

How Do Bank Regulators Determine Capital-Adequacy Requirements?

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Regulators require banks to maintain capital above a certain level in order to correct the incentives to make excessively risky loans. However, it has never been clear how regulators determine how high or low the minimum capital–asset ratio should be. An examination of US regulators’ justifications for five regulations issued over more than thirty years reveals that regulators have never performed a serious economic analysis that would justify the levels that they have chosen. Instead, regulators appear to have followed a practice of incremental change designed to weed out a handful of outlier banks. This approach resulted in significant regulatory failures leading up to the financial crisis of 2007–2008.

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INTRODUCTION

One of the central concepts in banking regulation is capital adequacy. Capital adequacy refers to the extent to which the assets of a bank exceed its liabilities, and it is thus a measure of the

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ability of the bank to withstand a financial loss. Bank regulators care about capital adequacy because their mandate is to prevent bank panics and contagions. A bank with a high ratio of capital to assets will, all else equal, be better able to withstand a sudden loss than a bank with a low capital–asset ratio. As a result, a well-capitalized bank is less likely to be thrown into insolvency or subjected to a run.¹

Financial regulators have always focused on capital adequacy, but regulations have evolved considerably over the years. From World War II until the early 1980s, regulators treated capital adequacy as just one factor in their evaluations of the overall health of a bank. They did not formulate specific capital-adequacy rules—such as minimum ratios—and different regulators used different definitions of capital adequacy.² In response to problems in the banking system in the 1970s, regulators began to think about capital adequacy more carefully. This led to four related developments in the early 1980s. First, regulators developed specific capital-adequacy rules to replace the vague standards under which capital adequacy was treated as just one factor among many. Second, regulators developed more-specific definitions of capital adequacy. Third, over time, regulators adopted increasingly strict minimum capital–asset ratios. Fourth, the different bank regulators began to coordinate their approaches to regulating capital.³

These developments were related. Rules were used to spur banks to raise capital, but the process of drafting rules required regulators to think carefully about how to treat different types of assets and liabilities for the purpose of determining capital–asset requirements. And as regulators moved from vague standards to bright-line rules, inconsistencies among their approaches became too obvious to ignore. Because banks can, within limits, move from one regulator to another by rechartering, regulators face pressures to act consistently.⁴

¹ The theory and mechanics of capital regulation can be found in any textbook on banking. See generally, for example, Frederic S. Mishkin, *The Economics of Money, Banking, and Financial Markets* (Pearson 10th ed 2012).

² See Part II.A.

³ See Part II.B.

⁴ See Jonathan R. Macey, *Regulatory Competition in the US Federal System: Banking and Financial Services*, in Daniel C. Esty and Damien Geradin, eds, *Regulatory Competition and Economic Integration: Comparative Perspectives* 95, 100–03 (Oxford 2001) (describing the operation of the banking regulatory system within the framework of federalism and recognizing the trend toward a nationalized consistency in regulations).

A further consequence of the move to rule-based regulations is that it became necessary for regulators to provide public justifications for the rules that they had adopted. As we will see, most of these justifications were terse, opaque, and laden with boilerplate language.⁵ As a result, the reasoning behind those rules was unclear. The only clear idea that emerges from an examination of the regulatory documents is that the regulators believed that the regulations would affect very few banks—on the order of 5 percent or less.⁶ Thus, a major theme that emerges is that regulators defended their regulations in part on the grounds that those regulations did not inflict costs on most banks.

While most regulatory agencies in the executive branch are required to issue cost-benefit analyses along with regulations,⁷ the bank regulators rarely did so, and the cost-benefit analyses that they did issue were badly executed.⁸ Only in 2011 was a high-quality cost-benefit analysis prepared—by an international organization, not by US regulators. It showed that capital requirements should have been much higher than they ever had been.⁹ Most economists appear to share this view, and many commentators have blamed the financial crisis of 2007–2008 on the inadequate capitalization of banks.¹⁰ Accordingly, the history of capital-adequacy regulation raises an interesting possibility: if bank regulators had used cost-benefit analysis from the start, the 2007–2008 financial crisis might not have taken place or (more likely) might have been less severe.

If bank regulators did not engage in cost-benefit analysis, what decision procedures did they use to formulate capital-adequacy requirements? I argue that the best theory for the regulators' choices is what I call "norming." "Norming," as I use the term, means choosing a regulatory standard that permits the mean or modal behavior of regulated entities, a process that rules out outliers only at the low end. As a consequence, norming imposes zero cost on most banks and requires a change of behavior in only the weakest banks, which must either raise capital or go out of business.

⁵ See Part III.A.

⁶ See text accompanying notes 117–18.

⁷ See generally Executive Order 13563, 3 CFR 215.

⁸ See text accompanying notes 145–50.

⁹ See text accompanying notes 122–30.

¹⁰ See, for example, Anat Admati and Martin Hellwig, *The Bankers' New Clothes: What's Wrong with Banking and What to Do about It* 4–13 (Princeton 2013).

After describing the process of norming in bank regulation, I discuss why it might have been an attractive approach for bank regulators. Norming is a restrained style of regulation that causes no harm to most regulated entities and thus minimizes political opposition to the regulation. Indeed, norming may benefit most regulated entities by eliminating competitors. For just this reason, norming is a highly questionable approach to regulation, since regulation is supposed to counter the externalities that the average regulated entity imposes.

If this is true, then the case for cost-benefit analysis of financial regulations is stronger than its critics acknowledge.¹¹ This argument should also help put to rest the claim that cost-benefit analysis is inherently deregulatory—a claim that has frequently been made by critics of cost-benefit analysis, who blame it for undermining environmental, health, and safety regulations.¹²

The plan is as follows. In Part I, I provide some background on capital-adequacy regulations, which are designed to counter a market failure that is associated with financial intermediation, the major economic function of banks. In Part II, I describe the history of those regulations, including the justifications that regulators provided for them and those regulations' effects on the behavior of banks. I focus on the major changes to those regulations, which took place in 1981, 1985, 1989, 2007, and 2013. An important theme of this discussion is that regulators believed that the capital regulations before 2013 would not affect most banks; evidence suggests that their belief was correct. Although capital–asset ratios gradually rose over the decades, evidence suggests that they rose in response to market forces rather

¹¹ See generally, for example, John C. Coates IV, *Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications*, 124 Yale L J 882 (2015) (criticizing cost-benefit analysis of financial regulation); Jeffrey N. Gordon, *The Empty Call for Cost-Benefit Analysis in Financial Regulation*, 43 J Legal Stud S351 (2014) (same). For defenses of cost-benefit analysis of financial regulation, see generally Eric A. Posner and E. Glen Weyl, *Cost-Benefit Analysis of Financial Regulations: A Response to Criticisms*, 124 Yale L J F 246 (2015) (responding to counterarguments by Professors John C. Coates IV and Jeffrey N. Gordon that cost-benefit analysis is undesirable for financial regulations because of valuation difficulties); Eric A. Posner and E. Glen Weyl, *Benefit-Cost Paradigms in Financial Regulation*, 43 J Legal Stud S1 (2014); Eric Posner and E. Glen Weyl, *Benefit-Cost Analysis for Financial Regulation*, 103 Am Econ Rev Papers & Proceedings 393 (2013).

¹² See generally, for example, Thomas O. McGarity, *Freedom to Harm: The Lasting Legacy of the Laissez Faire Revival* (Yale 2013); Frank Ackerman and Lisa Heinzerling, *Priceless: On Knowing the Price of Everything and the Value of Nothing* (New Press 2005).

than to the regulations.¹³ In Part III, I discuss more broadly the advantages and disadvantages of norming as a strategy for regulating the financial industry. Norming can in theory be given a policy justification, but a better explanation is that it serves as an excuse for regulatory failure in the face of entrenched industry opposition.

I. CAPITAL-ADEQUACY REGULATIONS: THEIR PURPOSE AND STRUCTURE

The theory of bank regulation is based on the risks that banks pose to the economy. Banks are financial intermediaries that are characterized by a liquidity mismatch between the asset and liability sides of the balance sheet. On the asset side, banks usually hold a large number of long-term, customized loans. If the bank must quickly raise capital, it can sell these loans—but because the loans are illiquid, the bank will have to sell them at a deep discount from their face value.¹⁴ Consider a \$100,000 five-year loan to an automaker, or a \$200,000 thirty-year mortgage to a homeowner. These loans are unique products. The market value of each loan—the price that a third party will pay for it—is a function of many variables, including the probability that the loan will be paid in full, as well as the value of underlying assets in case it is not. The probability that the automaker will pay its loan depends on all kinds of factors—how good management is, for example. The probability that the mortgage will be paid depends on the income, honesty, and competence of the borrower and on the value of the asset at the time of default if default strikes. The bank possesses inside information about these factors that is not accessible to potential buyers. The buyers will need to satisfy themselves by investigating the loans—but that takes time, so if the bank needs to sell the loans quickly, it can do so only at a discount.

On the liability side, banks typically are liable for a large amount of highly liquid debt—above all, demand deposits (that is, checking accounts). Customers lend money to the bank by

¹³ See Franklin Allen, Elena Carletti, and Robert Marquez, *Credit Market Competition and Capital Regulation*, 24 Rev Fin Stud 983, 983–84 (2011) (explaining that banks may raise capital to reduce the cost of debt when creditors worry that the banks are too risky).

¹⁴ See Rustom M. Irani and Ralf R. Meisenzahl, *Loan Sales and Bank Liquidity Management: Evidence from a U.S. Credit Register* *28 (unpublished manuscript, June 3, 2015), archived at <http://perma.cc/BXT4-JUHR>.

depositing cash, checks, or other financial instruments, and these customers have the right to withdraw any or all of their money at any time without notice. Normally, customers withdraw money at about the same rate that they deposit it, so the pool of liquid liability remains constant. This means that the bank can safely lend out this money in the form of illiquid loans. But from time to time, customers may withdraw their money en masse, causing a run on the bank. They may do so because of a severe economic downturn, rumors about the bank's solvency, or other random factors. If a run starts, the bank has few choices. It can sell off assets at a discount, but it then risks insolvency. Alternatively, it may be able to borrow from another bank long enough to reassure customers. But either way, there is a good chance that the bank will fail.

A bank failure by itself is not necessarily a problem that calls for government intervention. In principle, depositors and other creditors will be compensated for the risk of bank failure in the form of interest and other consideration.¹⁵ Bank failure is a problem for the government because of the risk of contagion.¹⁶ Banks lend money to each other, so if one bank fails, other banks may fail as well. If many banks fail, then businesses that depend on credit (as most do) will have trouble obtaining it, and many of those businesses will fail, throwing employees out of work.¹⁷ While in principle investors could create new banks to replace the old ones, or surviving banks could expand their lending to compensate for bank failures, the collapse of existing banks will result in the destruction of nonrecoverable value because information about borrowers will be lost and relationships will be destroyed.¹⁸ Consumers will also be unable to borrow in order to finance their purchases of houses, cars, and other items, which will further exacerbate the economic downturn. Moreover, banks play a vital role in the payments system, so widespread bank collapses will interfere with the transmission of money

¹⁵ This statement does not apply to depositors who receive insurance, an issue to which I return below. See text accompanying notes 25–29.

¹⁶ See Douglas W. Diamond and Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 *J Polit Econ* 401, 415 (1983).

¹⁷ See Brett McDonnell, *Don't Panic! Defending Cowardly Interventions during and after a Financial Crisis*, 116 *Penn St L Rev* 1, 8–9 (2011).

¹⁸ See generally Ben S. Bernanke, *Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression*, 73 *Am Econ Rev* 257 (1983).

from one person to another. In this way, a financial crisis can cause a general economic collapse.¹⁹

Bank failures occur in many ways, and not just through the classic runs by depositors. During the financial crisis of 2007–2008, the major type of asset that caused problems was not customized loans but collateralized debt obligations (CDOs).²⁰ While CDOs were designed to be tradable, and hence liquid, problems arose because of their immense complexity. Their value was tied to thousands of underlying mortgages. When housing prices started to decline, investors discovered that their assumptions about the value of the underlying mortgages, and therefore about the value of the CDOs, were incorrect, and so they could no longer accurately determine the value of the CDOs.²¹ Banks thus could not sell their CDOs to raise cash except at huge discounts. Meanwhile, many large banks obtained financing through the repo market, in which they offered CDOs and other securities as collateral for short-term (one- or two-day) loans from pension funds and other large institutions.²² The lenders stopped accepting CDOs as collateral (or required increasingly larger haircuts), and thus the banks could no longer borrow in short-term markets.²³ If forced to sell off CDOs at prevailing panic-driven prices, the banks would have been driven into insolvency (as some were).²⁴

To prevent or mitigate financial panics, the government offers two types of insurance. First, the Federal Deposit Insurance Corporation (FDIC) protects depositors up to \$250,000.²⁵ Second, the Federal Reserve (“the Fed”) stands as the lender of last resort and provides loans to any bank (as well as to other types of financial institutions) that suffers a run during a financial crisis.²⁶ Although only FDIC insurance is given the formal name of “insurance,” lender-of-last-resort lending is functionally insurance

¹⁹ See McDonnell, 116 Penn St L Rev at 8–9 (cited in note 17).

