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Capital Accounts: Bank Capital, Crises, and the Determinants of an Optimal Regulatory Approach

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Book Review

Capital Accounts: Bank Capital, Crises, and the Determinants of an Optimal Regulatory Approach

THE BANKERS' NEW CLOTHES: WHAT'S WRONG WITH BANKING AND WHAT
TO DO ABOUT IT. By *Anat Admati & Martin Hellwig*. New Jersey:
Princeton Univ. Press. 2013. Pp. 398. \$21.79.

MISUNDERSTANDING FINANCIAL CRISES: WHY WE DON'T SEE THEM
COMING. By *Gary B. Gorton*. New York: Oxford Univ. Press. 2012.
Pp. 278. \$29.99.

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INTRODUCTION

Suppose a woman named Kate¹ wants to start a bank. She has \$5 of her own and knows a creditworthy entrepreneur (Will) who needs a \$100 loan for a new project. She also knows lots of people who would happily deposit their savings with her. Should regulators permit Kate’s bank to borrow (from depositors) the extra \$95 she needs to lend to Will? Or should it require her to borrow less and put up more of her own money before extending the loan?² How much does it matter to financial stability?

Two superb accounts of the 2007–2008 financial crisis and subsequent reform efforts provide very different answers to these questions. Gary Gorton’s *Misunderstanding Financial Crises*³ is part of an influential line of papers and books that has placed him on former Federal Reserve Chairman Ben Bernanke’s recommended syllabus for those seeking a deeper understanding of the crisis.⁴ *The Bankers’ New Clothes*, by Anat Admati and Martin Hellwig (“A&H”), has been praised by luminaries across the political spectrum, and lauded by an economics Nobel as worthy of comparison with John Maynard Keynes’s *General Theory*.⁵

1. “Kate” is the name of the fictional character Anat Admati and Martin Hellwig employ in a series of wonderfully lucid examples to illustrate their technical arguments. See generally ANAT ADMATI & MARTIN HELLWIG, *THE BANKERS’ NEW CLOTHES: WHAT’S WRONG WITH BANKING AND WHAT TO DO ABOUT IT* (2013).

2. The example is, of course, highly stylized, and for the sake of clarity and simplicity it ignores certain key features of bank regulation—most obviously the requirement that banks hold some cash in reserves. See *infra* note 15. The \$5 and \$95 figures are, in fact, roughly consistent with what is currently permitted of banks.

3. GARY GORTON, *MISUNDERSTANDING FINANCIAL CRISES: WHY WE DON’T SEE THEM COMING* (2012).

4. See Michael Corkery, *Ben Bernanke’s Labor Day Reading List*, WALL ST. J. DEAL J. (Sept. 2, 2010, 4:18 PM), <http://blogs.wsj.com/deals/2010/09/02/ben-bernankes-labor-day-reading-list>.

5. Roger Myerson, *Rethinking the Principles of Bank Regulation: A Review of Admati and Hellwig’s Bankers’ New Clothes*, J. ECON. LITERATURE, Mar. 2014, at 197, 197–98 (citing JOHN MAYNARD KEYNES,

Gorton and A&H agree that the financial system remains dangerously vulnerable five years after the worst of the crisis in the United States, and that reform efforts such as the Dodd-Frank Act⁶ and the Basel III Accord⁷ do little to address the fundamental problem.⁸ Their diagnoses and prescriptions, however, differ markedly.

In this Essay, I evaluate the books' accounts of the causes and dynamics of crises, paying special attention to the question of capital. Gorton and A&H disagree most strikingly on the critical regulatory issue of how much banks should be permitted to fund their activities with "borrowed" money (from depositors and other creditors) as opposed to "unborrowed" money (from equity claimants—Kate's own money in the example above).⁹ "Unborrowed" funds count as a bank's "capital." Gorton believes that capital's role in financial crises is insignificant. In stark contrast, A&H argue that higher capital levels are a *sine qua non* of crisis prevention and a healthy financial system. Gorton understands the cost of higher capital requirements, but fails to account fully for its benefits. He provides little reason to think that banks should be *required* to fund their activities with any capital at all. A&H, on the other hand, provide a tour de force on the benefits of higher capital requirements, but fail to account for its potential cost. In particular, they fail to provide a persuasive reason for why we should permit lending institutions to *borrow* at all. I argue that it is vitally important to require banks to maintain a sufficient capital buffer, but that there are also good reasons to limit the size of the required buffer. I identify the factors that should inform the required level of capital, and propose that an optimal regulatory approach would incorporate the best elements of both books' analyses—weighing the importance of capital against countervailing economic objectives and possible alternative approaches to systemic stability.

In Part I of the Essay, I lay out Gorton's and A&H's different visions of where the principal problem of financial crises lies—bank solvency or bank "liquidity"—and explain why the problems they analyze have new salience after the long, panic-free "quiet period" that lasted in the United States from the introduction of federal deposit insurance in

THE GENERAL THEORY OF EMPLOYMENT, INTEREST AND MONEY (1936)). Many consider Keynes to be the greatest economist of the twentieth century, and *General Theory* was his most influential work. See, e.g., Robert Skidelsky, *Ideas and the World*, *ECONOMIST*, Nov. 23, 2000, at 83, 83. ("How does a historian write about John Maynard Keynes, the greatest economist of the 20th century?").

6. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111–203, 124 Stat. 1376 (2010) (codified as amended in scattered sections of 12 U.S.C. and 15 U.S.C. (2015)).

7. BASEL COMM. ON BANKING SUPERVISION, BANK FOR INT'L SETTLEMENTS, *BASEL III: A GLOBAL REGULATORY FRAMEWORK FOR MORE RESILIENT BANKS AND BANKING SYSTEMS* (2011), available at <http://www.bis.org/publ/bcbs189.pdf>. This Accord sets international standards for (inter alia) bank capital levels.

8. ADMATI & HELLWIG, *supra* note 1, at xi–xii; GORTON, *supra* note 3, at 157, 198.

9. ADMATI & HELLWIG, *supra* note 1, at 6.

1933 up until 2007. In Part II, I analyze each book’s treatment of capital, and argue that neither captures all of the relevant factors that should inform an ideal regulatory approach. In Part III, I consider other key factors and trade-offs involved in setting optimal bank capital levels. Part IV concludes.

I. BACKGROUND

A. APPROACHES TO UNDERSTANDING AND PREVENTING CRISES

To understand the books’ complementarities and disagreements, and the implications of both for legal reform, it is helpful to emphasize the multiple regulatory approaches to preventing financial crises. A useful way to illustrate this is to map different strategies of financial regulation and stabilization onto a representative bank balance sheet.¹⁰ The balance sheet, of course, provides a picture of all of a firm’s assets—that is, the tangible and intangible property the firm owns—as well as the money the firm owes to those who have extended loans to it. The difference between what a firm *owns* and what a firm *owes* represents the firm’s equity.¹¹ In the context of banking, “capital” is roughly equivalent to equity.¹²

FIGURE 1: STYLIZED BANK BALANCE SHEET

Assets	Liabilities/equity
Cash	Debt (\$ the bank owes others) Short-term (due soon) Long-term (due later)
Investments Loans (\$ owed to the bank)	Residual claims = capital \approx equity

Much financial regulation focuses on the left, or “asset,” side of the balance sheet. Various rules limit the types of investments and loans

10. See *infra* Figure 1.

11. Thus, the two sides of the balance sheet must balance out: equity = assets – liabilities, or, alternatively, assets = liabilities + equity.

12. In fact, regulatory bank capital consists of equity and equity-like instruments such as perpetual debt. See, e.g., RICHARD SCOTT CARNELL ET AL., *THE LAW OF BANKING AND FINANCIAL INSTITUTIONS* 254–56 (4th ed. 2009). For purposes of the policy discussion, I follow A&H and Gorton in equating “capital” with common equity and contrasting it with deposits and short-term, deposit-like debt. The degree to which long-term debt can serve a function similar to equity is a matter of some debate; it is worth noting that it plays a key role in regulators’ current strategy for “resolving” a systemically important financial institution that has failed. See John Crawford, “Single Point of Entry”: *The Promise and Limits of the Latest Cure for Bailouts*, 109 NW. U. L. REV. ONLINE 103, 103 (2014).

