

RETHINKING THE PRINCIPLES OF BANK REGULATION:
A REVIEW OF ADMATI AND HELLWIG'S *BANKERS' NEW CLOTHES*

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<http://home.uchicago.edu/~rmyerson/research/newcloth.pdf>

Abstract. In an important new book, Admati and Hellwig raise broad critical questions about bank regulation. These questions are reviewed and discussed here with a focus on how the problems of maintaining a stable financial system depend on fundamental problems of information and incentives in financial intermediation. It is argued that financial regulatory reforms can be reliably effective only when their basic principles are understood by informed citizens, and that Admati and Hellwig's book is a major contribution toward this goal, as it clearly lays out the essential case for requiring banks to have more equity.

1. A book worth comparing to Keynes's *General Theory*

We expected that the Great Recession after 2007 would yield major written responses that should be worthy of such global attention as Keynes's *General Theory* received in 1936. *The Bankers' New Clothes: What's Wrong with Banking and What to Do About It*, by Anat Admati and Martin Hellwig, is such a book. Admati and Hellwig have written a book for the general public about fundamental problems of financial instability in our time. They have used their command of economic theory to identify one key central issue that informed citizens need to understand: that banks should be required to have much more equity.

Banks are vital financial institutions that channel millions of people's savings into credit for economic investments. In particular, banks get substantial funds from deposits, which as debts of a bank are supposed to have such a clear and safe value that everyone should accept them as equivalent to any form of cash. Such power over the investment of other people's money can entail regular temptations to abuse the depositors' trust, however. Small businesses and other borrowers who rely on banks for credit implicitly depend on bankers' ability to maintain depositors' trust, but small depositors cannot be expected to do all the necessary work of monitoring to certify that their banks are trustworthy. So there is an essential role for public regulation of banks, to maintain stable trust in channels of credit that are vital to our society.

But the vast wealth involved in the banking business is more than enough to potentially corrupt any small group of officials, and so the reliability of any regulatory system must depend

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on broad public monitoring of the regulatory process itself. Regulators' rulings must be based on public information according to principles that informed citizens can understand, so that public officials can be held accountable for any failure to regulate appropriately, even when a major crash does not result from this failure.

Thus, any meaningful financial regulatory reform must include a clear explanation of its principles to millions of informed citizens and investors. Admati and Hellwig's new book can fill that essential role. Other excellent books should also be recommended (see Goodhart, 2009; Dewatripont, Rochet, and Tirole, 2010; Schooner and Taylor, 2010; Kotlikoff, 2010; Duffie, 2011; Barth, Caprio, and Levine, 2012; and Gorton, 2012), but Admati and Hellwig have matched broad clarity of exposition with a carefully chosen focus that deserves the widest public readership.

2. Why banks should be required to have more equity

The core message in this book is that banks should be required to have more equity. A bank's *equity* is its owners' stake in the bank's investments. This equity value is also called the bank's *capital*. The value of this equity can be computed by adding up the values of all the assets or investments that the bank owns, then subtracting the values of all the debt liabilities that the bank owes to its depositors and other creditors. The difference is the value of the equity or capital that belongs to the bank's owners.

Admati and Hellwig introduce these ideas with a story about a person named Kate who is buying a house, partly with her own money and partly with money borrowed in a mortgage. The part that Kate bought with her own money is her equity or capital in the house. For a house of any given current value, if Kate put more of her own capital into the purchase price, then the mortgage lenders would bear less risk of the house's value falling below the amount owed in a default, and so they should be willing to lend to Kate at a lower interest rate. In such a situation, Kate may well feel that contributing more capital could actually make her house investment less expensive. But when Kate's rich Aunt Claire offers to sign a loan guarantee, suddenly Kate can get a low interest rate on the mortgage loan that will not depend on the amount borrowed. Then Kate may begin to see equity as an expensive way to finance her house, and she may have an incentive to borrow as much as she can, investing her own money elsewhere. But borrowing more is implicitly transferring more risks to Aunt Claire, who must pay the guaranteed amount if

the house's value falls and Kate defaults on the loan. So Aunt Claire should not sign a loan guarantee without specifying some lower bound on how much Kate has to contribute to the price of the house. This is the basic logic of equity regulation, except that Kate becomes a bank owner and Aunt Claire becomes the taxpaying public.

Admati and Hellwig report that, early in the twentieth century, banks typically had equity capital worth about 25 percent of their total assets. That is, each dollar invested by such banks included 25 cents that actually belonged to the bank's owners, along with 75 cents borrowed from depositors and other creditors. If the value of the bank's assets were to decline, the losses would be borne by the owners, with no affect on the bank's ability to repay its depositors, until the owner's equity was exhausted. So a large value of equity was needed to reassure depositors that the bank was very likely to be able to repay them. Without this reassurance, they would not have been willing to lend their money to the bank at low interest rates.

Notice, however, that this reassurance was based on two distinct effects of equity. For any given level of risk in the bank's investments, the probability of investment losses large enough to affect the depositors becomes smaller when the bank has more equity. But more equity also means that the owners who control the bank have more incentive to avoid risks of such large losses. That is, equity helps to solve moral hazard in banking.