²⁰ See James Crotty, *Structural Causes of the Global Financial Crisis: A Critical Assessment of the ‘New Financial Architecture’*, 33 Camb J Econ 563, 566–70 (2009).

²¹ See id.

²² See Zachary J. Gubler, *Regulating in the Shadows: Systemic Moral Hazard and the Problem of the Twenty-First Century Bank Run*, 63 Ala L Rev 221, 237–39 (2012).

²³ See id at 240–41.

²⁴ See, for example, Gary B. Gorton, *Slapped by the Invisible Hand: The Panic of 2007* 125–33 (Oxford 2010) (discussing the panic-driven pricing of CDOs and its effects on bank solvency). Note that many of the institutions caught in this squeeze were investment banks rather than commercial banks.

²⁵ 12 USC § 1821(a)(1)(E).

²⁶ See 12 USC § 347a.

as well. Insurance should discourage depositors from withdrawing money, and other creditors from failing to roll over short-term loans, based on false rumors or worries about the economy; but it also suppresses creditors' incentives to monitor banks and to ensure that banks are safe before lending to them.²⁷ Thus, both types of insurance give banks an incentive (specifically, a moral hazard) to make risky loans and other investments.²⁸ Banks enjoy all the upside, while the downside is absorbed at least partly by the government insurance system.²⁹

Even if deposit insurance and emergency lending did not create perverse incentives, banks would still have incentives to take excessive risks by maintaining too-little capital relative to the social optimum, given their portfolio of assets. The reason is that a bank and its creditors (to the extent that creditors are able to engage in adequate monitoring of bank risk taking) do not take into account the costs of a bank's failure to other banks in the financial system. If one bank fails, then creditors of a second bank may run because they believe that the second bank has made loans to the first bank and will be unable to recover them; or creditors may fear that whatever caused the first bank to fail (such as adverse economic conditions) will also cause the second bank to fail.³⁰ If panic spreads and contagion results, a general financial crisis will occur that will harm not only bank shareholders and creditors but also people who would benefit from borrowing but who, as a result of the loss of liquidity throughout the system, can no longer borrow.

Bank regulation tries to counter these incentives. Its overall purpose is to ensure that banks operate in a "safe and sound" way. This means that banks are not permitted to take excessive risks. Regulation takes many forms: The FDIC charges a higher premium to risky banks.³¹ Bank regulators also limit the lines of

²⁷ See Peter P. Swire, *Bank Insolvency Law Now That It Matters Again*, 42 Duke L J 464, 514–15 (1992).

²⁸ See *id.* at 499.

²⁹ There is extensive literature on the lender-of-last-resort function of central banks. For an overview, see generally Charles Goodhart and Gerhard Illing, eds, *Financial Crises, Contagion, and the Lender of Last Resort: A Reader* (Oxford 2002).

³⁰ See Philippe Aghion, Patrick Bolton, and Mathias Dewatripont, *Contagious Bank Failures in a Free Banking System*, 44 Eur Econ Rev 713, 718 (2000).

³¹ See 12 CFR §§ 327.4, 327.9. Most academics believe that the FDIC does not price risk accurately. See, for example, Viral V. Acharya, João A.C. Santos, and Tanju Yorulmazer, *Systemic Risk and Deposit Insurance Premiums*, 16 Fed Res Bank NY Econ Pol Rev 89, 90–92 (Aug 2010) (describing the ways that FDIC insurance falls short of providing banks with optimal incentives).

business that banks may enter, the size of loans, and so on.³² But the focus of all these efforts is the capital–asset ratio. Generally speaking, banks with high capital–asset ratios are given more freedom to manage their portfolios than other banks. Banks with low capital–asset ratios may be shut down.

To understand the significance of the capital–asset ratio, consider the hypothetical bank balance sheet in Figure 1.

FIGURE 1. A HYPOTHETICAL BANK BALANCE SHEET

Assets	Liabilities
\$100 in loans	\$95 in demand deposits \$5 in common equity

This bank is solvent because its assets are worth more than its liabilities. The capital–asset ratio is 5 percent ($\$5 / \100), which tells the regulator that if the value of the assets declines by more than 5 percent, the bank will become insolvent. Thus, the capital–asset ratio is a measure of how robust a bank is against market shocks. Suppose, for example, that interest rates rise, with the result that the value of the bank’s loan portfolio falls to \$98. Now the bank has equity of \$3 ($\$98 - \95), and its capital–asset ratio is just over 3 percent ($\$3 / \98). The regulator would likely demand that the bank raise capital by issuing new shares to investors. If investors pay \$4 for new shares, the bank now has assets of \$102 ($\98 plus \$4 in cash from the investors), equity of \$7 ($\$102 - \95), and a healthy capital–asset ratio of almost 7 percent ($\$7 / \102).

The major effect of a high level of capital relative to assets is to reduce the incentive to take risks.³³ If a bank has very low equity, its shareholders have little to lose by taking risks. If the risks turn out well, the shareholders make a profit; if they do not, the bank’s creditors (and the government) absorb the loss. By requiring banks to issue more capital, the government puts

³² See, for example, 12 CFR § 32.1 (prohibiting “excessive loans to one person, or to related persons that are financially dependent”).

³³ Higher capital also increases bank performance during a financial crisis and decreases the possibility of bank failure. See Allen N. Berger and Christa H.S. Bouwman, *How Does Capital Affect Bank Performance during Financial Crises?*, 109 *J Fin Econ* 146, 149–50 (2013).

more of the risk on the shareholders. If investments go sour, the shareholders lose more money.³⁴

How high capital ratios should be is a complex question. Some scholars believe that they should be very high—as high as 50 percent.³⁵ Their reasons are derived from the Modigliani-Miller theorem, which provides that the value of a firm is independent of its mix of debt and equity.³⁶ If this theorem is correct, then there is no economic cost from forcing banks to issue equity rather than debt. Banks issue much more debt than ordinary firms, and the likely explanation is that the debt is implicitly subsidized by the government. However, the Modigliani-Miller theorem is an abstraction—a useful starting point for thinking about capital structure, not a description of the world. Among other things, it assumes (counterfactually) the absence of taxes, zero costs from bankruptcy, and an efficient capital market.³⁷ In the real world, there may well be costs from raising equity rather than debt.³⁸ In addition, people obviously value demand deposits; if banks were required to issue huge amounts of equity, then checking accounts would become scarcer and more expensive.³⁹ The magnitude of these costs is an empirical question.

³⁴ For a lucid exposition, see Admati and Hellwig, *The Bankers' New Clothes* at 108 (cited in note 10). For an in-depth analysis of this issue, see generally Anat R. Admati, et al, *Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity Is Not Socially Expensive* (Rock Center for Corporate Governance Working Paper Series, Oct 22, 2013), archived at <http://perma.cc/VSY2-H2ZN>.

³⁵ See, for example, John H. Cochrane, *The More Bank Capital, the Safer the Bank* (Wall St J, July 15, 2011), archived at <http://perma.cc/2EUK-KEG7>; John Cassidy, *Interview with Eugene Fama* (New Yorker, Jan 13, 2010), archived at <http://perma.cc/9XRT-EC9V>; Admati and Hellwig, *The Bankers' New Clothes* at 166 (cited in note 10) (arguing that “all the arguments made against much higher equity requirements [are] false or flawed”).

³⁶ Franco Modigliani and Merton H. Miller, *The Cost of Capital, Corporation Finance and the Theory of Investment*, 48 Am Econ Rev 261, 268 (1958).

³⁷ Id.

³⁸ A standard view is that debt may have value for corporate governance purposes. See generally, for example, Michael C. Jensen and William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J Fin Econ 305 (1976). Another view is that issuing equity can be a negative signal of a firm's financial health. See, for example, Stewart C. Myers and Nicholas S. Majluf, *Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have*, 13 J Fin Econ 187, 208 (1984).

³⁹ See Harry DeAngelo and René M. Stulz, *Liquid-Claim Production, Risk Management and Bank Capital Structure: Why High Leverage Is Optimal for Banks* *37 (Fisher College of Business Working Paper Series, Oct 2014), archived at <http://perma.cc/78VQ-W7EG> (explaining that “social costs can arise if mandated reductions in bank leverage are satisfied by a reduction in the supply of deposit debt or other socially valuable liquid claims”). For discussion and criticism of Professors Harry DeAngelo

Nonetheless, many economists have converged on the view that high capital–asset ratios would be socially beneficial.⁴⁰ But this raises an additional set of issues regarding how exactly the ratio should be defined. First, not all assets are the same: some loans are riskier than others. When market conditions decline, risky loans may default while safe loans do not. Regulators want to distinguish banks with risky loans from banks with safe loans because banks with risky loans are more likely to collapse in response to adverse market conditions even if both types of banks have the same capital–asset ratios. Another way to see this is to note that banks could undermine the effects of a higher capital requirement by selling low-risk assets and replacing them with high-risk assets.⁴¹ To prevent banks from doing this, one must adjust the ratios for the quality of the assets. Regulators use a system of risk weighting, which is discussed below.⁴²

Second, not all debt is the same. Demand deposits pose a threat to banks because depositors can withdraw their money quickly and without notice, depleting the cash reserves of the bank and possibly forcing it to sell illiquid assets at fire-sale prices or to pay a high interest rate for an emergency loan from another bank or from the Fed. Long-term debt is less risky for a bank because the bank can gradually sell assets to meet obligations as they become due. Other forms of debt and quasi debt, like preferred equity, are also less risky because they become due only if there are ample resources to pay short-term debt. Because the simple capital–asset ratio does not distinguish among

and René M. Stulz's work, see Admati, et al, *Fallacies, Irrelevant Facts, and Myths* at *37–43 (cited in note 34).

⁴⁰ See, for example, Admati and Hellwig, *The Bankers' New Clothes* at 166 (cited in note 10); Roger B. Myerson, *Rethinking the Principles of Bank Regulation: A Review of Admati and Hellwig's The Bankers' New Clothes*, 52 J Econ Lit 197, 209 (2014); Gary B. Gorton, *Misunderstanding Financial Crises: Why We Don't See Them Coming* 151 (Oxford 2012); Mathias Dewatripont, Jean-Charles Rochet, and Jean Tirole, *Balancing the Banks: Global Lessons from the Financial Crisis* 96 (Princeton 2010); Darrell Duffie, *How Big Banks Fail and What to Do about It* 55 (Princeton 2010); Heidi M. Schooner and Michael W. Taylor, *Global Bank Regulation: Principles and Policies* 132–35 (Academic 2010). But see James R. Barth, Gerard Caprio, and Ross Levine, *Guardians of Finance: Making Regulators Work for Us* 180 (MIT 2012) (“[A] system based on imposing required capital ratios . . . not only encourages shadow banking, but raising those capital requirements . . . increases the incentives for banks to move risky assets into off-balance sheet entities.”).

⁴¹ See Daesik Kim and Anthony M. Santomero, *Risk in Banking and Capital Regulation*, 43 J Fin 1219, 1231 (1988) (noting that capital ratio regulation by itself is insufficient to control bank insolvency because it allows banks to “circumvent the restrictions via financial leverage and/or business risk”).