It is also worth noting—and taking care to distinguish—the different meanings of “capital” outside the regulatory context; for example, when economists speak of “labor and capital,” by “capital” they usually mean long-lived physical assets. CARNELL ET AL., *supra*, at 254–56.

banks can make, aiming to constrain the risk of loss and thus of insolvency and bank failure.¹³ This is not, however, the primary concern of A&H or Gorton. They focus instead on the *right* side of the balance sheet. Here, there are two key possible interventions worth emphasizing. First, banks face capital requirements. This means that the value of a bank's assets must exceed its liabilities by a prescribed ratio.¹⁴ This safeguards a bank's solvency in the event it suffers losses on its assets. Second, for a particular type of short-term bank debt—namely, deposits—there is federal insurance. This prevents the type of panicked withdrawal that could, absent government intervention, destroy an otherwise solvent bank.

B. SOLVENCY AND LIQUIDITY

As indicated, both Gorton and A&H argue that the principal problem of financial crises lies not in the bad loans and investments banks have made (the left side of the balance sheet)—as important as those are—but rather in how banks fund themselves (the right side of the balance sheet). A&H focus on capital, which, they emphasize contra persistent misstatements by bankers and the financial media, has nothing to do with how much cash a bank holds.¹⁵ A financial intermediary could lend out every last dollar it had, and if it was entirely funded with equity, it would have a capital ratio of 100 percent.

The problem with funding a bank or any firm with a lot of debt relative to equity is that losses on loans and other investments may mean the bank is unable to meet its promises to creditors—in other words, the bank is more likely to become insolvent.¹⁶ A&H argue that the crux of a financial crisis lies precisely in this risk of insolvency to banks, and that

13. For example, the Volcker Rule limits the degree of proprietary trading in which banks and bank affiliates can engage. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 619, 124 Stat. 1376, 1620 (2010) (codified at 12 U.S.C. § 1851 (2012)). Section 619 is often referred to as the “Volcker Rule” because former Federal Reserve Board Chairman Paul Volcker was a prominent supporter of the law. More generally, banks cannot invest in securities deemed too risky—thus, no equity shares or junk bonds. Banks are also limited in what lines of business they can enter. 12 U.S.C. § 24 (Seventh).

14. Harking back to the first paragraph, Kate's contribution to her bank must meet a prescribed minimum relative to the money she borrows. See generally ADMATI & HELLWIG, *supra* note 1.

15. *Id.* at 6–7, 98. Banks *are*, of course, required to hold cash—but this is covered by reserve requirements, not capital requirements. Confusion between capital and reserve requirements has been distressingly hard to overcome, even in purportedly sophisticated organs of the financial press; one of A&H's great contributions has been to clarify this distinction. See, e.g., Matt Levine, *Ask a Banker: Capital, Capital!*, NPR: PLANET MONEY (May 20, 2013, 10:57 AM), <http://www.npr.org/blogs/money/2013/05/20/185511800/ask-a-banker-capital-capital> (“The recent debate over bank capital, sparked by Anat Admati and Martin Hellwig's book *The Bankers' New Clothes* and the Brown-Vitter bill in the Senate, has had at least one unambiguous effect, which is that it is now fashionable in certain circles to say ‘banks don't hold capital’ in the tone of voice formerly reserved for correcting split infinitives or declining ketchup on your hot dog.”).

16. ADMATI & HELLWIG, *supra* note 1, at 17–21.

higher capital requirements—that is, requiring banks to fund themselves with less debt and more equity—can address this.¹⁷

Gorton, in contrast, focuses not on the amount of bank debt relative to equity, but rather on the *type* of debt with which banks fund themselves.¹⁸ To grasp Gorton’s argument, it helps to imagine a world without central banks and deposit insurance—a world very much like the one that existed in the United States until a century ago.¹⁹ In this world, bank crises were not uncommon. Why?

Banks, unlike other firms, overwhelmingly fund themselves with a unique kind of debt—the kind that must be paid back immediately when the lender demands it. As banks lend a portion of this money out, it is not simply sitting in a vault, waiting for depositor redemption requests.²⁰ This creates a fundamental mismatch between the “maturities” of the loans *to* a bank and the loans a bank makes to others. “Maturity” refers to the period of time a borrower has to repay a loan. The loans a bank makes tend to be long-term. Conversely, the loans others make to banks tend to be extremely short-term; depositors, for example, can withdraw their funds at a moment’s notice.²¹ The result of this mismatch is often referred to as “maturity transformation”—and it serves an important purpose for both depositors and the firms and individuals that borrow from banks.²²

Everything works well unless and until depositors ask for their money back *en masse*. This is a bank run, and a bank facing heavy withdrawal demands may quickly exhaust its cash reserves. At that point, the bank must attempt to transform its less “liquid” assets (primarily money that others owe to *it*) into cash to repay depositors.²³

17. *Id.* at 219.

18. GORTON, *supra* note 3, at 5.

19. *Id.* at 32.

20. *Cf.* *IT’S A WONDERFUL LIFE* (Liberty Films, Inc. 1946). During a famous scene in the movie, George Bailey, played by Jimmy Stewart, meets a mob of depositors running on his Building and Loan. He tells them:

[Y]ou . . . you . . . you’re thinking of this place all wrong. As if I had the money back in a safe. The, the money’s not here. Your money’s in Joe’s house . . . right next to yours. And in the Kennedy house, and Mrs. Macklin’s house, and, and a hundred others. Why, you’re lending them the money to build, and then, they’re going to pay it back to you as best they can. Now what are you going to do? Foreclose on them?

“*It’s a Wonderful Life*”, INTERNET MOVIE SCRIPT DATABASE, <http://www.imsdb.com/scripts/It's-a-Wonderful-Life.html> (last visited June 9, 2015).

21. Even if a depositor leaves her money in the bank, this is the functional equivalent of a day-to-day loan that is continually rolled over.

22. Depositors very much want immediate access to all their money. Businesses that borrow invest their money in longer term projects; it would be extremely disruptive if they were forced to repay at the bank’s whim.

23. It is worth noting that the central problem of a bank run, as the discussion here should make clear, arises not from maturity mismatch *per se*, but rather from *liquidity* mismatch. A run on a (solvent) bank

If a bank can sell an asset immediately for full value, the asset is said to be “liquid.” An asset may be *illiquid*, on the other hand, because of the time it takes to sell it at full price; because of the discount from full value one must accept in selling it; or both. The time lag may be due to the difficulty of identifying a willing buyer or to the buyer’s need to perform due diligence before closing the deal. Even with a willing buyer and time for diligence, the seller may suffer a “lemons” discount if the seller cannot credibly communicate all the (good) information about the asset’s quality to the buyer.²⁴

Gorton focuses on a particular source of illiquidity: the type that arises when all banks are facing pressure to sell noncash assets in order to get cash to meet depositor withdrawal demands, and plausible buyers are either unable to absorb the system-wide supply or are facing the same liquidity stress as sellers and are loathe to part with their own cash.²⁵ Gorton believes this scenario defines financial crises; they are principally about banks facing liquidity problems during a system-wide run.²⁶

Illiquidity and insolvency can both severely damage banks, but as suggested above, their relative importance in the recent crisis remains a matter of dispute. A&H admit that liquidity is an issue, but minimize its importance relative to solvency; Gorton avers the importance of solvency before downplaying its relevance relative to liquidity. It matters for policy which story is correct. If crises are principally about solvency, it suggests a need for higher capital levels. If liquidity is the key issue, it may weigh instead in favor of shoring up the “safety net” provided by federal guarantees and the Federal Reserve’s emergency lending facilities.²⁷

would not be problematic if the bank’s assets were perfectly liquid—in other words, if the assets could be sold immediately for full value.

24. See generally George A. Akerlof, *The Market for “Lemons”: Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488 (1970). A&H’s distinction between “hard” and “soft” information may help explain why it can be difficult for a bank to communicate credibly all its information about a loan. ADMATI & HELLWIG, *supra* note 1, at 50. Hard information includes “business plans, statements of profits and losses, [and] consumer credit scores and bank statements.” *Id.* Soft information might include “assessments of management capability. Even such things as local gossip might be relevant in assessing the creditworthiness of a borrower.” *Id.*

25. GORTON, *supra* note 3, at 42. Some financial intermediaries engaged in maturity transformation are understood *not* to be engaged in “liquidity transformation” under normal market conditions—that is, even if they are financing long-term bonds with short-term debt, the bonds can be easily resold in liquid markets, and thus the intermediary should have no trouble paying back creditors who refuse to roll over their debt. As Gorton highlights, the problem in a financial panic is that bonds that are usually liquid—that is, easy to sell for full value—are suddenly illiquid, as buyers disappear from the market. *Id.*

26. *Id.* at 43. Gorton includes in his crisis definition situations in which a run would have occurred if not for expectations of government intervention—but in either case, it is the vulnerability of bank debt to runs that is the defining feature of financial crises.

