gaps in adaptive management). Over time, the regulators' experience with staging will itself provide feedback information regarding which kinds of regulation are most suited for staging and the optimal procedures to be adopted in gathering information and modifying new rules as they are implemented. *See* Camacho, *supra* note 202, at 342–44.

tion turns elsewhere.[208] That continued attention can minimize the risk of regulatory capture of the review and assessment process.[209] Second, staging permits regulators to adopt more effective regulation from the outset, even in the face of concern that the new rules may create other problems. Introducing a new rule in stages can minimize that uncertainty so long as regulators can modify the rule to reflect new information that arises during the staging process.[210] It can also limit the cost of new regulation that is ineffective or results in unanticipated consequences.[211]

There is a possibility that new rules will reflect an initial overestimation of the financial risks they are intended to address. An assessment soon thereafter may not reflect a clear balance of the actual costs and benefits.[212] Lengthening the period over which regulators stage new regulation and relying on an expert panel for assistance can address part of that concern. Moreover, by encouraging the collection of additional information, staging can provide a more objective measure than current rulemaking of the costs and benefits of, and need to adapt, new regulation to a changing marketplace.[213] Finally, by permitting regulators to modify new rules, the Goldilocks approach can help minimize the unanticipated costs of a sunset date that itself may be set unintentionally too late.[214]

CONCLUSION

This Article has explored the potential for unanticipated consequences in the introduction of new financial risk regulation. Bank and other financial firm managers engage in a wide range of private conduct, some of which may become subject to the new rules. What the rules do not regulate is all conduct or the factors influencing that conduct, which may be difficult for outsiders to observe.

The Goldilocks approach strikes a compromise between finalizing new rules at the outset and implementing new rules with sunset provisions. The former forces regulators to assess the effect of new rules with incomplete information; the latter increases the risk of reg-

208 *See* Kysar, *supra* note 193, at 1043–45, 1051–54 (describing the risk of regulatory capture by interest groups as a regulation approaches its sunset date).

209 *See supra* note 200 and accompanying text.

210 *See supra* notes 159–64 and accompanying text.

211 *See* Luppi & Parisi, *supra* note 149, at 28–29.

212 *See* Gersen, *supra* note 193, at 269–70. That concern may be exaggerated. Cognitive biases may also result in a lack of regulation in some circumstances. *See* Kysar, *supra* note 193, at 1048–50. For a description of the cognitive failures that can influence regulators and new regulation, see McDonnell & Schwarcz, *supra* note 200, at 1636–42.

213 *See* McDonnell & Schwarcz, *supra* note 200, at 1674–75 (describing the importance of performance metrics in assessing how well regulators perform their jobs).

214 *See* Kysar, *supra* note 193, at 1050 (describing the challenges of setting a correct sunset date).

ulatory capture around the time a sunset period ends. Staging new regulation—so long as the criteria used to assess regulation, and the procedures used to monitor and modify regulation, are specified up front—can help minimize unanticipated consequences and create more effective rules based on more complete information. Moving the regulatory process in that direction may be particularly timely in light of recent concerns over ineffective cost-benefit analyses undertaken by financial regulators under the Dodd-Frank Act.[215]

None of this is to suggest that the Goldilocks approach is not without its own costs. Many of those costs, however, are shared with both the current and sunsetting approaches to rulemaking. The difference is that staging permits new regulation to be modified up front as market participants adjust their actions in response to new restrictions. Doing so increases the likelihood that regulators can and will address unanticipated consequences sooner, and at lower cost, than under the alternatives.

215 *See* CCMR Letter, *supra* note 159.