⁴² See text accompanying notes 73–77.

different types of debt and equity, it can give a misleading impression of the vulnerability of banks with different capital structures. Regulators address this problem by allowing banks to treat the safest forms of debt as equity for purposes of calculating the capital–asset ratio under some circumstances.⁴³

Third, the simple capital–asset ratio disregards off–balance sheet obligations, like loan commitments and standby letters of credit. Suppose that the bank in Figure 1 enters into a contract with a customer to issue a \$20 loan to the customer one year from today. That loan will not appear on the balance sheet until it is issued. When it does, the bank’s capital–asset ratio may fall, depending on how the bank raises capital to make that loan. A bank with many loan commitments is thus riskier than a bank without them, yet this difference will not appear in banks’ capital–asset ratios. Regulators have addressed this problem by requiring banks to translate off–balance sheet commitments into appropriately weighted liabilities for purposes of calculating capital–asset ratios.⁴⁴

In sum, financial intermediation causes negative externalities in the form of systemic risk. Government insurance helps mitigate the risk of a financial panic but also creates a moral hazard. Capital regulation counters both this moral hazard and the excessive level of risk taking that is inherent in financial intermediation. But while there is little debate that capital requirements are the appropriate regulatory response as a matter of theory, economists have debated the level and the form of optimal capital requirements.

II. THE HISTORY OF CAPITAL-ADEQUACY REGULATION BY US REGULATORS

In this Part, I provide a brief and necessarily incomplete history of capital-adequacy regulation.⁴⁵ To keep this Article within manageable bounds, I disregard state regulation of banks, federal regulation of financial institutions other than

⁴³ For a discussion of this type of treatment, known as Tier 2 capital, see *Risk Management Manual of Examination Policies* § 2.1-4 to -5 (FDIC, Apr 2015), archived at <http://perma.cc/V499-AW2X>.

⁴⁴ For a discussion of these weighted liabilities, known as “risk-weighted assets,” see Heath Price Tarbert, *Are International Capital Adequacy Rules Adequate? The Basle Accord and Beyond*, 148 U Pa L Rev 1771, 1812–13 (2000).

⁴⁵ For a brief and useful overview of this history up to 1988, see generally Malcolm C. Alfried, *International Risk-Based Capital Standard: History and Explanation*, 74 Fed Res Bank Richmond Econ Rev 28 (Nov/Dec 1988).

commercial banks, and regulation of bank-like institutions such as thrifts. Thus, I focus on federal regulation of commercial banks and hence emphasize the activities of the major federal bank regulators—the Fed, the Office of the Comptroller of the Currency (OCC), and the FDIC. While the jurisdictions of these agencies overlap a great deal, generally speaking, the Fed regulates bank holding companies and state banks that belong to the Federal Reserve System, the OCC regulates nationally chartered banks, and the FDIC regulates other state banks that are members of the FDIC.⁴⁶

A. From World War II to the 1970s

The period from World War II to the 1970s is a prehistory of capital-adequacy regulation. Financial regulators did not require banks to satisfy any specific minimum-capital rule. Instead, regulators applied a general “safety and soundness” standard to all banks.⁴⁷ Capital adequacy was only one of many indicators that regulators looked at to determine whether a bank was healthy.⁴⁸ Regulators considered the riskiness of assets, the quality of management, earnings, and the size of the bank, among other things, and they then made an all-things-considered judgment as to whether a bank was in regulatory compliance.⁴⁹

Because capital adequacy was just one factor among others used to generate an overall assessment of a bank’s financial health, regulators were not always specific about how they defined the relevant components of the capital-adequacy ratio—assets, liabilities, and so on—and they did not try very hard to coordinate with each other. As a result, each regulator applied a different standard to the banks under its jurisdiction.⁵⁰

The period from World War II until the late 1960s was one of unusual stability in the banking system. While regulatory supervision no doubt played a role, the usual explanation is that the United States experienced low inflation and steady economic

⁴⁶ See Mishkin, *The Economics of Money* at 250–51 (cited in note 1).

⁴⁷ See Susan Burhouse, et al, *Basel and the Evolution of Capital Regulation: Moving Forward, Looking Back* (FDIC, Jan 14, 2003), archived at <http://perma.cc/7Q68-9BT9>.

⁴⁸ See Alfriend, 74 Fed Res Bank Richmond Econ Rev at 29 (cited in note 45); Daniel K. Tarullo, *Banking on Basel: The Future of International Financial Regulation* 29–35 (Peterson Institute for International Economics 2008).

⁴⁹ See Alfriend, 74 Fed Res Bank Richmond Econ Rev at 29 (cited in note 45).

⁵⁰ See Tarullo, *Banking on Basel* at 29–35 (cited in note 48).

growth.⁵¹ Banks were also barred from risky financial activities and protected from competition by heavy restrictions on branching, significant chartering requirements, and rules that barred them from charging a market interest rate on deposits.⁵² Thus, managers may have exercised caution because banks earned monopoly rents that they would lose if their banks failed.

B. The Modern Regulatory Era

In the late 1970s, the sleepy era of banking came to an end. High inflation and low economic growth squeezed banks.⁵³ Because of high inflation, depositors demanded interest on deposits, but banks were limited in what they could offer. Because of low economic growth, demand for credit fell.⁵⁴ Meanwhile, deregulation in the banking industry reduced the monopoly rents enjoyed by owners of bank charters. Notably, money market mutual funds were allowed to offer interest in return for short-term deposits with checking privileges, and they attracted billions of dollars of deposits from banks.⁵⁵ A number of banks failed during this period, and the capital–asset ratios of most banks declined.⁵⁶ Alarmed by this turn of events, the Fed, the OCC, and the FDIC agreed to try to coordinate regulation in an attempt to reverse the decline of capital in the banking system. In 1981, they issued a (partially) coordinated rule governing capital adequacy.⁵⁷

One major feature of this rule was the division of capital into “primary” and “secondary” versions. Primary capital included common stock, certain reserves, and preferred stock with sufficiently long maturity. Secondary capital included other forms of preferred stock and subordinated debt.⁵⁸ “Total capital”

⁵¹ See Charles W. Calomiris and Stephen H. Haber, *Fragile by Design: The Political Origins of Banking Crises and Scarce Credit* 194 (Princeton 2014) (discussing the accelerated price inflation that took place in the 1960s and 1970s).

⁵² See Banking Act of 1933 (“Glass-Steagall”) §§ 3, 5(b)–(c), 48 Stat 162, 163–66, codified as amended at 12 USC §§ 301, 304, 321, 333–36, 338.

⁵³ See Donald Tomaskovic-Devey and Ken-Hou Lin, *Financialization: Causes, Inequality Consequences, and Policy Implications*, 18 NC Banking Inst 167, 171 (Special Edition 2013).

⁵⁴ *Id.* at 171–72.

⁵⁵ See Calomiris and Haber, *Fragile by Design* at 195–96 (cited in note 51).

⁵⁶ See Burhouse, et al, *Basel and the Evolution of Capital Regulation* (cited in note 47) (attributing the increased incidence of bank failures in the 1980s to worsened economic conditions as well as bank risk profiles).

⁵⁷ See generally *Capital Adequacy Guidelines*, 68 Fed Res Bull 33 (1982) (explaining the Fed and the OCC’s policy); Federal Deposit Insurance Corporation, Statement of Policy on Capital Adequacy, 46 Fed Reg 62693 (1981) (explaining the FDIC’s policy).

⁵⁸ See 68 Fed Res Bull at 34 (cited in note 57).

equaled primary capital plus secondary capital. The regulators also agreed to create separate rules for regional banks (assets between \$1 billion and \$15 billion)—which were large and diversified—and community banks (assets below \$1 billion).⁵⁹ Table 1 provides a summary.⁶⁰

TABLE 1. MINIMUM-CAPITAL REGULATIONS (1981)

	Regional Banks	Community Banks
Primary-Capital Ratio (%)	5	6
Total-Capital Ratio (%)	6.5	7

Because regional banks were more diversified than community banks, they were permitted a lower level of capital.⁶¹ Banks that fell below these floors were not shut down immediately but were instead subjected to increasingly greater obligations to manage risk and raise capital as their capital–asset ratios fell.⁶²

In 1983, Congress passed the International Lending Supervision Act⁶³ (ILSA). This statute directed the banking regulators to “achieve and maintain adequate capital by establishing minimum levels of capital” for the banks that they regulate.⁶⁴ ILSA was enacted in response to the Latin American debt crisis, which revealed that some US banks were dangerously exposed to risky foreign-sovereign debt.⁶⁵ The law also put on firmer footing the regulators’ authority to issue capital-adequacy rules.⁶⁶

⁵⁹ Large multinational banks—those with assets greater than \$15 billion—were subjected to a 5 percent floor in 1983. See *Minimum Capital Guidelines: Amendments*, 69 Fed Res Bull 539, 539 (1983).

⁶⁰ For the source of the information in Table 1, see 68 Fed Res Bull at 34 (cited in note 57).

⁶¹ See id at 33.

⁶² The FDIC used a slightly different system. It tried to take account of the riskiness of assets and the different types of equity, but otherwise the approach and numbers were similar. See 46 Fed Reg at 62694 (cited in note 57) (“When the adjusted equity capital ratio falls below this level, the Corporation will insist on a specific program for remedying the equity capital deficiency promptly.”).

⁶³ Pub L No 98-181, 97 Stat 1278 (1983), codified in various sections of Title 12.

⁶⁴ ILSA § 908(a)(1), 97 Stat at 1280, codified as amended at 12 USC § 3907(a)(1).

⁶⁵ See Timothy Curry, *The LDC Debt Crisis*, in 1 *History of the Eighties: Lessons for the Future; An Examination of the Banking Crises of the 1980s and Early 1990s* 191, 207–08 (FDIC 1997).

⁶⁶ For an example of a pre-ILSA decision vacating an OCC order requiring a bank to raise capital, see *First National Bank of Bellaire v Comptroller of the Currency*, 697 F2d 674, 687 (5th Cir 1983).

The regulators used this opportunity to simplify capital requirements. The distinction between regional and community banks was discarded.⁶⁷ Table 2 summarizes the new system.⁶⁸

TABLE 2. MINIMUM-CAPITAL REGULATIONS (1985)

Primary-Capital Ratio (%)	5.5
Total-Capital Ratio (%)	6

The regulators increased the primary-capital ratio for regional banks from 5 percent to 5.5 percent, and they reduced it from 6 percent to 5.5 percent for community banks. The regulators reduced the total-capital ratio for regional banks from 6.5 percent to 6 percent, and for community banks from 7 percent to 6 percent.⁶⁹

The next major round of changes took place starting in 1989. The stimulus this time was the globalization of the financial system, which led to regulatory arbitrage—and a potential race to the bottom⁷⁰—as large banks located offices and assets in countries with the weakest regulatory systems. The central banks of the G10 countries sent representatives to Basel, Switzerland, to hash out regulatory standards that would be acceptable to all. The result was the 1988 Basel Accord (“Basel I”), which regulators agreed to apply to domestic banking systems.⁷¹

In the United States, banking regulators implemented the new capital rules over several years (although for simplicity I

⁶⁷ See ILSA § 908, 97 Stat at 1280–81, codified as amended at 12 USC § 3907.

⁶⁸ See Seung Jung Lee and Viktors Stebunovs, *Bank Capital Ratios and the Structure of Nonfinancial Industries* *7–8 (Finance and Economics Discussion Series, Aug 14, 2012), archived at <http://perma.cc/3R5A-A99U>.

⁶⁹ See *id.* at *8.

⁷⁰ See Tarullo, *Banking on Basel* at 45–46 (cited in note 48) (“Basel I was motivated by two interacting concerns—the risk posed to the stability of the global financial system by low capital levels of internationally active banks and the competitive advantages accruing to banks subject to lower capital requirements.”).

⁷¹ See generally Basle Committee on Banking Supervision, *International Convergence of Capital Measurement and Capital Standards* (July 1988), archived at <http://perma.cc/5NBP-2LLB>. The focus of this Article is US regulation, so I discuss the Basel Accords only insofar as they intersect with my topic. There is a large literature on the Basel agreements. See generally, for example, Charles Goodhart, *The Basel Committee on Banking Supervision: A History of the Early Years 1974–1997* (Cambridge 2011); Tarullo, *Banking on Basel* (cited in note 48).

call them “the 1989 regulations”).⁷² The 1989 regulations distinguished Tier 1 (instead of “primary”) and Tier 2 (instead of “secondary”) capital. While the definitions differed slightly, the details do not concern us.⁷³ The regulations also created a risk-weighting system for assets. Assets received a risk weight of 0, 0.2, 0.5, or 1, with the safest assets (like US treasuries) receiving the lowest numbers and the riskiest assets (like ordinary loans) receiving the highest numbers.⁷⁴ When calculating the denominator of the capital–asset ratio, the regulator would add together each asset multiplied by its risk weight. For example, a bank with \$100 in US treasuries and \$100 in regular loans would have risk-weighted assets of \$100. A bank with no US treasuries and \$200 in regular loans would have risk-weighted assets of \$200. The higher denominators for the second bank with riskier assets would result in a lower capital–asset ratio. The minimums under these regulations are provided in Table 3.⁷⁵

TABLE 3. MINIMUM-CAPITAL REGULATIONS (1989)

Ratio	1990	1992
Tier 1 (%)	3.25	4
Tier 1 + Tier 2 (%)	7.25	8
Tier 1 Leverage Ratio, Unweighted (%)	3	3

The 1989 regulations phased in progressively stricter rules over several years, as shown in Table 3. They also introduced a separate minimum leverage ratio. The leverage ratio was the ratio of Tier 1 equity to the sum of *unweighted* assets. It thus served as an additional cushion to ensure that a bank trying to game the risk-weighting system by accumulating low-weighted assets that were in fact relatively risky would nonetheless have sufficient capital.