27. Through its “discount window,” the Federal Reserve provides secured lending to banks facing liquidity crunches so that banks do not have to engage in destructive “fire sales”—that is, sales of assets for prices below “full value.”

C. WHY IT MATTERS: SHADOW BANKING

A safety net is already in place for commercial banks—the Federal Reserve opens its discount window to banks facing liquidity problems so that they do not have to engage in fire sales, and federal deposit insurance prevents depositors from running on banks at the first sign of weakness.²⁸ Indeed, this safety net largely explains why the United States enjoyed nearly three-quarters of a century without a financial panic leading up to 2007.²⁹ What changes have occurred that give the issues of solvency and liquidity such fresh urgency?

The answer is that a huge swath of the financial system has, over the past few decades, come to resemble the commercial banking system of a century ago, in that it serves similar maturity transformation functions yet rests outside the regulatory framework that applies to banks and lacks explicit government guarantees and automatic access to lending by the Federal Reserve.³⁰ It is as large as or larger than the commercial banking system,³¹ but resides in the regulatory “shadows”; thus, it is commonly called the “shadow banking system.”

For example, instead of a bank funding a mortgage loan with deposits, a broker-dealer may hold a mortgage-backed security and fund it with a very short-term loan, such as a “repo” loan.³² Repo lenders—typically institutional investors such as money market mutual funds—can withdraw funding on very short notice, often on a day-to-day basis, and thus function very much like depositors did prior to federal deposit insurance.³³ Repo debt is just one among several types of “runnable” debt funding financial

28. There are rare but important exceptions to the assertion that commercial banks no longer experience runs. Most notably, during the recent crisis there were runs by depositors (primarily but not exclusively over the insurance cap) at Wachovia and Washington Mutual. FIN. CRISIS INQUIRY COMM’N, THE FINANCIAL CRISIS INQUIRY REPORT 365–67 (2011).

29. The safety net was likely the most important but far from the sole cause of the long “Quiet Period” without banking panics. See Gary Gorton, *Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007*, at 39 (Fed. Reserve Bank of Atl.: Financial Markets Conference, 2009), <http://www.frbatlanta.org/news/conferen/09fmc/gorton.pdf> (“The Quiet Period followed from a combination of ‘sticks’ and ‘carrots.’ Banks faced the ‘stick’ of bank regulations and examinations, but also had the ‘carrot,’ in the form of monopoly rents that made the charter valuable.”).

30. See, e.g., Daniel K. Tarullo, Remarks at the Federal Reserve Bank of San Francisco Conference on Challenges in Global Finance: Shadow Banking After the Financial Crisis (June 12, 2012), available at <http://www.federalreserve.gov/newsevents/speech/tarullo20120612a.pdf>.

31. See, e.g., Morgan Ricks, *Regulating Money Creation After the Crisis*, 1 Harv. Bus. L. Rev. 75, 86 fig.1 (2012).

32. “Repo” is short for sale and repurchase agreements. TOBIAS ADRIAN & HYUN SONG SHIN, FED. RESERVE BANK OF N.Y., THE SHADOW BANKING SYSTEM: IMPLICATIONS FOR FINANCIAL REGULATION 8 (2009), http://www.newyorkfed.org/research/staff_reports/sr382.pdf (“In a repo, the borrower sells a security today for a price below the current market price on the understanding that it will buy it back in the future at a pre-agreed price.”).

33. Gorton, *supra* note 29, at 4 (“[R]epo is short-term, like demand deposits, and it can be withdrawn at any time, like demand deposits.”).

intermediation and maturity transformation in the regulatory “shadows.”³⁴ The most acute phases of the recent crisis involved runs on shadow banks.³⁵ It was the shadow banking system to which economist Tyler Cowen referred when he declared in the *New York Times* in 2012 that “[t]he age of the bank run has returned.”³⁶ Unless otherwise noted, I will use the term “banks” in the rest of this Essay to mean both insured depository institutions and “shadow” banks such as broker-dealers.

It is also worth emphasizing, of course, that the solvency of commercial banks is a matter of public concern regardless of the risk of runs. A&H provide a brilliant account of the perverse incentives that face a bank in the zone of insolvency. One potential problem is that the bank will not invest in valuable projects.³⁷ Another is that the bank will “gamble for resurrection,” making bets that, from the net perspective of all stakeholders, are not worth making.³⁸ Gorton observes that these value-destroying dynamics have much longer to play out at banks that benefit from deposit insurance precisely because such banks do not face the risk of precipitous runs.³⁹ The prime example of this is the savings-and-loan (“S&L”) crisis of the 1980s, during which hundreds of insolvent S&Ls were permitted to “gamble for resurrection” over an extended period, worsening their losses considerably.⁴⁰

II. CAPITAL: COSTS AND BENEFITS

A. GORTON’S CASE AGAINST THE IMPORTANCE OF CAPITAL

Gorton states that bank runs occur when losses in the real economy shake depositors’ faith in the ability of banks to ultimately repay all their debts at par (that is, 100 cents on the dollar): “Panics are not irrational events. Panics happen when information arrives about a coming recession.

34. See generally Darrell Duffie, *The Failure Mechanics of Dealer Banks*, 24 J. ECON. PERSP. 51 (2010).

35. This widely accepted interpretation of the crisis is most prominently associated with Gorton. See Gorton, *supra* note 29, at 4–5.

36. Tyler Cowen, *Call it the Age of the Shadow Bank Run*, N.Y. TIMES, Mar. 25, 2012, at BU.4

37. ADMATI & HELLWIG, *supra* note 1, at 42. A&H provide an arithmetic illustration with Kate owing \$270,000 on a mortgage for a home originally worth \$300,000. The home has been damaged by a flood, however, and is now worth only \$240,000. Kate has a friend who is a contractor and offers to restore the home to its original condition (increasing the value of the home from \$240,000 to \$300,000—implying \$60,000 worth of work) but charge her only \$50,000. A&H explain: “From Kate’s perspective, this is not an attractive investment. Because she owes \$270,000 on the mortgage, her equity in the \$300,000 house would be \$30,000. But putting in \$50,000 to bring her equity from zero to \$30,000 implies a loss of \$20,000.” *Id.*

38. *Id.* at 43. The intuition here is that a gamble with a high payout but a very small chance of success may be a bad wager, but would make sense for an insolvent gambler (with limited liability!) playing with creditors’ money: if he does not play, he has \$0; if he plays and loses, he still has \$0. But if he plays and wins, he keeps the difference between the payout and the money owed to the creditors.

39. GORTON, *supra* note 3, at 170–71.

40. ADMATI & HELLWIG, *supra* note 1, at 54–55.

It is the fact that there are potential problems with banks that causes a run. It is not the other way around, that runs cause problems for the banks.”⁴¹

One might imagine, then, that the best way to reduce the likelihood of a crisis is to reduce the likelihood of fears over banks’ solvency that may lead to a run. The most obvious way for banks to do this is to fund themselves with a higher proportion of equity. If the face value of a bank’s assets is \$100, and it owes various creditors (including depositors) \$90, then losses on the bank’s portfolio of ten percent or more should trigger a run. The losses would have to climb twice as high to trigger a run if the bank (with the same assets) only had \$80 in liabilities.

Gorton, however, tells us that “[h]igh capital ratios cannot prevent runs.”⁴² He cites calls for heightened capital requirements from regulators and central bankers as an example of confusion as to the relationship between capital and crises.⁴³ Once a systemic run starts, “no amount of capital short of 100 percent . . . can prevent a crisis.”⁴⁴ Further, Gorton states that “there is almost no evidence that links capital to bank failures.”⁴⁵ Cash, he argues, not capital, is relevant when a crisis hits.⁴⁶

Gorton’s arguments, however, appear to apply only to a system already in the throes of a broad panic and run. In a systemic run, when there is no buyer able to give banks enough cash in exchange for noncash assets to enable the banks to meet all their withdrawal demands, then Gorton is likely correct that it will not matter for banks’ survival how well capitalized they are. But while it may be true that high capital ratios cannot *stop* a run once it has been triggered, it defies logic that higher capital ratios cannot, at the margin, help *prevent* possible runs before they begin. Gorton’s own theory of how bank runs begin—depositors receive information that makes them think the entire banking system might be insolvent⁴⁷—depends on fears that the value of assets in the banking system may fall below the value of liabilities. This is less likely to happen—and depositors are less likely to fear it will happen—if asset values have further to drop before they sink below the value of liabilities. Policy should concern itself just as much with the potential triggers of a run as with dealing with runs if they occur.