⁷² See generally Federal Reserve System, Capital; Risk-Based Capital Guidelines, 54 Fed Reg 4186 (1989); Office of the Comptroller of the Currency, Risk-Based Capital Guidelines, 54 Fed Reg 4168 (1989); Federal Deposit Insurance Corporation, Capital Maintenance; Final Statement of Policy on Risk-Based Capital, 54 Fed Reg 11500 (1989).

⁷³ Among other things, there was a limit to how much Tier 2 could be used in total capital. See generally Federal Deposit Insurance Corporation, Differences in Capital and Accounting Standards among the Federal Banking and Thrift Agencies; Report to Congressional Committees, 55 Fed Reg 34339 (1990).

⁷⁴ Id at 34341.

⁷⁵ 54 Fed Reg at 11516 (cited in note 72).

Basel I was regarded as excessively crude from the start.⁷⁶ Among other problems, the four-basket risk-weighting system bore little relationship to reality. Consider a bank that has loaned \$100,000 to a family to buy a home and has bought \$100,000 in municipal bonds. The mortgage will typically receive a risk weighting of 0.5, while the municipal bond investment will receive a risk weighting of 0.2. But it is highly unlikely that the mortgage is precisely 2.5 times riskier than the bond investment. The mortgage may well be exceptionally safe because the homeowner is wealthy and the value of the house is much greater than the loan. The bond investment may be risky because the city's finances are in disarray. To address this problem, central bankers met in Basel again and reached a new agreement—known as Basel II—in 2004.⁷⁷

Basel II contained numerous innovations, most of which were never implemented by national regulators. Its most important legacy was the introduction of exemptions from the Basel I system for large, sophisticated banks, which were permitted to use computer models to estimate their exposures to various types of risks.⁷⁸ Regulators had actually permitted banks to use these models since the 1990s,⁷⁹ but Basel II formalized this approach. Banks had developed computer models that they used for internal risk management. These models used data from a bank's lending business plus economic data to generate predictions about the bank's financial position in response to various shocks—such as interest-rate spikes, sovereign-debt defaults, housing-price declines, and so on.⁸⁰ In 2007, US regulators implemented this new regime.⁸¹

These rules were implemented just in time for the 2007–2008 financial crisis, which revealed that banks were undercapitalized. In the wake of the crisis, central bankers repaired to

⁷⁶ See Goodhart, *The Basel Committee on Banking Supervision* at 576 (cited in note 71).

⁷⁷ See generally Basel Committee on Banking Supervision, *International Convergence of Capital Measurement and Capital Standards: A Revised Framework* (Bank for International Settlements, June 2004), archived at <http://perma.cc/E2ZK-MGRU>.

⁷⁸ See Tarullo, *Banking on Basel* at 104–13 (cited in note 48).

⁷⁹ *Id.* at 88–89.

⁸⁰ See Daniel A. Nuxoll, *Internal Risk-Management Models as a Basis for Capital Requirements*, 12 FDIC Banking Rev 18, 19–25 (1999).

⁸¹ See Office of the Comptroller of the Currency, et al, *Risk-Based Capital Standards: Advanced Capital Adequacy Framework — Basel II*, 72 Fed Reg 69288, 69294 (2007). The Tier 1 leverage ratio was increased to 4 percent in 2006. See *id.* at 69289–94.

Basel to negotiate a new agreement (Basel III),⁸² and Congress passed the Dodd-Frank Wall Street Reform and Consumer Protection Act⁸³ (“Dodd-Frank Act”). After the dust settled, the regulators issued the regulatory minimums presented in Table 4, which are based on Basel III.⁸⁴

TABLE 4. MINIMUM-CAPITAL REGULATIONS (2013)

Tier 1 (%)	6
Tier 1 + Tier 2 (%)	8
Tier 1 Leverage Ratio (%)	4
Common-Equity Tier 1 (%)	4.5

In addition to raising Tier 1, the 2013 regulations introduced the common-equity Tier 1 category, which includes only common equity (hence excluding certain types of preferred equity in Tier 1). The 2013 capital rules also introduced a range of additional safeguards, including a capital-conservation buffer requirement that prohibits banks from issuing dividends when doing so would bring them too close to the capital floors. The buffer requirement effectively raises the capital requirement another 2.5 percent.⁸⁵

And so we conclude our whirlwind tour of the history of capital-adequacy regulation. Some caveats bear emphasis. I have suppressed a large amount of detail and some variation among the regulators. Some of the rules in the tables above do not apply to certain types of banks or bank-related institutions; in particular, global systemically important financial institutions are governed

⁸² See generally Basel Committee on Banking Supervision, *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems* (Bank for International Settlements, Dec 2010), archived at <http://perma.cc/4GVC-D9GC>. A revised version of the agreement was released in June 2011.

⁸³ Pub L No 111-203, 124 Stat 1376 (2010). For a critical view of the Dodd-Frank Act, see Viral V. Acharya and Matthew Richardson, *Implications of the Dodd-Frank Act*, 4 Ann Rev Fin Econ 1, 31–33 (2012).

⁸⁴ See generally Office of the Comptroller of the Currency and the Board of Governors of the Federal Reserve System, *Regulatory Capital Rules: Regulatory Capital, Implementation of Basel III, Capital Adequacy, Transition Provisions, Prompt Corrective Action, Standardized Approach for Risk-Weighted Assets, Market Discipline and Disclosure Requirements, Advanced Approaches Risk-Based Capital Rule, and Market Risk Capital Rule*, 78 Fed Reg 62018 (2013).

⁸⁵ See id at 62033.

by additional rules.⁸⁶ Regulators phased in the rules over different periods of time.⁸⁷ They engaged in greater and lesser forms of regulatory forbearance toward banks that dipped close to the floors or even fell below them. Indeed, enforcement is a source of a great deal of variation, as regulators have the discretion to (and frequently do) demand that banks exceed capital requirements.⁸⁸ Regulators amended their rules at various times in ways that I have skipped over. They no doubt used their judgment in different ways in evaluating assets. But the overall picture should by now be roughly clear.

III. HOW DID REGULATORS CHOOSE (AND JUSTIFY) THE CAPITAL-ADEQUACY RULES?

A. The Regulators' Explanations

I turn now to the justifications that the regulators provided for the capital-adequacy rules and their revisions of those rules. At the start of the period under discussion, regulators provided hardly any justifications at all. The FDIC and the Fed (which was also acting on behalf of the OCC) issued cursory two-page statements announcing the 1981 regulations. These statements consisted of boilerplate language about the importance of objective and consistent standards for ensuring the financial health of banks, and they emphasized that capital adequacy would remain only one of a number of factors that regulators would evaluate.⁸⁹ These statements did not explain why capital-adequacy rules were an appropriate approach to bank regulation, nor why the regulators chose the minimum capital levels that they did.

The OCC, as a nonindependent regulatory agency, was subject to Executive Order 12291, which required regulatory agencies in the executive branch to conduct cost-benefit analyses of all proposed “major rules”—those that are expected to have an

⁸⁶ See *Update of Group of Global Systemically Important Banks (G-SIBs)* *2 (Financial Stability Board, Nov 1, 2012), archived at <http://perma.cc/6YYU-LQF8>.

⁸⁷ See, for example, *New Capital Rule Quick Reference Guide for Community Banks* *2 (OCC, July 2013), archived at <http://perma.cc/78FC-J9RS>.

⁸⁸ For a valuable empirical study of enforcement practices, see Julie Andersen Hill, *Bank Capital Regulation by Enforcement: An Empirical Study*, 87 *Ind L J* 645, 708 (2012) (finding significant variation in the capital-asset ratios demanded by regulators in enforcement actions).

⁸⁹ See generally 46 Fed Reg 62693 (cited in note 57); 68 Fed Res Bull 33 (cited in note 57).

economic impact of at least \$100 million annually.⁹⁰ The order did not extend to independent agencies like the Fed and the FDIC. The OCC addressed Executive Order 12291 in a separate document, in which it argued that a cost-benefit analysis of the capital-adequacy rule was not necessary, because the rule would not have an impact of \$100 million or more per year.⁹¹ The reason was that the effect of the regulation—to increase the book value of the aggregate capital of national banks by less than 5 percent—represented “only a reclassification of already existing categories of funds.”⁹² It is not at all clear what this meant.

The OCC also said that because the capital–asset ratios of national banks would increase as a result of the rule, banks would be able to “compete more aggressively for funds” and make larger loans to individual borrowers.⁹³ Again, it is not clear what the OCC meant. It might have meant that banks with larger capital–asset ratios would be able to borrow at lower rates of interest and obtain economies of scale in lending; but if this were true, then banks would voluntarily improve their capital–asset ratios. The OCC did not acknowledge that the rule might impose costs on banks.

In a later document, the Fed explained that the 1981 rules were driven by “[c]oncern about the decline in the ratio of capital to bank assets before 1981.”⁹⁴ In the 1970s, the banking system experienced stress as a result of high inflation and low economic growth.⁹⁵ A number of banks failed and the capital–asset ratio of the industry declined.⁹⁶ Regulators decided that by incorporating capital standards into a rule, they would encourage banks to strengthen their balance sheets. But they did not explain the basis of the minimum capital levels that they chose. The bare fact that capital levels declined is not by itself cause for alarm: perhaps they were already too high relative to the social optimum. Indeed, bank capital levels were significantly higher in

⁹⁰ Executive Order 12291, 3 CFR 127, 127–28.

⁹¹ Office of the Comptroller of the Currency, Interpretive Rulings; National Banks; Definition of Capital, 48 Fed Reg 56359, 56363 (1983).

⁹² *Id.*

⁹³ *Id.*

⁹⁴ Board of Governors of the Federal Reserve System, Membership of State Banking Institutions; Bank Holding Companies and Change in Bank Control; Capital Maintenance; Rules of Procedure, 50 Fed Reg 16057, 16057 (1985).

⁹⁵ See generally Allan H. Meltzer, *Origins of the Great Inflation*, 87 Fed Res Bank St Louis Rev 145 (2005).

⁹⁶ See Burhouse, et al, *Basel and the Evolution of Capital Regulation* (cited in note 47).

the nineteenth century than they are today;⁹⁷ it may well be the case that capital levels can be allowed to decline as banks develop more-sophisticated methods for minimizing risk or diversifying their portfolios.

In 1985, regulators revised the capital rules in response to ILSA, which ordered regulators to “cause banking institutions to achieve and maintain adequate capital by establishing minimum levels of capital for such banking institutions and by using such other methods as the appropriate Federal banking agency deems appropriate.”⁹⁸ ILSA was passed after the Latin American debt crisis, which revealed that some US banks were heavily exposed to risky foreign debt.⁹⁹ Congress accordingly endorsed the move toward capital-adequacy rules and also encouraged regulators to strengthen them.

Congress did not tell the regulators what the new capital requirements should be, leaving regulators with the discretion to pick specific numbers. The regulators did not explain why they chose 5.5 percent for primary capital and 6 percent for total capital, but they did note that the new levels would not affect most banks. As the Fed explained:

Based on the most recent available data, only 17 state member banks and 61 bank holding companies with assets over \$150 million have primary capital ratios (without deducting intangible assets) below the 5.5 percent minimum primary capital guideline. Thus, fewer than 2 percent of all state member banks and 8 percent of all holding companies with assets over \$150 million had primary capital ratios below the minimum benchmark. With respect to total capital, 25 state member banks and 80 bank holding companies have total capital ratios (without deducting intangibles) below the 6.0 percent minimum guideline.¹⁰⁰

Similarly, the FDIC observed that “almost 96 percent of the banks in the nation [would not be] impacted by this regulation.”¹⁰¹

⁹⁷ See Admati, et al, *Fallacies, Irrelevant Facts, and Myths* at *6 n 12 (cited in note 34).