Reducing the likelihood of crises is not the only potential benefit of higher capital ratios. Equally important is limiting the costs of crises when they occur. Regardless of runs, solvency problems at banks can translate into constricted flows of credit to the real economy, so that valuable projects

41. GORTON, *supra* note 3, at 5.

42. *Id.* at 153.

43. *Id.* at 153, 157.

44. *Id.* at 152.

45. *Id.* at 157.

46. *Id.* at 153.

47. *Id.* at 5, 58.

that should be undertaken no longer will. This could occur because some banks fail and go into liquidation and other banks are not able to step in immediately to pick up the slack.⁴⁸ It could also occur because surviving banks that have suffered losses and need to rebuild their capital ratios may do so by shrinking their balance sheets (such as by selling loans or allowing them to mature without making new ones) rather than by raising new capital. A&H provide a lucid illustration of this in their book.⁴⁹ When leverage is higher, the same losses will, if this dynamic is in play, lead to much more severe de-leveraging and balance-sheet shrinkage.⁵⁰ Again, other banks may not be able to fill the gap. All of this may make it harder for creditworthy firms and individuals to access needed credit. Anil Kashyap and his co-authors refer to this as the “credit crunch externality.”⁵¹

Among Gorton’s statements on capital, the one that would likely draw the strongest objection from A&H comes at the beginning of his chapter on the topic. After listing the various risk constraints, including capital requirements, that can be imposed on banks to try to ensure financial stability, Gorton tells us that “it is a delicate balance of payoffs and punishments—if there is no profit in being a bank, bank capital will exit the industry.”⁵² At least with respect to capital, the implication seems to be that if we enforce higher capital ratios, banks will not be able to make enough money to meet the required return of equity investors.⁵³ An alternate way of stating the problem—one commonly put forward by bank executives and lobbyists—is that equity is “expensive,” and that forcing banks to fund themselves with more equity will raise their cost of capital, reducing the number of projects they can profitably undertake, and effectively shrinking the financial system.⁵⁴

The problem with this view, as A&H explain at length, is that the return that investors demand is largely driven by risk, and as leverage

48. The classic statement of this argument can be found in Ben Bernanke, *Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression*, 73 AM. ECON. REV. 257 (1983).

49. ADMATI & HELLWIG, *supra* note 1, at 64.

50. A&H compare two banks with \$100 in assets each; Bank 1 has \$2 in capital and Bank 2 has \$20. Assume the assets of each bank suffer a \$1 loss. If the banks do not raise new capital, then in order to maintain a stable debt-to-equity ratio, Bank 1 has to sell almost half of its remaining assets, while Bank 2 will only have to sell roughly five percent of its assets. *See id.* at 64; *see also* Anat Admati et al., *Debt Overhang and Capital Regulation* (Rock Ctr. for Corporate Governance at Stanford Univ., Working Paper No. 114, 2012), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2031204 (exploring the conditions under which shareholders will prefer to reduce leverage by raising new equity as opposed to shrinking the balance sheet).

51. Anil K. Kashyap et al., *Rethinking Capital Regulation* 12 (Fed. Reserve Bank of Kansas City: Maintaining Stability in a Changing Financial System Symposium, 2008), <http://www.kc.frb.org/publicat/sympos/2008/KashyapRajanStein.08.08.08.pdf>.

52. GORTON, *supra* note 3, at 151.

53. Equity is riskier than debt and so the “required return” is higher than for debt.

54. ADMATI & HELLWIG, *supra* note 1, at 100.

falls, the risk associated with equity decreases.⁵⁵ Therefore, the required return on equity will decrease, as well. A&H point to the foundational work by Franco Modigliani and Merton H. Miller, who proved a half century ago that the way a firm funds itself—that is, how leveraged it is—should have no impact on its cost of capital (and thus the scope of projects it can and should undertake) absent real-world frictions or distortions.⁵⁶ Are there any such frictions that might make us think that banks' cost of capital *would* rise if they were forced to use less debt?

A&H explore several answers to this question. First, there is a tax benefit to debt, as firms can deduct interest payments, but not dividends, from their taxable income.⁵⁷ Second, if the government explicitly provides insurance to a bank but undercharges for it, or if the bank enjoys an implicit guarantee so that the bank's lenders believe the government will intervene to prevent default if the bank is in distress, lenders will demand an artificially low rate of interest from the bank.⁵⁸ The government will effectively be subsidizing the bank's borrowing. While both of these factors lower a bank's cost of funding itself, they do so at society's expense. Forcing banks to use more equity and less debt would increase their funding costs by removing the subsidies banks currently enjoy.⁵⁹ A&H argue persuasively that while removing these subsidies may result in increased *private* costs (that is, to the bank), it should not increase *social* costs.⁶⁰

A third possibility for why banks can fund themselves more cheaply by using more debt rather than equity is that bank debt has instrumental value as a type of money held for transaction purposes.⁶¹ This value is distinct from any investment-like return, and so, lenders (such as depositors) will charge less (that is, demand less interest) for it, thus lowering banks' cost of capital. The degree to which the "moneyness" of bank debt is a legitimate source of value that lowers banks' cost of capital independently of any subsidies is a point of contention to which I return below. For now, it is enough to note that A&H launch a vigorous but largely unsuccessful attack on the idea.

A final element in Gorton's critique of capital involves the difficulty of precise and reliable measurements of the relevant variables. He tells us:

55. *Id.* at 108–09.

56. *Id.* at 109 (discussing Franco Modigliani & Merton H. Miller, *The Cost of Capital, Corporation Finance and the Theory of Investment*, 48 AM. ECON. REV. 261 (1958)).

57. *Id.* at 139–40.

58. *Id.* at 130. If lenders believe they do not bear the risk of default, they will not price it.

59. *Id.*

60. *Id.* Similarly, they observe, limiting pollution may harm the private interests of polluters even as it benefits society. *Id.* at 13.

61. GORTON, *supra* note 3, at 5.

The fact that an entire shadow banking system had developed, completely undetected by bank regulators, would suggest that the greater problem is one of measurement of economic activity rather than just capital. The commercial banks that failed in the recent crisis held on average more capital than Basel III required.⁶²

This is an important point: banks were able to game capital ratios such that regulatory capital often bore a tenuous link with economic reality leading up to the crisis.⁶³ Here, A&H agree wholeheartedly with him—they are particularly critical of the risk-weighting system that the Basel II and Basel III accords both embrace.⁶⁴ Admitting Gorton’s point, then, should we just give up on capital ratios? Should we admit bankers are smarter than the rest of us, and eliminate any requirement for holding capital? Gorton does not go this far. Once one admits the importance of *some* required capital, the question then becomes *how much*. One might argue that better measurements of economic activity are required (as Gorton does).⁶⁵ But one might also argue (without denying the first point) that the ability of bankers to game the ratios in the past suggests the need for an extra “buffer” in future requirements.

B. IS HIGHER CAPITAL SUFFICIENT TO PREVENT CRISES?

Gorton believes a crisis is defined by illiquidity in the face of a system-wide run.⁶⁶ A&H do not contest that a run, once underway, can be enormously destructive, but their underlying position seems to be that preventing insolvency automatically solves the problem of runs.⁶⁷ Insolvency can be prevented, in turn, by boosting required capital ratios.⁶⁸ This must be true at a certain point—for example, if we outlawed debt, insolvency would be impossible, and so would runs. But once we allow for any leverage *at all*, the question is how much equity is required to prevent the possibility of debilitating runs. If we want to avoid runs *without* relying on safety net tools such as insurance for deposit-like debt, we should be very confident that capital requirements (as supported by other regulatory rules and tools) are set at appropriately high levels.

62. *Id.* at 157.

63. ADMATI & HELLWIG, *supra* note 1, at 183–87.

64. *Id.*

65. GORTON, *supra* note 3, at 210.

66. *See, e.g., id.* at 42.

67. ADMATI & HELLWIG, *supra* note 1, at 38. A&H believe that assigning it the primary causal role puts things backwards. *Id.* at 209–12. They tell us that the “fascination with runs and panics makes the liquidity narrative attractive, but that does not mean that this narrative is true.” *Id.* at 211. The crisis was driven primarily by “serious and legitimate solvency concerns about a number of banks and other institutions.” *Id.* at 212. Focus on illiquidity diverts our attention, they argue, from higher capital requirements and lends support to the “inappropriate” solution of expanding the government safety net. *Id.* at 210–11.

68. *Id.* at 179.

A&H suggest that banks be required to fund at least twenty to thirty percent of their portfolios with equity rather than debt.⁶⁹ This would represent a significant increase from current bank leverage ratios, which, for large banks, can hover around four or five percent.⁷⁰ Perhaps as a preemptive strike against those who believe departing from the status quo would pose unknown (or unknowable) risks, or that current capital levels are somehow part of the natural (market) order, A&H observe:

Until the middle of the nineteenth century, equity levels around 40–50 percent of banks’ total investments were typical. Bankers were careful not to take too much risk because they could not walk away from the debts when the investments did not work out.

. . . .

Early in the 20th century, it was still typical for banks to have equity equal to 25 percent of their total assets, but banks’ equity levels declined to single digits, around 6–8 percent of their total assets in the United States, by the early 1990s.⁷¹

Banks may very well have provided all the valuable services for which we rely on them, and at optimal levels, during the era of higher capital levels. One may also derive some comfort from the assurance that because of higher capital levels, “bankers were careful not to take too much risk.”⁷² The problem with this narrative of reassurance, however, is that the financial system in the nineteenth and early twentieth centuries was remarkably unstable, with damaging crises and panics hitting every decade or so.⁷³ What the system sorely lacked in the nineteenth century was precisely what A&H imply shadow banks can do without now if only capital levels approach nineteenth century levels—the safety net of insurance for deposit-like debt and the Federal Reserve as “lender of last resort.”⁷⁴

C. WHY NOT 100 PERCENT CAPITAL?

A&H make a strong case for (much) higher capital levels, telling us that they “have never received a coherent answer to the question of why

69. *Id.*

70. *Id.* at 176. A new rule for the largest U.S. bank holding companies will require them, beginning in 2018, to maintain a ratio of assets to total capital of five percent. Joint Press Release, Bd. of Governors of the Fed. Reserve Sys. et al., Agencies Adopt Enhanced Supplementary Leverage Ratio Final Rule and Issue Supplementary Leverage Ratio Notice of Proposed Rulemaking (Apr. 8, 2014), <http://www.federalreserve.gov/newsevents/press/bcreg/20140408a.htm>.

71. ADMATI & HELLWIG, *supra* note 1, at 30–31.

72. *Id.* at 30.

73. Gorton quotes a commentator writing in 1899: “Since 1793 [financial] panics have occurred [in the United States] in the following years: 1797, 1811, 1813, 1816, 1819, 1825, 1837, 1847, 1857, 1866, 1873, 1884, 1890, and 1893.” GORTON, *supra* note 3, at 29 (quoting THEODORE GILMAN, FEDERAL CLEARING HOUSES (1899)). See also BEN BERNANKE, THE FEDERAL RESERVE AND THE FINANCIAL CRISIS 9–10 (2013) (identifying six banking panics between 1873 and 1914).

74. Again, of course, the shadow banking system is where the risk of runs and crises now lies. See *supra* Part I.C.

banks should *not* have equity levels between 20 and 30 percent of their total assets.”⁷⁵ There is a central theoretical inconsistency, however, between A&H’s analysis and their policy prescription—they have not provided a coherent answer to the question of why financial intermediaries should not be required to have equity levels of 100 percent of assets. They tell us “banks benefit the economy by taking deposits and making loans,”⁷⁶ but they do not tell us why these functions have to be housed under the same corporate roof. Providers of deposit and payment services could function as “money warehouses,” holding all their clients’ deposits in vault cash and deposits with the Federal Reserve, while still providing checking services and ATM machines.⁷⁷ Separate institutions, funded entirely with equity,⁷⁸ could then make loans to consumers and businesses. Such an approach would require that the money warehouses charge depositors fees, but this would simply reflect the cost of providing those services. A&H do not tell us why we should allow these costs to be subsidized by maturity transformation—that is, by the interest on the loans made with the deposits—when maturity transformation can lead to liquidity crises and when the risk of losses on those loans can lead to insolvency.

A&H exempt deposits from their scathing critique of banks’ reliance on short-term debt, but they do not provide a persuasive reason for doing so. They tell us that “[b]anks provide depositors with important services, such as making payments and standing ready to provide cash at any moment. Because deposits are a form of debt, borrowing is an essential part of banking.”⁷⁹ But relying on the payment services provided by deposits to justify (a bit of) maturity transformation simply begs the question. Would they withdraw their apparent disapproval of the repo market if arrangements were made to permit checks to be written on repo accounts? A&H assure us that raising capital levels will have benefits but no costs.⁸⁰ They do not suggest any limiting principle or any countervailing factors that might change this calculus as capital levels rise. Problems of insolvency *and* of illiquidity would disappear if we simply outlawed debt

75. ADMATI & HELLWIG, *supra* note 1, at 182.

76. *Id.* at 148.

77. Some economists have proposed versions of such a separation of the monetary and credit functions of banks. See, e.g., LAURENCE KOTLIKOFF, JIMMY STEWART IS DEAD: ENDING THE WORLD’S ONGOING FINANCIAL PLAGUE WITH LIMITED PURPOSE BANKING (2010); John Cochrane, *Stopping Bank Crises Before They Start*, WALL ST. J., June 24, 2013, at A.19; Jaromir Benes & Michael Kumhof, *The Chicago Plan Revisited* (Int’l Monetary Fund, Working Paper No. WP/12/202, 2012), available at <http://www.imf.org/external/pubs/ft/wp/2012/wp12202.pdf>. I believe these proposals are misguided, for reasons set out below.

78. Such intermediaries could also probably raise funds through non-runnable (long-term) debt without threatening stability, but again, to simplify the policy discussion, I will focus on the distinction between the debt most typically (and uniquely) issued by banks—that is, deposit-like debt—and bank equity.

79. ADMATI & HELLWIG, *supra* note 1, at 148.

80. *Id.* at 191.

for financial intermediaries, and forced them instead to fund *all* their activities with equity. A&H provide no reason *not* to adopt this approach—the rest of their analysis, if correct and complete, would seem to compel it.

To summarize, either A&H’s analysis is correct and their twenty to thirty percent proposal makes little sense, or there is something missing from their analysis. I believe their analysis misses something—something which they do not, in fact, completely ignore, but with which they nevertheless wrestle unsuccessfully. The key factor A&H are missing is that maturity transformation can *create* funding for valuable projects in a way that other types of financial intermediation—funded by equity claimants or long-term debtors, for example—do not. Understanding this requires exploring what is “special” about short-term bank debt from the perspective of those (such as depositors) lending *to* the bank, and then analyzing whether the funds provided by these lenders would be available to fund projects in the real economy if maturity transformation were outlawed.

Gorton avers that short-term claims in the shadow-banking sector are special because they are a new kind of “money.” His is among the earliest and strongest voices arguing that any successful attempt to wrestle with the problem of the shadow banking system must address this fact. Indeed, he ascribes economists’ and regulators’ failure to anticipate the crisis to the fact that “[t]hey did not know what ‘money’ had become”—namely, repo and other short-term claims.⁸¹

A&H argue that this is an “abuse of the word ‘money.’”⁸² They have two principal objections. The first objection centers on what counts as “actual money”:

Even the deposits and other money-like assets that banks and other financial institutions create are not quite the same as actual money. Whereas money—that is, cash—is nobody’s debt, the kind of money-like debts that are represented by deposits and other kinds of very short-term borrowing *do* represent promises made by the issuing institutions.⁸³

This treatment of money is perhaps the least successful section of *The Bankers’ New Clothes*. By the logic of the above quote, for example, dollar bills did not become actual money until the moment President Nixon took the United States off of the gold standard.⁸⁴ More fundamentally, the

81. GORTON, *supra* note 3, at viii.

82. Anat Admati & Martin Hellwig, *The Parade of Bankers’ New Clothes Continues: 23 Flawed Claims Debunked* 6 (2013), <http://bankersnewclothes.com/wp-content/uploads/2013/06/parade-continues-June-3.pdf>. This document can be viewed as a supplement to the *Bankers’ New Clothes*.