⁹⁸ ILSA § 908(a)(1), 97 Stat at 1280, codified as amended at 12 USC § 3907(a)(1).

⁹⁹ See Curry, *The LDC Debt Crisis* at 207–08 (cited in note 65).

¹⁰⁰ 50 Fed Reg at 16059 (cited in note 94).

¹⁰¹ Federal Deposit Insurance Corporation, *Capital Maintenance*, 50 Fed Reg 11128, 11130 (1985).

The OCC also emphasized that few of the national banks that it regulated would be affected by the new rules.¹⁰²

This time, the OCC conducted a cost-benefit analysis under Executive Order 12291.¹⁰³ The OCC stated that 72 national banks had a shortfall of at least \$1.8 billion in primary capital; 66 of those banks, plus another 54, had a shortfall of at least \$1.3 billion in secondary capital; and 389 banks met the minimums but faced risks that required them to raise their capital ratios. These banks would thus incur underwriting costs of up to \$185 million and in the meantime might need to reduce dividend payments.¹⁰⁴

This accounting of the costs is seriously deficient. The underwriting costs are obviously trivial—this is just the cost of paying an investment bank to underwrite a stock offering. The reduction in dividends—that is, the lost profits—would be the major impact of the regulation, but the OCC did not estimate the reduction’s quantitative value. Thus, it failed to recognize most of the costs of the regulation.

The OCC argued that the benefits of the regulation would be greater solvency for the banks, increased stability of the financial system, and increased “capacity to fund economic growth.”¹⁰⁵ The OCC did not estimate the value of these benefits.¹⁰⁶ Thus, although the OCC for the first time made an effort to qualitatively identify the costs and benefits of a minimum-capital-adequacy regulation, it did not quantitatively estimate any of the benefits or the relevant costs.

In 1989, the regulators introduced risk-based capital rules in the wake of Basel I. The purpose of these standards was to provide a more accurate assessment of bank health by rewarding banks with low-risk assets. The regulations also attempted to take account of off-balance sheet liabilities.¹⁰⁷ The regulators

¹⁰² Comptroller of the Currency, Minimum Capital Ratios; Issuance of Directives, 50 Fed Reg 10207, 10208 (1985):

[A]pproximately 95% of all national banks had a primary capital ratio in excess of 6%, a level which would exceed the primary capital requirement established by this regulation. In addition, most of the larger multinational and regional banks (which generally have lower capital ratios than smaller banks) had primary and total capital ratios which would exceed the minimum requirements.

¹⁰³ See *id.* at 10215.

¹⁰⁴ See *id.*

¹⁰⁵ *Id.*

¹⁰⁶ See 50 Fed Reg at 10215 (cited in note 102).

¹⁰⁷ See 54 Fed Reg at 4186 (cited in note 72).

did not mention any concerns about existing capital levels; their goal was to provide a more appropriate measure of financial solvency rather than to strengthen standards. The OCC did not conduct a cost-benefit analysis, because it did not believe that the rule was a “major rule”—that is, a rule creating costs of \$100 million or more per year.¹⁰⁸ It did not explain why it came to this conclusion, but the most likely reason is that it believed that the rule created net benefits for banks by releasing them from excessively rigid capital-adequacy regulations. The Fed and the FDIC noted that while the regulation would impose some new reporting requirements, it would not require banks to raise capital.¹⁰⁹

Similarly, in 2007 the regulators adjusted the risk-based rules by allowing a subset of banks to use internal valuation methods to determine the appropriate capital–asset ratios in light of the credit risks of their loans, but they did not intend to strengthen these rules.¹¹⁰ In a joint statement, the regulators discussed the costs and benefits of the new rules. The regulators estimated a total cost of \$489.9 million for implementing the new rules—including expenses by regulators as well as by banks.¹¹¹ This amount of money is pocket change for the banking industry and does not reflect the major impact of capital regulation, which, by putting a limit on lending, reduces profits.¹¹² It may have been the case that the regulators did not expect the 2007 regulations to reduce profits but instead expected them to increase profits by liberating banks from the arbitrary rules then in effect.¹¹³ If so, however, the regulators did not quantify this benefit. The regulators listed other benefits without quantifying them, including better capital allocation, reduction of

¹⁰⁸ 54 Fed Reg at 4177 (cited in note 72).

¹⁰⁹ 54 Fed Reg at 4197 (cited in note 72); 54 Fed Reg at 11509 (cited in note 72).

¹¹⁰ See 72 Fed Reg at 69295 (cited in note 81).

¹¹¹ *Id.* at 69393.

¹¹² See Shekhar Aiyar, Charles W. Calomiris, and Tomasz Wieladek, *Does Macro-Pru Leak? Evidence from a UK Policy Experiment* *16–20 (NBER Working Paper Series, Feb 2012), archived at <http://perma.cc/5P4R-NLXA> (finding that regulated banks decrease lending in response to increased capital requirements).

¹¹³ One important aspect of this argument is that banks face competition from the shadow-banking system. See Malcolm Baker and Jeffrey Wurgler, *Do Strict Capital Requirements Raise the Cost of Capital? Banking Regulation and the Low Risk Anomaly* *31 (NBER Working Paper Series, May 2013), archived at <http://perma.cc/X8XV-YCBT> (arguing that capital requirements do raise capital costs, which disadvantages regulated banks to the benefit of the shadow-banking system).

regulatory arbitrage, and better coordination across countries, among others.¹¹⁴

Finally, with the party over in 2013, the regulators raised capital-adequacy requirements. As the joint statement of the Fed and the OCC observed, “[T]he recent financial crisis demonstrated that the amount of high-quality capital held by banking organizations was insufficient to absorb the losses generated over that period.”¹¹⁵ The regulators do not appear to have conducted a formal cost-benefit analysis, but their joint statement refers to, and appears to rely on, a pair of cost-benefit analyses that were conducted by the Basel Committee on Banking Supervision (BCBS),¹¹⁶ which I discuss later in this Section. Two passages in the joint statement are of interest.

First, as before, the regulators observed that the new regulations will not affect most banks:

The agencies’ analysis also indicates that the overwhelming majority of banking organizations already have sufficient capital to comply with the final rule. In particular, the agencies estimate that over 95 percent of all insured depository institutions would be in compliance with the minimums and buffers established under the final rule if it were fully effective immediately.¹¹⁷

The FDIC made a similar statement.¹¹⁸ These statements are astonishing in light of the severity of the financial crisis and its effect on the economy. If banks were undercapitalized prior to 2007–2008 and if their undercapitalization either caused or exacerbated the financial crisis, as is widely believed,¹¹⁹ then how

¹¹⁴ See 72 Fed Reg at 69391 (cited in note 81).

¹¹⁵ 78 Fed Reg at 62021 (cited in note 84).

¹¹⁶ See generally Macroeconomic Assessment Group, *Final Report: Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity Requirements* (Bank for International Settlements, Dec 2010), archived at <http://perma.cc/XC2S-4DNQ>; Basel Committee on Banking Supervision, *An Assessment of the Long-Term Economic Impact of Stronger Capital and Liquidity Requirements* (Bank for International Settlements, Aug 2010), archived at <http://perma.cc/Y3E9-YXY5>.

¹¹⁷ 78 Fed Reg at 62026 (cited in note 84).

¹¹⁸ See Federal Deposit Insurance Corporation, Regulatory Capital Rules: Regulatory Capital, Implementation of Basel III, Capital Adequacy, Transition Provisions, Prompt Corrective Action, Standardized Approach for Risk-Weighted Assets, Market Discipline and Disclosure Requirements, Advanced Approaches Risk-Based Capital Rule, and Market Risk Capital Rule, 78 Fed Reg 55340, 55467 (2013).

¹¹⁹ See, for example, Admati and Hellwig, *The Bankers’ New Clothes* at 184–85 (cited in note 10); Federal Crisis Inquiry Commission, *The Financial Crisis Inquiry Report*:

could it be the case that corrective regulations would affect hardly any banks?¹²⁰

Second, the regulators noted that one of the major costs of the regulation is that when banks switch from debt to equity, they lose tax benefits.¹²¹ However, the loss of tax benefits is not a social cost that would be included in a cost-benefit analysis—higher tax bills for the bank are just a transfer to the public. Thus, these tax costs are irrelevant.

The BCBS produced a lengthy and sophisticated cost-benefit analysis that relied heavily on academic literature.¹²² The major benefit of capital-adequacy regulations is that they reduce the probability of a financial crisis. To calculate the probability of a financial crisis, the BCBS looked at historical data. A financial crisis occurs in a country once every twenty to twenty-five years, or with an average annual probability of 4.5 percent.¹²³ When a banking crisis occurs, the economy typically goes into recession; thus, the major effect of a banking crisis is lost economic output. A comparison of studies indicates that the median loss is 63 percent of gross domestic product (GDP).¹²⁴ Using these figures, the BCBS calculated the expected social benefit from reducing the probability of a financial crisis by 1 percent as approximately 0.2 percent of GDP per year.¹²⁵ The BCBS also estimated the effect of a change in capital requirements on the probability of a crisis. The probability and severity of a financial crisis decline at a decreasing rate as bank capitalization increases.¹²⁶

The major cost of capital-adequacy regulations is the constraint on banks' flexibility in choosing financing arrangements that maximize profits. If banks must maintain certain capital—

Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States *230 (Jan 2011), archived at <http://perma.cc/UYE7-AFUH>.

¹²⁰ A related puzzle is why banks have issued capital in excess of the required minimums. See Allen, Carletti, and Marquez, 24 *Rev Fin Stud* at 1006 (cited in note 13) (arguing that bank competition leads banks to increase capital reserves above the required minimums). It is important to note, as Professor Franklin Allen and his coauthors have done, that issuing capital above the minimum requirements does not necessarily mean that the issuing banks are adequately capitalized. *Id.* at 1008.

¹²¹ See 78 *Fed Reg* at 62153 (cited in note 84).

¹²² The BCBS's analysis is divided into two documents. See generally MAG, *Final Report* (cited in note 116); BCBS, *An Assessment of the Long-Term Economic Impact* (cited in note 116).

¹²³ See BCBS, *An Assessment of the Long-Term Economic Impact* at *9 (cited in note 116).

¹²⁴ See *id.* at *35.

¹²⁵ *Id.* at *13.

¹²⁶ *Id.* at *16.

asset ratios, then they cannot take on too much debt and must issue equity instead.¹²⁷ The BCBS assumed that the cost is passed on to customers, who must pay higher interest rates for loans or borrow less money.¹²⁸ Thus, the question is the economic impact of an increase in lending costs. With this information, the net benefits of different capital ratios can be estimated. Using various assumptions, the BCBS estimated optimal capital ratios in the range of 10 to 15 percent using a specific definition of capital that is not used by US regulators.¹²⁹ Translated into US legal definitions, a midrange 12 percent ratio under the BCBS definitions implies a Tier 1–total assets ratio of 7.6 percent, a Tier 1–risk-weighted assets ratio of 13.2 percent, and a total capital–risk-weighted assets ratio of 15.6 percent.¹³⁰

The BCBS report expressed a great deal of caution in its recommendations. Historical data on financial crises are sparse, and because economic conditions are always changing and different legal and economic systems prevail in different countries, there are limits to what one can extrapolate from those data.¹³¹ Moreover, the BCBS could not quantify numerous costs and benefits—for example, the possibility that higher capital requirements would reduce economic volatility. Academics have criticized the BCBS for making more-precise estimates of costs than were justified by existing studies¹³² and for assuming that the historical cost of raising equity under weak capital requirements provides an accurate basis for estimating the future cost if all banks were required to raise additional capital.¹³³ Nonetheless, the BCBS study is significantly more illuminating and useful than the published explanations that US regulators have produced.

¹²⁷ Similarly, capital requirements reduce a bank's ability to create liquidity. See Skander J. Van den Heuvel, *The Welfare Cost of Bank Capital Requirements*, 55 *J Monetary Econ* 298, 316 (2008).

¹²⁸ The BCBS also includes in the cost-benefit analysis the effect of the increased liquidity requirements in Basel III. See BCBS, *An Assessment of the Long-Term Economic Impact* at *3 (cited in note 116) ("Although there is considerable uncertainty about the exact magnitude of the effect, the evidence suggests that higher capital and liquidity requirements can significantly reduce the probability of banking crises.").