83. ADMATI & HELLWIG, *supra* note 1, at 154.

84. See, e.g., Adam Martin, *Remembering Nixon’s Gold-Standard Gamble: Interrupting ‘Bonanza’*, ATL WIRE (Aug. 15, 2011, 12:07 PM), <http://www.thewire.com/politics/2011/08/nixon-gold-standard-gamble-interrupting-bonanza/41278> (“Nixon ended the gold standard, *Time* reported, ‘to prevent a run on Fort Knox, which contained only a third of the gold bullion necessary to cover the amount of dollars in foreign

conflation of “actual money” with “cash” creates a straw man of the arguments of those who believe bank debt plays a special, money-like role in the economy. Economists usually adopt a functional definition of “money” and apply the term to anything that serves three functions, namely as a unit of account, a medium of exchange, and store of value.⁸⁵ A&H seem to want to constrict its definition to coins and banknotes. If they simply mean to observe that some things that meet the functional definition of money—as much bank debt clearly does⁸⁶—entail more risk than others, they are very much on the same page as Gorton.⁸⁷ But the question then is how to deal with this vulnerability. Observing that bank debt is not cash restates the problem in a roundabout way rather than helping to solve it.

A&H’s second objection to the claim that short-term shadow bank debt is “money” is stronger and more pertinent. They distinguish deposits from non-deposit debt by pointing to the payment services banks provide for the former but not the latter.⁸⁸ A more general formulation of the same point is that non-deposit bank debt usually lacks a central feature of money; namely, that it can be used as a medium of exchange. There are, however, other features (besides payment services) of short-term shadow-bank debt that may justify its special “money-like” treatment.

In considering these features, it helps to think of short-term shadow-bank debt as the equivalent not of a checking account, but rather of a bank savings account *without* check-writing privileges. As long as cash can be withdrawn on demand, such an account provides useful storage services (usually with a bit of interest) for the assets firms and individuals want to set aside in order to transact for anticipated needs—that is, to buy required goods and services—in the near term.⁸⁹ Assets held for this

hands.”). Nixon’s move was the final blow to the gold standard in the United States, ending a system, in place since the end of World War II, under which foreign governments could convert dollars into gold at \$35 per ounce. President Franklin D. Roosevelt had killed the gold standard for most domestic purposes in 1933. See Eric Rauchway, *How Franklin Roosevelt Secretly Ended the Gold Standard*, BLOOMBERG NEWS (Mar. 21, 2013, 7:28 AM), <http://www.bloomberg.com/news/2013-03-21/how-franklin-roosevelt-secretly-ended-the-gold-standard.html>.

85. See, e.g., N. GREGORY MANKIW, *MACROECONOMICS*, ch. 4 (5th ed. 2002).

86. The fact that bank debt meets the functional definition of money, including as a medium of exchange, may be counterintuitive to those unaccustomed to pondering the economics of banking. To illustrate with the example of a checking account: If I deposit cash into a checking account at Wells Fargo, my account balance represents an asset for me, but a liability (or a debt) for the bank. The bank owes the money to me and promises to pay it back to me when I ask for it. If I want to buy something, then, I may go to the bank and withdraw the cash. But I may also write a check, which the provider of the good that I buy can then either cash or deposit into her own bank account. No cash is used to transact in this instance. Rather, I transfer my claim on the bank to the provider of the good or service. What the bank owed me it now owes her.

87. GORTON, *supra* note 3, at 6.

88. Admati & Hellwig, *supra* note 82, at 7. There are exceptions to this general rule in the shadow-banking realm. First and foremost, many money market accounts provide check-writing privileges. Second, the collateral in a repo loan can be rehypothecated, thus creating a very limited type of transaction currency.

89. Ricks, *supra* note 31, at 90–91.

purpose constitute “transaction reserves.”⁹⁰ To be part of a transaction reserve, an asset must exhibit extremely high degrees of liquidity and price protection.⁹¹ An extremely high degree of liquidity, as discussed above, means that the holder can convert the asset into cash immediately at negligible cost. Price protection means that the asset’s value has negligible volatility vis-à-vis currency.⁹² This requires both extremely high credit quality and negligible interest rate risk, which in turn requires that the asset have an extremely short maturity.⁹³ Morgan Ricks calls deposits and other short-term claims that meet these criteria “money claims.”⁹⁴ Some money claims (such as checking accounts) can be used as a medium of exchange and some (such as savings accounts and most short-term shadow-

90. *Id.* at 91. Note that the transaction reserve may encompass cushions held for precautionary purposes—for meeting needs or opportunities that may not arise, but which we want to be sure we can meet if they do arise.

91. *Id.* at 92–93.

92. *Id.* Cochrane, *supra* note 77, suggests that with appropriate application of existing technologies, transaction reserves could be held as claims on an exchange-traded stock fund. But while such claims are liquid, their prices fluctuate. His proposal might make sense for an upper-middle-class professional with a large retirement nest egg, but would not work for a firm trying to minimize the resources it must devote to transaction reserves. As Ricks observes:

By putting its transaction reserves in, say, Google stock, the firm would run a material risk of experiencing a costly shortfall. In theory, the firm could reduce this risk by simply increasing the size of its transaction reserve—holding *more* Google stock. But this strategy would consume firm resources that could be put to better use. Not every firm can be a capital markets specialist.

Ricks, *supra* note 31, at 92.

93. *Id.* at 93 (“Even debt securities that are free from credit risk, such as long-term Treasuries, often fluctuate significantly in price due to changes in market interest rates. By contrast, because they mature so soon, money market instruments are subject to negligible interest rate risk—zero if they mature before they need to be tapped for transactional purposes.”). To illustrate why the price of a long-term bond with no risk of default can fluctuate, consider the following stylized example: a perpetual bond with a face value of \$100 pays its holder, Kate, \$5 per year. The bond’s yield is thus five percent, and as long as interest rates stay at five percent, the bond is worth \$100. But if interest rates jump to ten percent, then anyone could purchase the same future cash flow—\$5 per year—for just \$50 today. Therefore no one would pay more than \$50 for the original \$100 bond. At the other extreme, an overnight loan has almost no interest rate risk—recall that interest rates (unless otherwise noted) are expressed in annual terms, so the difference between five percent (per annum) and ten percent (per annum) is quite small when adjusted to a daily rate. The holder of a demand claim can withdraw and reinvest her money immediately at a higher interest rate if rates do, in fact, rise.

This is one reason why Cochrane’s claim that the current level of government debt is “enough to back any conceivable demand for fixed-value assets” is not persuasive. Cochrane, *supra* note 77. Most U.S. debt has maturity of more than a year. *See, e.g.*, COUNCIL OF ECON. ADVISERS, EXEC. OFFICE OF THE PRESIDENT, ECONOMIC REPORT OF THE PRESIDENT 420 tbl.B-87 (2012) (listing U.S. treasury securities outstanding by kind of obligation, 1973–2011, showing that as of December 2011, only \$1.52 trillion of more than \$15.2 trillion total debt outstanding was in Treasury bills, the category of debt obligation with maturity of less than one year). Another problem with relying exclusively on Treasuries to satisfy the demand for “safe” assets is that a large portion of government debt is held by foreign lenders. *See* Tarullo, *supra* note 30, at 3. Finally, making the Treasury the sole supplier or backer of liquid claims could, if demand outstripped the legitimate fiscal requirements of the government, either lead to a shortage of money claims, on the one hand, or to needlessly distortionary taxes and potentially wasteful public expenditures, on the other.

94. Ricks, *supra* note 31, at 97.

bank debt) cannot. But because of the extremely high degree of liquidity, one can, under normal market conditions, convert the latter type of money claim into cash immediately at virtually no cost and with no fear of its losing value before one needs it. It may thus serve quite well as part of a transaction reserve.⁹⁵

A&H look at the short-term structure of financial firm liabilities and see only moral hazard and the outcome of a “maturity rat race.”⁹⁶ One need not discount these as contributing factors to recognize that there may be more important and benign explanatory factors at play. The need for individuals and firms to keep transaction reserves has always been with us, and the demand for such assets seems to have risen over the past two decades.⁹⁷ Daniel Tarullo, a Federal Reserve governor, suggests three sources of this increasing demand. The first is foreign official investors, some of whom “undoubtedly built up [reserves] as a precautionary measure in light of the financial problems in emerging markets during the late 1990s,” while others built reserves “attendant to policies of managed exchange rates.”⁹⁸ The second source of increased demand for money claims has been nonfinancial firms, “which responded to the market disruptions associated with defaults by Enron and other firms more than a decade ago by boosting their holdings of cash.”⁹⁹ Third, institutional investors have adopted more elaborate investment strategies, which require the use of safe, liquid instruments as collateral.¹⁰⁰

Again, however, the fact that demand increased for “money claims” does not answer the question of why currency warehouses that provide payment services should not meet this demand. The answer to the question

95. *Id.* at 96.

96. ADMATI & HELLWIG, *supra* note 1, at 163. See generally Markus K. Brunnermeier & Martin Oehmke, *The Maturity Rat Race*, 68 J. FIN. 483 (2013) (developing a model in which extreme reliance on short-term financing results from creditors trying to ensure they can pull their funding in the event of borrower distress before other creditors).

97. A&H tell us that “the notion that the economy has an unbounded ‘need’ for liquid assets is another example of the bankers’ new clothes.” ADMATI & HELLWIG, *supra* note 1, at 154. But observing that the need for transaction reserves must be finite does not tell us anything about what the current demand is, or whether the existing stock of currency and deposits meets this demand.

98. Tarullo, *supra* note 30, at 3. Tarullo explains further:

This official sector demand for safe assets was largely if not entirely focused on U.S. government securities, rather than cash equivalents. But this source of demand absorbed roughly 80 percent of the increase in U.S. Treasury and agency securities . . . potentially crowding out other investors and thereby increasing their demand for cash equivalents that appeared to be of comparable safety and liquidity.

Id.

99. *Id.*

100. *Id.* at 3–4 (“For example, as more such investors used derivatives or short-selling as part of their overall strategies, they needed cash or cash-like instruments for margining and other collateral purposes. Moreover, of course, as the amount of assets under professional management increased, the demand for safe, liquid investments also inevitably increased, since intermediaries need a place to park funds that are awaiting investment or needed to meet unexpected withdrawals.”).

lies in the fact that a firm that raises funds by issuing money claims, and then lends those funds out to creditworthy firms and individuals, does not simply draw on the existing investment capital in the economy: it creates new investment capital.¹⁰¹

It is worth pausing for a moment to ponder this claim. To grasp it fully, one needs to distinguish between two markets: money markets and capital markets. Money markets involve the issuance and trading of money claims, while capital markets finance real economic activity via the issuance and trading of stocks and bonds.¹⁰² There are good economic as well as legal reasons to distinguish between the two markets.¹⁰³ Even though money market instruments generally “offer modest rates of interest,” their risk-adjusted return is not attractive relative to capital market instruments, unless one accounts for their instrumental value. “In fact, there is really no good reason for any economic agent to hold these instruments *unless* it thinks it might engage in near-term transactions.”¹⁰⁴ On the other hand, capital market instruments are a poor choice for transaction reserves: their price fluctuations frustrate the efforts of a firm, for example, trying both to ensure that it can meet its near-term transactional needs and to minimize the resources it must devote to meeting this objective.¹⁰⁵ If maturity transformation were outlawed, there is no reason to think that money claimants would prefer to replace their (banned) money market assets with capital market instruments rather than to hold currency or to store their transaction reserves in money warehouses (which would presumably arise to meet the new demand). What banks and money markets do, then, is channel money that would otherwise be unavailable to fund real economic activity *into* capital markets and longer-term loans.¹⁰⁶ Because of this, valuable projects that would

101. Ricks, *supra* note 31, at 99–100.

102. The money market constitutes “a segment of the financial market in which financial instruments with high liquidity and very short maturities are traded.” *Money Market*, INVESTOPEDIA, <http://www.investopedia.com/terms/m/moneymarket.asp> (last visited June 9, 2015). Capital markets encompass stock and bond markets, and include both primary markets (in which firms raise needed funds) and secondary markets (in which securities holders trade claims). *Id.*; *Capital Markets*, INVESTOPEDIA, <http://www.investopedia.com/terms/c/capitalmarkets.asp> (last visited June 9, 2015).

103. Ricks, *supra* note 31, at 89–97.

104. *Id.* at 96.

105. *Id.* at 92.

106. Walter Bagehot, the great nineteenth-century banking theorist (among much else), makes the point beautifully:

[M]uch more cash exists out of banks in France and Germany, and in all non-banking countries, than could be found in England or Scotland, where banking is developed. But that cash is not, so to speak, ‘money market money’: it is not attainable But the English money is ‘borrowable’ money [T]he mere fact that their money is deposited in a bank makes it far more obtainable. A million in the hands of a single banker is a great power; he can at once lend it where he will But the same sum scattered in tens and fifties through a whole nation is no power at all: no one knows where to find it or whom to ask for it.

not otherwise be undertaken can receive needed credit and go forward. This is the source of value of maturity transformation, and this is the countervailing factor that justifies allowing a money claim issuer to engage in financial intermediation—that is, to invest or make longer-term loans with the money it receives from its short-term creditors.

III. OTHER KEY FACTORS IN SETTING OPTIMAL CAPITAL LEVELS

A. OPTIMAL CAPITAL AND REGULATORY ARBITRAGE

Once we recognize the trade-off involved in requiring financial intermediaries to maintain a capital buffer—namely that higher capital increases stability but may require us to forego some valuable projects that could otherwise be funded by maturity transformation—the question becomes how high we should set the level. I should state at the outset that A&H’s proposed level of twenty to thirty percent does not, at first blush, strike me as unreasonable. Indeed, I can imagine plausible arguments might be made for even higher levels of capital. That said, determining the appropriate level must very much depend on what else is going on in financial regulation.

The first thing to consider is how well regulation addresses the possibility of regulatory arbitrage. Samuel Hanson and his co-authors point out, for example, that even a very small increase in the cost of capital for financial services firms could result in capital flight to the shadows:

While higher capital and liquidity requirements on banks will no doubt help to insulate the banks themselves from the consequences of large shocks, the danger is that, given the intensity of competition in financial services, they will also drive a larger share of intermediation into the shadow-banking realm If so, the individual regulated banks may be safer than they were before, but the overall system of credit creation may not.¹⁰⁷

This does not, of course, mean we should throw up our hands and surrender to the cunning of the arbitrageurs: on this point all agree. A&H, for example, tell us that much higher capital requirements should extend to “all institutions that offer banking services to the public,” as well as “other institutions that are systemically important in the sense that their distress, insolvency, or default could significantly destabilize and harm the system.”¹⁰⁸

While this goal is easy enough to state, it would take a fairly radical regulatory overhaul to achieve it. To be clear, I do not mean to argue against such a radical move—quite the contrary. But we must take seriously

Id. at 99 n.56 (quoting WALTER BAGEHOT, *LOMBARD STREET: A DESCRIPTION OF THE MONEY MARKET* 5–6 (John Wiley & Sons 1999) (1873)).

¹⁰⁷ Samuel G. Hanson et al., *A Macropprudential Approach to Financial Regulation*, 25 *J. ECON. PERSP.* 3, 25 (2011).

¹⁰⁸ ADMATI & HELLWIG, *supra* note 1, at 179.

the obstacles that lie in the way, and what the implications will be if we cannot achieve the ideal regulatory end state. If indeed we cannot achieve it, and are stuck in a world of second-best approaches, it is by no means clear that much higher capital for only a subset of the financial system will increase stability. A&H do not ignore the objection that higher capital applied to banks may lead to regulatory arbitrage. They tell us:

Another bugbear involves the warning that tighter regulation might cause financial activities to move from regulated banking to the so-called shadow-banking sector, where there is less regulation and possibly no regulation The argument that we should not have regulation because banks might evade regulation is somewhat perverse. It turns the failure to enforce into an argument against having any regulation at all.¹⁰⁹

Critics' key concern, however, is *not* that banks might evade the regulation, and it is *not* based on the fear of weak enforcement, however important both of these issues may be. It is that economic agents may treat liabilities of unregulated firms as money claims, and that there may be no relevant regulations at all that apply to these institutions' leverage or risk taking. It is not enough to argue that these new claims should not be treated as money; what matters is how economic actors actually perceive them and utilize them. Likewise, it is not enough to imply that we should let such institutions and their creditors bear the pain of their own foolhardiness, even if their failure is part of (or might trigger) a systemic crisis—both of these books would be pointless if permitting financial crises to run their course as a way to prevent moral hazard *ex ante* and punish it *ex post* were an appealing policy option.

The goal, then, cannot be simply to regulate bank holding companies—it must be to regulate maturity transformation, wherever it occurs. As Hanson and his co-authors argue:

[T]he overarching goal of financial regulation goes beyond just protecting insured depositories and even beyond dealing with the problems created by “too-big-to-fail” non-bank intermediaries. Instead, the task is to mitigate the fire-sales and credit-crunch effects that can arise as a consequence of excessive leverage *anywhere in the financial system*.¹¹⁰

Containing these effects with just capital rules, or even with capital rules and liquidity regulation, will be difficult. If we do *not* take a more radical approach to shining the regulatory light on all existing *and* all potentially existing crannies of the shadow banking system, then A&H have not made the case that significantly higher capital standards will increase financial stability.