¹²⁹ See *id.* at *29.

¹³⁰ See *id.* at *57.

¹³¹ For a discussion and critique of these data, see Coates, 124 *Yale L J* at 960–74 (cited in note 11).

¹³² See, for example, *id.*

¹³³ See, for example, Admati, et al, *Fallacies, Irrelevant Facts, and Myths* at *54–55 (cited in note 34).

The BCBS ratios are considerably higher than the final Basel III rules,¹³⁴ which are being phased in by US regulators.¹³⁵ Recall that the Tier 1 ratio was only 6 percent (rather than the BCBS's 13.2 percent) and that the total ratio was only 8 percent (rather than the BCBS's 15.6 percent). Part of the explanation for the difference is that US regulators chose to incorporate part of the capital ratio in the form of capital-buffer requirements, which effectively raise all the minimums by 2.5 percentage points.¹³⁶ An additional surcharge of up to 2.5 percentage points for global systemically important institutions further increases the ratios for those institutions.¹³⁷ Other differences may be due to different definitions; however, I have not found a clear explanation.¹³⁸

B. Lessons

Regulators raised capital requirements slowly and reluctantly from 1981 to 2013, while at the same time increasing their complexity. The increase in complexity was clearly a response to the problem of regulatory arbitrage. Crude bright-line rules are easy to administer but invite evasion, resulting in banks that are excessively risky relative to the goals of those rules.¹³⁹ The real puzzle is why the regulators did not increase capital regulations more aggressively.¹⁴⁰

To see why this is a puzzle, recall that as a matter of theory, capital regulations should constrain banks' behavior because, in

¹³⁴ It is not clear why the final Basel III rules are less demanding than the ratios recommended by the BCBS's cost-benefit analysis. See Ranjit Lall, *From Failure to Failure: The Politics of International Banking Regulation*, 19 Rev Intl Polit Econ 609, 626–32 (2011).

¹³⁵ *Id.*

¹³⁶ See 78 Fed Reg at 62033 (cited in note 84).

¹³⁷ For a list of global systemically important institutions, see *Update of Group of Global Systemically Important Banks* at *3 (cited in note 86).

¹³⁸ As discussed by Sir Paul Tucker, former Deputy Governor of the Bank of England for Financial Stability, the cumulative effect of these requirements, taking into account the various loopholes in Basel I, was to increase capital requirements for global systemically important institutions by as much as ten times. See Paul Tucker, *Capital Regulation in the New World: The Political Economy of Regime Change* *1–3 (unpublished manuscript, Aug 1, 2014), archived at <http://perma.cc/CHV5-EEHQ>.

¹³⁹ See generally Prasad Krishnamurthy, *Rules, Standards, and Complexity in Capital Regulation*, 43 J Legal Stud S273 (2014). See also Ran Duchin and Denis Sosyura, *Safer Ratios, Riskier Portfolios: Banks' Response to Government Aid*, 113 J Fin Econ 1, 9–12 (2014) (finding that banks receiving government support tend to shift toward riskier assets within the same asset class).

¹⁴⁰ One response from the regulators might be that while ratios have not increased drastically, the definitions of Tier 1 and equity capital have become stricter. See Martin Feldstein, *What Powers for the Federal Reserve?*, 48 J Econ Lit 134, 142 (2010).

the absence of regulation, banks maximize profits by making loans and investments that are riskier than what is socially optimal. These incentives are possessed by *all* banks, including the best-managed ones and not only poorly managed or marginal banks. Moreover, the magnitude of this effect is significant. The BCBS's cost-benefit analysis suggests that optimal capital ratios are significantly higher than those implemented by regulators.¹⁴¹ Academics have conducted their own cost-benefit analyses, and an emerging consensus indicates that optimal capital rules may be even stricter than those recommended by the BCBS.¹⁴²

Yet US regulators took pains, even as late as 2013, to argue that their regulations would affect very few banks—only the bottom 5 percent or so. Historical data bear out this claim. Empirical studies show that US capital-adequacy rules have not affected the capital–asset ratios of banks.¹⁴³ The ratios in those rules were too low, or the rules were too easy to arbitrage. Many banks did increase their capital–asset ratios at various times—for example in the 1990s—but this was in response to market forces, not to capital-adequacy rules.¹⁴⁴ The capital-adequacy rules were like speed limits of two hundred miles per hour that no one exceeds because their cars cannot drive that fast.

As noted above, the introduction of risk weighting was apparently motivated by worries that unweighted capital–asset rules were excessively crude and invited arbitrage. But risk weighting was itself a crude response to this problem. As Professor Prasad Krishnamurthy shows, it would have been possible for regulators to conduct a cost-benefit analysis of risk weighting.¹⁴⁵ If they had, they might well have decided to forgo it because of the equivocal evidence of its effect on the financial

¹⁴¹ See text accompanying notes 134–38.

¹⁴² See notes 34–35; Prasad Krishnamurthy, *Regulating Capital*, 4 Harv Bus L Rev 1, 7–8 (2014).

¹⁴³ See, for example, Reint Gropp and Florian Heider, *The Determinants of Bank Capital Structure*, 14 Rev Fin 587, 590 (2010) (noting that capital regulation did not affect capital–asset ratios in the 1990s or early 2000s); Mark J. Flannery and Kasturi P. Rangan, *What Caused the Bank Capital Build-Up of the 1990s?*, 12 Rev Fin 391, 420–23 (2008) (finding no statistically significant relationship between capital rules and capital–asset ratios of bank holding companies in the 1980s or 1990s). These articles cite an extensive literature on this topic. See, for example, Tarullo, *Banking on Basel* at 141–42 (cited in note 48). There is also an extensive literature on why market forces cause banks to issue capital beyond regulatory limits. See generally, for example, Allen, Carletti, and Marquez, 24 Rev Fin Stud 983 (cited in note 13).

¹⁴⁴ See Allen, Carletti, and Marquez, 24 Rev Fin Stud at 984 (cited in note 13).

¹⁴⁵ See Krishnamurthy, 43 J Legal Stud at S288–92 (cited in note 139).

health of banks. Yet they did not engage in rigorous cost-benefit analysis, and they effectively weakened capital requirements by enabling banks to classify high-risk assets as low risk.¹⁴⁶

All of this suggests that if regulators had used cost-benefit analysis, they would have produced stricter capital-adequacy rules, which would have caused banks to raise capital–asset ratios. Because inadequate capitalization contributed to the 2007–2008 financial crisis,¹⁴⁷ the failure to use cost-benefit analysis probably increased the severity of that crisis.¹⁴⁸ Hence, contrary to the usual charge that cost-benefit analysis blocks regulation,¹⁴⁹ in the area of finance, cost-benefit analysis would have advanced regulation.¹⁵⁰

Why didn't regulators use cost-benefit analysis? What were they doing instead? I now turn to these questions.

IV. NORMING AS A REGULATORY STRATEGY IN BANKING LAW

A. Cost-Benefit Analysis, Feasibility Analysis, and Norming

What is the explanation for the financial regulators' choices of minimum capital levels? The regulators obviously believed that a relatively high capital–asset ratio is an important mark of the financial health of banks. This belief is at least plausible; most economists agree.¹⁵¹ But that is only the beginning of the inquiry. The next question is how to determine the right levels for capital-adequacy requirements.

One hypothesis is that the regulators chose the socially optimal capital-adequacy requirements in light of the information available at the time, based on formal cost-benefit analyses or at least on informal cost-benefit reasoning. As we have seen, the OCC produced some cost-benefit analyses, the other regulators

¹⁴⁶ See Admati and Hellwig, *The Bankers' New Clothes* at 183–87 (cited in note 10).

¹⁴⁷ See *id.* at 184–85; FCIC, *Financial Crisis Inquiry Report* at *230 (cited in note 119).

¹⁴⁸ Another contributing factor could be that bank regulation, split among three main agencies in the United States, is too fragmented. See Kenneth R. French, et al, *The Squam Lake Report: Fixing the Financial System* 15 (Princeton 2010).

¹⁴⁹ See, for example, Ackerman and Heinzerling, *Priceless* at 35–40 (cited in note 12); McGarity, *Freedom to Harm* at 77–78, 273–74 (cited in note 12).

¹⁵⁰ An alternative hypothesis is simply that regulators believed that other prudential tools at their disposal were sufficient to deter bank runs and that they therefore deliberately chose low minimum-capital rules because they did not believe that high minimum-capital rules were necessary.

¹⁵¹ See, for example, Admati and Hellwig, *The Bankers' New Clothes* at 94–99 (cited in note 10).

discussed costs and benefits, and the BCBS produced a cost-benefit analysis for the capital-adequacy rules in Basel III. But it is doubtful that these cost-benefit analyses determined the capital-adequacy rules that were ultimately issued. The cost-benefit analyses produced by the regulators were informal, addressed the wrong costs, and did not quantify the benefits—and, in any event, did not appear to be done in a rigorous fashion and so could not justify a specific ratio. The first high-quality cost-benefit analysis was the BCBS's, which, however, was not explicitly adopted by US regulators. It is possible that US regulators engaged in formal or informal cost-benefit analysis behind the scenes—but that seems highly unlikely, given the woefully inadequate levels that the regulators chose before 2013.

Regulators may also have believed that the risk of a systemic crisis was essentially zero, thanks to advances in the intellectual understanding of financial crises and in the operations of central banks. Thus, regulators did not bother to perform formal cost-benefit analyses, because they understood the benefit of capital regulation to be zero. However, this hypothesis is not consistent with regulators' behavior. Why would regulators have intervened in the collapse of Long-Term Capital Management in 1998¹⁵² if they believed that the cost of a crisis would have been zero?

Yet another hypothesis is that minimum-capital regulations were chosen at the international level starting with Basel I; the domestic regulations that were examined above merely implemented the Basel agreements. It would have made little sense to conduct cost-benefit analyses for domestic regulations that were predetermined by international bargaining. And yet this hypothesis begs the question of how the international regulations were chosen.

To understand the regulators' behavior, we start with an observation that the regulations could be predicted directionally from data about bank weaknesses. The stricter rules in 1981, 1985, and 2013 followed periods of financial instability. The rules of 1989 and 2007, which either relaxed or maintained standards, followed periods of financial health. The regulators acted like a person in a shower who turns the faucet toward hot if the water is too cold and toward cold if the water is too hot.

¹⁵² See Franklin R. Edwards, *Hedge Funds and the Collapse of Long-Term Capital Management*, 13 *J Econ Persp* 189, 200–04 (1999).

Still, we need to ask why the regulators raised or lowered capital levels as much (or as little) as they did. A major clue is the repeated insistence by the regulators that the new rules affected hardly any banks. Changes would be made, but they would be small enough not to cause much harm to the industry. The only banks hurt by the regulations would be a handful of barely solvent banks, which would be forced to raise capital or else shut down.¹⁵³

This approach resembles feasibility analysis, another standard used by regulators to evaluate regulations. Under feasibility analysis, the regulator chooses the strictest level of regulation that is “feasible,” in the sense of not imposing excessive costs on the industry in terms of job loss, bankruptcy, and factory shutdowns.¹⁵⁴ Feasibility analyses are often used in environmental regulations, when the regulator imposes the strictest possible pollution controls that do not cause excessive harm to industry.¹⁵⁵ In a typical feasibility analysis, the regulator describes the effects of the regulation and then justifies the regulation by arguing that these harmful effects are small.¹⁵⁶

Feasibility analysis is not a rigorous style of evaluation. “Feasibility” is not defined; it is impossible to determine why one or two factory shutdowns are tolerable while four or five are not. Many commentators think that feasibility analysis favors regulatory aggressiveness.¹⁵⁷ In environmental regulation, rules justified as “feasible” are often criticized on cost-benefit grounds.¹⁵⁸

In banking regulation, by contrast, this style of regulation is significantly less aggressive than what cost-benefit analysis implies. For this reason, feasibility analysis seems not to be an apt description of the regulatory decision procedure. Instead, regulators

¹⁵³ Another way of framing this criticism is that regulators adopt capital requirements in a microprudential way—in other words, that they aim to reduce individual bank failures rather than systemic costs. See Samuel G. Hanson, Anil K Kashyap, and Jeremy C. Stein, *A Macroprudential Approach to Financial Regulation*, 25 *J Econ Persp* 3, 4–5 (2011).

¹⁵⁴ See generally David M. Driesen, *Two Cheers for Feasible Regulation: A Modest Response to Masur and Posner*, 35 *Harv Envir L Rev* 313 (2011) (describing feasibility analysis).