109. *Id.* at 225.

110. Hanson et al., *supra* note 107, at 25 (emphasis in original).

If the situation calls for more radical moves, as I believe it does, then we should consider what such moves would look like. There have been a number of proposals. Hanson and his co-authors suggest attaching margin requirements to specific types of securities, regardless of who holds them.¹¹¹ Gorton suggests limiting the purchase of asset-backed securities to “narrow funding banks,” which would be tightly regulated, and which could then issue securities that could serve as collateral and as “money” more generally in the financial system.¹¹² Ricks suggests extending to the shadow-banking system, and into new types of money claims, what he calls “the first law of banking”—that is, the prohibition of non-regulated firms from issuing short-term liabilities that could be treated as money claims. Those that do issue money claims would then be subject to pervasive regulation.¹¹³ My purpose here is not to critique these proposals, but to point to the need to take the problem seriously if our goal is a stable financial system.

B. IDENTIFYING TRADE-OFFS

Assuming we can apply appropriate capital requirements to all entities engaged in maturity transformation, the optimal level of capital must still depend on the other features of the regulatory system. For example, capital should be higher in the absence of strict portfolio and activity restrictions, rigorous regulatory examinations, or a credible resolution regime for faltering financial behemoths. Focusing, as do Gorton and A&H, on the right side of the balance sheet, a critical question is whether and how far we would extend the equivalent of commercial banks’ safety net to the shadow banking system in an ideal world.¹¹⁴ Access to emergency lending and credible money claim insurance would significantly reduce, if not eliminate, the risk of runs, lessening the need for heightened capital levels. Achieving the same degree of stability from capital requirements *without* a safety net would require levels to be set so high that the cost in foregone maturity transformation—that is, in the reduction of funding for potentially valuable projects—could very well exceed the moral hazard costs a safety net creates.¹¹⁵

111. *Id.* (“[W]e reiterate that it would be a good idea to establish regulatory minimum haircut requirements on asset-backed securities, so that no investor who takes a long position in credit assets is able to evade constraints on short-term leverage.”).

112. GORTON, *supra* note 3, at 197–98.

113. *See* Ricks, *supra* note 31.

114. A&H are not proponents of extending deposit insurance. ADMATI & HELLWIG, *supra* note 1, at 210–11. Gorton has proposed a limited extension to money market funds. Gary Gorton & Andrew Metrick, *Regulating the Shadow Banking System*, BROOKINGS PAPERS ON ECON. ACTIVITY, Fall 2010, at 261, http://www.brookings.edu/~media/projects/bpea/fall%202010/2010b_bpea_gorton.pdf.

115. The moral hazard distortions of deposit insurance can, of course, be at least partially mitigated by appropriate risk premia, capital requirements, insurance caps, and so on.

In any event, identifying the relevant costs and benefits of different regulatory approaches is not meant to imply that we can measure them with any precision or to the satisfaction of everyone in the debate. Doing so may nevertheless be helpful as a way to structure and discipline our analysis. Thus Learned Hand, formulator of American law's most famous equation as a tool for determining tort liability,¹¹⁶ later wrote that "all such attempts [to quantify the determinants of liability] are illusory; and, if serviceable at all, are so only to center attention upon which one of the factors may be determinative in any given situation."¹¹⁷ The aim here is to center our attention on the determinative factors.

With that caveat, let us try to define the relevant trade-offs involved in setting capital requirements. The optimal capital level should be set in combination with other regulatory strategies so as to minimize the sum of: (1) the cost of foregone maturity transformation; (2) the cost of misallocation of credit and capital due to moral hazard; (3) the various costs of a systemic run, multiplied by the likelihood of a run's occurrence; and (4) the direct costs of regulation, including compliance costs for banks and staffing costs for regulators. Cost (1) increases with higher capital, while the other costs should all decrease with higher capital. Cost (2) should decrease because moral hazard becomes most problematic when banks reach the zone of insolvency,¹¹⁸ and more capital makes insolvency less likely. Capital is not, of course, the only way to mitigate moral hazard; direct regulation of bank risk taking and a regime for the timely resolution of insolvent banks serve the same end.¹¹⁹ Cost (3) should decrease with higher capital because, as discussed above,¹²⁰ higher capital reduces the risk of runs and makes them less damaging when they occur. (As noted, money claim insurance is likely a more effective and efficient way to achieve the same end, with capital requirements one way to control the costs of moral hazard arising from such insurance.) Cost (4) should decrease because higher capital can, to some degree, serve as a substitute for other types of direct regulation: bank regulation is justified by the negative externalities that bank insolvency and runs can create, and higher capital makes insolvency and runs less likely.

Of course, even if it were possible to measure these costs reliably, they would not be fixed but would likely vary depending on what else is going on in the real economy—for example, the optimal level of capital

116. *United States v. Carroll Towing Co.*, 159 F.2d 169, 173 (2d Cir. 1947) ("If the probability [of injury] be called P; the [gravity of] injury, L; and the burden [of avoiding injury], B; liability depends upon whether B is less than L multiplied by P: i.e., whether B [less than] PL.")

117. D.A. Kysar et al., *Group Report: Are Heuristics a Problem or a Solution?*, in *HEURISTICS AND THE LAW* 103, 129 (Gerd Gigerenzer & Christoph Engel eds., 2006) (quoting *Moisan v. Loftus*, 178 F.2d 148, 149 (2d Cir. 1949)).

118. See *supra* notes 38 and 39 and accompanying text.

119. These approaches are not, of course, mutually exclusive with robust capital requirements.

120. See *supra* Subpart II.A.

may be higher when a business cycle approaches its crest than at other times.¹²¹ It may also be naïve to assume that the costs of crises on the one hand, and financial repression on the other, can be measured by a single metric. Gorton's treatment of this difficult point is better than A&H's. On the one hand, a crisis can, for example, lead to losses—of jobs and homes as well as of money—that are felt more dearly than the financially equivalent loss in foregone growth from financial repression. On the other hand, Gorton is alive to the possibility that *really* eliminating all risk of crisis could do more harm than good. He points to at least one study finding evidence “that countries that have experienced occasional financial crises have tended to grow faster than countries that have not experienced crises.”¹²² But, while admitting that “[w]e simply don't know enough about these issues yet to say what the best policies are,”¹²³ he opines that the right balance between preventing crises and constraining growth through financial repression “depends [on] how society feels about economic volatility.”¹²⁴

CONCLUSION

To return to the question posed in the first paragraph: How much of her own money should Kate be required to contribute to Will's loan—or equivalently, how big of a capital buffer should banks be required to maintain? While calculating the optimal level of required capital with any precision is a fool's errand, I believe *The Bankers' New Clothes* makes a persuasive argument that capital requirements should rise above their current single-digit levels (in percentage terms)—so that Kate would have to contribute more than \$5 to make a \$100 loan—and that A&H convincingly dismantle many of the arguments advanced by those who oppose higher capital levels. They fail, however, to come to terms with the money-like function bank debt can serve, and to acknowledge the value in maturity transformation—factors that weigh against capital levels rising *too* high. *Misunderstanding Financial Crises*, on the other hand, provides a compelling account of liquidity crises and the dynamics of a systemic run—dynamics that in the pre-deposit-insurance era played out every decade or two, despite high levels of bank capital, and that may play out again today in the shadow banking system. Gorton's treatment of capital as irrelevant to a crisis is nonetheless a weak spot in an otherwise splendid book. An ideal regulatory approach would combine these books' concerns, and encompass higher capital levels as well as mechanisms, such

121. This is the insight driving Basel III's “countercyclical capital buffer.” See BASEL COMM. ON BANKING SUPERVISION, BANK FOR INT'L SETTLEMENTS, COUNTERCYCLICAL CAPITAL BUFFER PROPOSAL (2010), available at <http://www.bis.org/publ/bcbs172.pdf>.

122. GORTON, *supra* note 3, at 177.

123. *Id.* at 180.

124. *Id.* at 178.

as money-claim insurance, to address the risk of runs in the shadow banking system. It appears politically unlikely that this type of agenda will carry the day. This is a shame, as both these books focus our attention on lingering vulnerabilities in the financial system and persuasively argue that the likelihood of future crises has not sufficiently abated with recent reforms.