¹⁵⁵ See *id.* at 314 (characterizing the feasibility principle as “the idea that administrative agencies should regulate serious health and environmental hazards as stringently as possible without causing widespread plant shutdowns”).

¹⁵⁶ See Jonathan S. Masur and Eric A. Posner, *Against Feasibility Analysis*, 77 *U Chi L Rev* 657, 675–80, 684–87 (2010).

¹⁵⁷ See, for example, Driesen, 35 *Harv Envir L Rev* at 316–17 (cited in note 154) (providing a qualified defense of feasibility analysis).

¹⁵⁸ See Masur and Posner, 77 *U Chi L Rev* at 687–712 (cited in note 156).

seem driven by a desire to inflict as little cost as possible on the industry—to mop up outliers, the riskiest banks, while leaving most banks unaffected.¹⁵⁹ Moreover, regulations based on feasibility analyses typically impose costs on all firms in the industry even if they bankrupt only a few. By contrast, banking regulation imposes no costs (aside from reporting requirements) on all but the weakest firms in the industry. The banks at the middle or the high end of the normal distribution are unaffected; for that reason, I call this form of regulation “norming.”

B. Is Norming a Justifiable Style of Financial Regulation?

Is it possible that norming is the proper way to regulate the banking industry? There are strong reasons for doubt. As explained earlier, the government’s role in providing emergency liquidity gives all banks an incentive to maintain excessively risky portfolios.¹⁶⁰ The proper regulatory response should be to reduce this perverse incentive.

One could nonetheless imagine a justification for norming as a cautious, pragmatic form of regulation that may seem reasonable in the face of great uncertainty.¹⁶¹ Suppose that financial regulators know that banks have excessive incentives to take risk, but that they do not know the magnitude of either those incentives or the risk. One possibility is that the risk of a financial crisis is small and, should a financial crisis occur, the economy would recover quickly. Another possibility is that the risk is very large. If the regulator does not know the magnitude of the risk, it has no basis for choosing a specific degree of regulatory strictness. In addition, the regulator may fear unintended consequences. For example, if it raises capital requirements by a large amount, banks will pay less for deposits—which may cause depositors to take their funds to money market mutual funds or

¹⁵⁹ For an explanation and critique of bank regulators’ behavior, see Jeremy Bulow and Paul Klemperer, *Market-Based Bank Capital Regulation* *11–12 (unpublished manuscript, Sept 2013), archived at <http://perma.cc/C33G-X6LD>.

¹⁶⁰ This has been framed as a time-inconsistency problem: because the government faces enormous political costs resulting from bank failures, even the toughest capital requirements may be relaxed when a bank is at risk of failure. See Oliver Hart and Luigi Zingales, *A New Capital Regulation for Large Financial Institutions*, 13 *Am L & Econ Rev* 453, 482–84 (2011).

¹⁶¹ On this topic, see generally Adrian Vermeule, *Rationally Arbitrary Decisions (in Administrative Law)* (Harvard Law School Public Law & Legal Theory Working Paper Series), archived at <http://perma.cc/8JC9-QUYN>; Cass R. Sunstein, *The Limits of Quantification*, 102 *Cal L Rev* 1369 (2014).

elsewhere, precipitating a crisis or creating general economic dislocations that are hard to predict.¹⁶²

Regulators may therefore adopt a cautious ratcheting strategy in which they raise capital regulations a small amount and then see what happens. If capital flees from banks, they will learn that the unintended consequences are more severe than they anticipated, and they can retreat. If it does not, they will learn that perhaps those consequences may be safely ignored, and they can then make plans to further increase the strictness of the regulations. Meanwhile, the regulations will also have some direct beneficial effects, as they will force the weakest banks to raise capital or else shut down. This approach has an experimental feel. In a climate of extreme uncertainty, it may be justified to engage in small steps and see what the market reaction is. This will create additional information that will reduce some uncertainty and provide the basis for additional regulation if necessary.¹⁶³ The small-step approach also helps address the often-exaggerated but politically effective claims of regulated parties that even a little bit of regulation will destroy thousands of jobs or the economy itself.¹⁶⁴

A further consideration is that banking regulators are responsible for the health of the banking system, while, say, environmental regulators are not responsible for the financial health of the industries that they regulate. When a banking regulator raises capital requirements, it takes a risk that it will force banks to shut down and that it will then be responsible for ensuring that those bank shutdowns do not cause panic or contagion. When an environmental regulation drives a firm into bankruptcy, the EPA has no specific obligations toward that firm, its shareholders, or its creditors. Thus, banking regulators may have stronger incentives to issue regulations that leave most firms unaffected.

¹⁶² There is cause for regulators to worry about high capital requirements funneling investments to the shadow-banking system. See Milton Harris, Christian C. Opp, and Marcus M. Opp, *Higher Capital Requirements, Safer Banks? Macroprudential Regulation in a Competitive Financial System* *32–33 (unpublished manuscript, Mar 21, 2014), archived at <http://perma.cc/343X-HP46> (discussing the relationship between capital regulations and competition from other investors, such as shadow banks).

¹⁶³ See generally Matthew Spitzer and Eric Talley, *On Experimentation and Real Options in Financial Regulation*, 42 *J Legal Stud* S121 (2014).

¹⁶⁴ See, for example, Editorial, *They Keep Fighting Back* (NY Times, Feb 2, 2012), archived at <http://perma.cc/BR7T-57BY> (discussing banks' resistance to capital regulations).

Norming may well be justified in a range of regulatory settings. Consider, for example, the regulation of a new industry, like the commercial-space-travel industry. Regulators are likely concerned about the safety of new spaceships, but at the same time they lack sufficient data to estimate the effectiveness of expensive safety features.¹⁶⁵ Thus, regulators cannot use cost-benefit analysis to determine whether specific safety features should be mandatory. As an alternative approach, regulators could wait to see how different commercial-space-travel companies perform and then require the firms that experience the most accidents to adopt the precautions and safety standards of the firms that experience the fewest accidents. It seems likely that aviation- and automobile-safety regulators have taken similar approaches.

Banking regulation is different because decades of experience with banking—and piles of data—provide the basis for cost-benefit analysis. Because of the rarity and severity of financial crises, little will be learned from raising standards incrementally and then waiting to see what happens. If no financial crisis takes place, nothing will be learned. If a financial crisis does take place, then significant harm will have occurred. Moreover, data on financial institutions are plentiful and thus make possible reasonable predictions about the effects of regulations on the financial system.¹⁶⁶

C. A Political Theory of Norming

The political economy of banking regulation has received a great deal of attention. In a recent book, Professors Charles Calomiris and Stephen Haber argue that the US banking system is, and has been, fragile because of the role of interest groups in constructing the state and federal legal systems.¹⁶⁷ In the nineteenth century and much of the twentieth century, small state banks formed a political alliance with populist interests that feared that large financial institutions would use their economic powers to harm Southern and Western farmers.¹⁶⁸ This alliance resisted sporadic efforts to permit banks to merge and grow, enabling small banks to maintain monopoly power in

¹⁶⁵ See Ledyard King, *Panel Says It Can't Confirm Commercial Crew Meets Safety Standards* (USA Today, Feb 28, 2015), archived at <http://perma.cc/JM24-NLLP>.

¹⁶⁶ See Posner and Weyl, 124 *Yale L J F* at 248–50 (cited in note 11).

¹⁶⁷ See generally Calomiris and Haber, *Fragile by Design* (cited in note 51).

¹⁶⁸ *Id.* at 158.

their markets.¹⁶⁹ After urbanization and technological development weakened the ability of small banks to earn monopoly rents in the 1980s and 1990s, consolidation took place, resulting in the much-feared political domination of large banks and financial conglomerates, which formed alliances with urban activists who sought cheaper credit for low-income people.¹⁷⁰ The result was deregulation, the erosion of underwriting standards, and ultimately the financial crisis of 2007–2008.¹⁷¹

Many other scholars agree that the banking industry played a significant role in pushing for deregulation, which took place at both the legislative and agency levels.¹⁷² Congress passed numerous statutes that weakened the rules. These statutes included the Depository Institutions Deregulation and Monetary Control Act of 1980,¹⁷³ which phased out interest-rate ceilings on deposits; the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994,¹⁷⁴ which abolished many restrictions on interstate banking; and the Gramm-Leach-Bliley Act,¹⁷⁵ which eroded the Glass-Steagall wall between commercial and investment banking. During this entire period, going as far back as the 1960s, the individual banking regulators also increasingly allowed banks to enter new markets, based on broad interpretations of the law.¹⁷⁶

¹⁶⁹ Id at 158–83.

¹⁷⁰ Id at 208–13.

¹⁷¹ See Calomiris and Haber, *Fragile by Design* at 203–13 (cited in note 51).

¹⁷² For discussions of the political economy of banking regulation, see generally, for example, id; Randall S. Kroszner and Philip E. Strahan, *Regulation and Deregulation of the US Banking Industry: Causes, Consequences, and Implications for the Future*, in Nancy L. Rose, ed, *Economic Regulation and Its Reform: What Have We Learned?* 485 (Chicago 2014) (emphasizing interest group competition between preregulation small banks and antiregulation big banks); James Livingston, *Origins of the Federal Reserve System: Money, Class, and Corporate Capitalism, 1890–1913* (Cornell 1986) (emphasizing the populist distrust of banking); Barth, Caprio, and Levine, *Guardians of Finance* (cited in note 40) (arguing that the regulatory breakdown that led to the financial crisis was caused by ideology, influence of the financial industry, psychological biases of regulators, and opacity of regulation); Simon Johnson and James Kwak, *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown* (Pantheon 2011) (discussing the political economy causes of the financial crisis).

¹⁷³ Pub L No 96-221, 94 Stat 132, codified as amended in Titles 12 and 15.

¹⁷⁴ Pub L No 103-328, 108 Stat 2338, codified as amended in various sections of Titles 7, 12, and 31.

¹⁷⁵ Pub L No 106-102, 113 Stat 1338 (1999).

¹⁷⁶ See, for example, *NationsBank of North Carolina, N.A. v Variable Annuity Life Insurance Co*, 513 US 251, 264 (1995) (approving the OCC's decision to permit banks to act as agents in the sales of annuities); *Securities Industry Association v Board of Governors of the Federal Reserve System*, 807 F2d 1052, 1069–70 (DC Cir 1986) (approving the Fed's decision to permit banks to engage in private placements of commercial paper).

There is little doubt that banks also pressured regulators to reduce—or not to increase too much—the capital requirements.¹⁷⁷ Yet banking regulators were also under political pressure to increase capital requirements. As we saw, the decline in the capital levels of banks in the 1970s, accompanied by bank failures, both led regulators to increase capital-adequacy requirements in 1981 and induced Congress to urge regulators forward in 1983.¹⁷⁸ The savings and loan (S&L) crisis in the 1980s further illustrated the dangers of undercapitalized banks.¹⁷⁹

Norming as a decision procedure can be seen as a way of responding to these contradictory pressures. Imagine that a regulator wants to avoid criticism for failing to regulate *and* criticism for regulating too strictly. The criticism for regulating too strictly comes from industry, which directly bears the costs of regulation. The criticism for failing to regulate may come from public-interest groups or from industries that compete with the regulated industry. Congress may also criticize a regulator for failing to regulate strictly when the law calls for strict regulation,¹⁸⁰ but Congress has diverse constituencies, and both the regulated industry and the beneficiaries from regulation will be able to influence it.

These competing pressures could, in some cases, result in significant levels of regulation, as is illustrated by environmental regulation. Polluting industries fight against environmental regulations because those regulations increase their costs of business. But public-interest groups like the Sierra Club urge regulators to regulate strictly. A regulator may try to optimize among these competing pressures. Many environmental regulations are fairly strict, perhaps reflecting that public-interest groups can mobilize public pressure by bringing to the public's

¹⁷⁷ See Johnson and Kwak, *13 Bankers* at 200 (cited in note 172) (discussing the influence of banks on regulators); Calomiris and Haber, *Fragile by Design* at 263–66 (cited in note 51) (same). For a discussion of banks' impact on the Basel process, see Lall, 19 *Rev Intl Polit Econ* at 610 (cited in note 134) (arguing that large banks had a significant influence on negotiations, which led to a weakening of standards).

¹⁷⁸ See text accompanying notes 57–66.

¹⁷⁹ See generally Joe Peek and Eric S. Rosengren, *How Well Capitalized Are Well-Capitalized Banks?*, 1997 *New Eng Econ Rev* 41 (Sept/Oct 1997).

¹⁸⁰ See, for example, Edward Markey, *Disappointing Ozone Decision Puts Pressure on Obama on Other Clean Air, Water Rules* (Sept 2, 2011), archived at <http://perma.cc/97YU-464P> (“I am disappointed that the President chose to further delay important clean air protections that would have helped to prevent respiratory and cardiac disease in thousands of Americans.”).

attention the harmful effects of pollution on people's health and well-being.

In the area of financial regulation, public-interest groups seem considerably weaker. It is plausible (though hard to demonstrate) that the public feels less strongly about financial regulation than about environmental regulation.¹⁸¹ The beneficial effects of capital-adequacy regulation are far more obscure than the beneficial effects of regulations that reduce the amount of arsenic in water supplies.¹⁸² Thus, if financial regulation is inadequate, it will be difficult for public-interest groups to mobilize public pressure.¹⁸³ Indeed, while we are all familiar with the major environmental groups like the Sierra Club and Greenpeace, it is hard to think of the names of the groups that seek greater financial regulation.¹⁸⁴ They have a blurrier public profile, because the public is less interested in financial regulation than in environmental regulation and has a weaker understanding of financial regulation than of environmental regulation.

Consider, for example, the difference between the public reaction to climate change and the public reaction to the financial crisis. While not everyone believes that climate change is taking place, it has remained in the news continuously—whenever the weather is bad, or a natural disaster occurs, or a new study is released. By contrast, the financial crisis generated the Occupy Wall Street movement, which grabbed public attention for about a year and then petered out long before banking regulators had completed the hundreds of new regulations authorized by the Dodd-Frank Act.¹⁸⁵ Economic recovery seems to quell outrage about financial crises, while concerns about the quality of the environment persist over booms and busts.

There are many other differences between environmental regulation and financial regulation. One is that pollution is often a continuous problem. If smog envelops a town, everyone sees (and smells) it. Financial crises, by contrast, are sporadic. Twenty

¹⁸¹ See Jonathan R. Macey, *The Political Science of Regulating Bank Risk*, 49 Ohio St L J 1277, 1287–88 (1989) (describing and citing literature on this variation in public opinion).

¹⁸² See Cass R. Sunstein, *The Arithmetic of Arsenic*, 90 Georgetown L J 2255, 2256 (2002) (describing the EPA's use of cost-benefit analysis to evaluate arsenic regulations).

¹⁸³ See Atif Mian, Amir Sufi, and Francesco Trebbi, *Resolving Debt Overhang: Political Constraints in the Aftermath of Financial Crises*, 6 Am Econ J: Macroecon 1, 26 (2014).

¹⁸⁴ See Macey, 49 Ohio St L J at 1288–90 (cited in note 181).

¹⁸⁵ This observation is based on a search in Google Trends for the terms “Occupy Wall Street” and “climate change.” See Google Trends, archived at <http://perma.cc/69KY-VMV5>.

years separated the S&L crisis of the 1980s and the financial crisis of 2007–2008. The financial industry can resist regulation by using a strategy of delay in the immediate aftermath of the crisis until public attention has wandered. Polluting industries have no such strategy.

Another difference is that financial regulation is a global matter while environmental regulation is usually a national one.¹⁸⁶ It is much easier to move money overseas than to move plants and equipment overseas; accordingly, excessive financial regulation can lead to capital flight while excessive environmental regulation will have a more limited effect on the regulated industries. In such circumstances, a certain amount of regulatory conservatism (as reflected in the norming approach) is easy to understand, even if it is not necessarily optimal.

Note also that major financial institutions gain from regulation to the extent that it reduces competition from marginal institutions. Thus, major players in the financial industry may well be willing to support stricter capital-adequacy regulations that eliminate competition from the marginal enterprises that can undercut them on prices. Indeed, to the extent that weak banks can spark panic and contagion, major banks will benefit from rules that regulate the weak banks out of existence. It may well be the case that norming will be attractive to an agency that is captured by an industry. The industry uses the agency to eliminate outliers; the agency's regulatory efforts are then seen by an uninformed public (to the extent that it is paying attention at all) as evidence that the agency is not excessively passive. A similar argument has been made about licensing requirements, which are sometimes seen as devices used by an industry that has captured legislators or regulators to raise the costs of entry beyond what is justified by legitimate health and safety considerations.¹⁸⁷

The interest group pressures that cause banking regulation to deviate from the social optimum are complicated, and a large literature already identifies many ways that those pressures may influence specific policies, such as chartering requirements,

¹⁸⁶ There are a few exceptions to this generalization, including the regulation of chlorofluorocarbon and carbon emissions. See Cass R. Sunstein, *Of Montreal and Kyoto: A Tale of Two Protocols*, 31 Harv Envir L Rev 1, 2 (2007) (describing treaty negotiations to address two major international environmental problems—the ozone hole and climate change).

¹⁸⁷ See Harold Demsetz, *Barriers to Entry*, 72 Am Econ Rev 47, 48 (1982) (arguing that incumbent firms may support regulations that raise the costs of entry for potential competitors).

capital levels, and so on.¹⁸⁸ The argument I advance here is that those pressures may also affect a regulator's choice of decision procedure or methodology for evaluating regulations. Norming will appeal to any regulator that faces strong headwinds from interest groups—because it encourages limited regulation that benefits most firms while harming only outliers—and that also wants to be seen as doing something to avoid offending Congress and the public.

By contrast, cost-benefit analysis is not the sort of methodology that would normally be adopted by regulators that are subject to interest group pressures. The methodology does not lend itself to deals among interest groups, because it forces regulators to take into account the effects of regulations on unorganized consumers. Thus, cost-benefit analysis has rarely been used by regulators at their own initiative. Instead, it was forced on them by the White House starting in 1981 with Executive Order 12291.

One of the virtues of cost-benefit analysis is that it provides intellectual resources for resisting political pressures. If bank regulators had used cost-benefit analysis to evaluate capital regulations, they might have been able to resist some of the pressures brought against them.¹⁸⁹ One might argue that if regulators had been captured by industry, they would simply have manipulated the cost-benefit analysis. But a manipulated cost-benefit analysis is a bad cost-benefit analysis, and evidence of such manipulation could have been used by forces hostile to deregulation to counter the pressure of the banks. It is also not clear that bank regulators were really captured. They may well have been influenced by ideological currents of the time that

¹⁸⁸ See, for example, Macey, 49 Ohio St L J at 1278 (cited in note 181).

¹⁸⁹ Regulators might also not have been able to resist such pressures. It is important to recognize that there was a great deal of controversy over what the optimal capital regulations would be. Many economists believed that, for example, the Basel II rules were too strict or too rigid. See generally, for example, Anil K Kashyap and Jeremy C. Stein, *Cyclical Implications of the Basel II Capital Standards*, 28 Econ Persp 18 (2004) (arguing that Basel II should have provided for lower standards during recessions so as to avoid exacerbating cyclical downturns); Joe Peek and Eric Rosengren, *Bank Regulation and the Credit Crunch*, 19 J Bank & Fin 679 (1995) (arguing that the enforcement of capital requirements caused credit shrinkage in New England). However, I have not found contemporary papers summarizing formal cost-benefit analyses of capital-asset ratios, as opposed to pointing out various isolated empirical effects of those rules.

avored deregulation. But even deregulators can be influenced by cost-benefit analysis when the results are compelling.¹⁹⁰

CONCLUSION

It is by now well-known that the government underregulated the financial industry from the 1980s until the 2007–2008 financial crisis and that this underregulation contributed to that crisis. The deregulation of the financial industry had complex roots. Banks were overregulated in the post–World War II period, which made it difficult for them to survive the economic stresses of the 1970s. Many of the rules—such as restrictions on branching—made little sense from the standpoint of the public interest, and it was reasonable to abolish them. Yet no one believed that banks should be completely deregulated. Regulators retained their legal authority to regulate banks for safety and soundness, and several statutes enacted in the 1980s encouraged them to do so.

Basic economic principles indicated that banks would take excessive risks unless regulated. Indeed, the S&L crisis of the 1980s was a textbook illustration of the economic consequences of insufficient financial regulation,¹⁹¹ and Congress responded in 1989 by ordering regulators to tighten the rules.¹⁹² Thus, economic principles and statutory mandates should have equipped regulators with justifications for relatively strict capital rules.¹⁹³ Yet regulators did not issue strict capital regulations. Instead, they adopted a strategy of norming, which ensured that the rules did no more than weed out a handful of outliers.

The explanation for this behavior may be that regulatory zeal simply crumbled in the face of industry opposition. But another hypothesis is that regulators lacked an adequate decision procedure that would have enabled them to see that the industry's

¹⁹⁰ A frequently cited example is the Reagan administration's decision to support an ozone treaty after being presented with a cost-benefit analysis that showed both that the ozone hole produced huge costs and that regulations that would ameliorate the problem would impose relatively low costs on industry. See Sunstein, 31 Harv Envir L Rev at 15 (cited in note 186).

¹⁹¹ See generally Edward J. Kane, *The S&L Insurance Mess: How Did It Happen?* (Urban Institute 1989) (describing the regulatory failures that led to the S&L crisis).

¹⁹² See Financial Institutions Reform, Recovery, and Enforcement Act of 1989, Pub L No 101-73, 103 Stat 183.

¹⁹³ By contrast, the academic literature overwhelmingly criticized bank regulations for encouraging banks to engage in excessive risk taking. See, for example, Macey, 49 Ohio St L J at 1277–78 & n 8 (cited in note 181).

demands were unreasonable. We cannot rerun history and see what would have happened if regulators had been required to use cost-benefit analysis. It is possible that each regulator would have conducted phony cost-benefit analyses (as the OCC did) and that the same outcomes would have occurred. Critics of cost-benefit analysis worry that this decision procedure encourages regulators to ignore the intangible, hard-to-value benefits of a regulation.¹⁹⁴ In the area of financial regulation, the statistical value of an avoided financial crisis may have been regarded as too hard to determine.

But even if this criticism is valid for environmental regulation, it is hard to imagine that something similar could happen in financial regulation. In the case of environmental regulation, the EPA typically does value the major hard-to-measure benefits of regulation—namely, avoided statistical deaths.¹⁹⁵ It ignores certain other, even-harder-to-measure benefits like the abstract value of the continuing existence of wilderness, and it also ignores mild harms like headaches.¹⁹⁶ Cost-benefit analyses may therefore understate benefits, but likely not by much. By contrast, if financial regulators ignored the benefits of reducing the probability of a financial crisis, there would be virtually no benefit to financial regulation—and capital requirements would be reduced to zero. No one believes that this is the right outcome. A cost-benefit-analysis requirement would thus compel regulators to undertake this difficult but not impossible valuation exercise, rather than to ignore it.¹⁹⁷

The history of capital regulation also contains larger lessons for the regulatory state. Norming and its cousin, feasibility analysis, lend themselves to underregulation when the regulator faces determined opposition from industry. Norming may make sense in certain industries, particularly those in which rapid technological development keeps regulators guessing about the social costs and benefits of the regulated activity. Regulators may reasonably permit different firms to take different levels of

¹⁹⁴ See Ackerman and Heinzerling, *Priceless at 200* (cited in note 12).

¹⁹⁵ See Lisa A. Robinson, *How US Government Agencies Value Mortality Risk Reductions*, 1 *Rev. Environ. Econ. & Pol.* 283, 283–85 (2007).

¹⁹⁶ For a discussion of the problem of measuring these kinds of harms, see Matthew D. Adler and Eric A. Posner, *New Foundations of Cost-Benefit Analysis* 126–27 (Harvard 2006).

¹⁹⁷ This is not to say that judicial enforcement of cost-benefit analysis would have been justified. On the question of institutional enforcement, see generally Robert P. Bartlett III, *The Institutional Framework for Cost-Benefit Analysis in Financial Regulation: A Tale of Four Paradigms?*, 43 *J. Legal Stud.* S379 (2014).

precaution and then—only after observing the safety records of the different firms—require all firms to use the precautions of the average firm. The advantages and disadvantages of norming as a regulatory strategy in other industries may be an appropriate topic for future research.

But norming is not the correct regulatory strategy for banking regulation. It does not offer the intellectual resources for justifying socially beneficial regulations that impose large costs on the financial sector and thus for withstanding the pressures of the financial industry. Cost-benefit analysis for financial regulation is overdue.