Of course, a large bank may have many small share-holders who are not actively involved in the bank's management, but the term equity denotes the equal proportionate sharing of profits among all owners, including large investors who can actively oversee management. And any systematic failure to serve equity interests could open the possibility of a take-over bid. So it is not unreasonable to identify the interests of a bank with the interests of its equity owners.

The waves of bank runs that brought on the Great Depression in the 1930s led to the creation of government deposit insurance programs in America and elsewhere. Deposit insurance effectively responded to the possibility that widespread fears of bank failure could create a self-fulfilling prophecy, as depositors would run to withdraw their deposits before the bank failed because of an inability to quickly liquidate all its investments. With deposit insurance, however, depositors became less concerned about how much equity their bank had in its total investments, and so banks could borrow at low interest rates even with less equity. But when creditors are publicly insured, bank default risk becomes a public problem. Thus, the requirement that banks should have adequate equity has become a responsibility of public

regulators.

But now we come to the critical point of confusion that Admati and Hellwig compare to Hans Christian Anderson's story of a deceived emperor whose lack of clothes went unrecognized. When individual depositors bore the risks of bank failure, people could see clearly enough that they should not deposit funds in a bank with too little equity. But when the responsibility for insuring depositors against bank failures has been transferred to the government, then equity requirements can be portrayed as a technical regulatory subject that only experts can understand, and banks can hire the most experts to address this subject.

Persuasive voices in regulatory debates have argued that equity is expensive for banks, and that requiring more equity would increase their costs of lending and cause a decline of economic investment and growth. With this logic, the levels of bank equity have been allowed to decline over the twentieth century until, in the run-up to the financial crisis of 2008, many large banks in Europe and America could finance their assets with 3 percent or less equity. When losses put this thin layer of equity at risk, the result was a global financial meltdown.

But like the boy who finally observed that the emperor had no clothes, Admati and Hellwig offer straightforward and convincing testimony to contradict all these arguments for minimizing bank equity. Complicated arguments call for complicated counter-arguments, but Admati and Hellwig use their expertise in economic analysis to identify the simplest rebuttal.

A key point in this discussion is the famous insight of Modigliani and Miller (1958) that, under some basic assumptions, the sum of the total value of a corporation's equity to its owners plus the total value of its debt to its creditors should be equal to the total value of its income-earning assets.¹ This result tells us that the total cost of issuing debt and equity to finance any given portfolio of investments should not depend on how much is debt and how much is equity. Under these basic assumptions, then, changing equity requirements should not affect the total cost of bank lending at all. Modigliani and Miller tell us that, at least for banks that are organized as corporations, profitable new investments could be financed by selling new shares of stock in the bank as well as by borrowing more money.

A good economic theorist can find plenty of exceptions to the simplifying assumptions of this Modigliani-Miller theorem. But the primary reason why the cost of financing investments

¹ Standard accounting estimates of equity value are calculated to make this equation an identity, but Modigliani and Miller's argument applies to actual market values, showing that an arbitrage opportunity would exist if two firms with the same prospective income streams had different total values of their equity and debt.

can sometimes depend on the mix of debt and equity is when there is some other party who is bearing the difference in costs. In particular, when the government is (implicitly or explicitly) insuring a bank's creditors, then increasing the fraction of debt financing can increase the value of this insurance from the government. In this case, increasing debt may make the bank's owners better off at no cost to the creditors, but the bank's gains would be at the expense of the tax-paying public, which is bearing risks that private investors would not accept without being paid a greater interest premium. Then if tighter equity requirements would prevent the bank from making some investments, these would only be investments that private investors would have refused without subsidized government insurance.

Thus, Admati and Hellwig argue, although equity may indeed seem expensive to a bank, it is only because public insurance enables them to borrow at low rates that do not properly respond to the greater risks that their creditors must bear when the bank has less equity. When the cost to the public of providing this insurance is properly taken into account, the total social cost of the investment is not increased by requiring more of it to be financed by equity.

There are other exceptions to the Modigliani-Miller theorem that are worth mentioning. Myers and Majluf (1984) argued that, when the managers of a firm decide whether to finance new investments by borrowing money or by selling new equity shares at any given price in the stock market, the managers will be more likely to choose to sell new equity when they have adverse private information which suggests that the market has over-valued their stock. So the public may rationally take a firm's decision to issue new equity as bad news about the firm, and the price of its stock should be reduced to take account of this adverse inference. This Myers-Majluf effect can indeed make equity financing more expensive than debt for the current owners of the firm. But notice that this adverse inference occurs only when a firm's decision to raise capital by selling new equity shares depends on its managers' private information about the profitability of their business. The Myers-Majluf adverse inference would not apply when a regulator requires the firm to sell new equity shares based on information that is publicly available. Thus, a bank's cost of raising new equity may actually be less when new shares are issued under a transparent regulatory requirement than if the same shares were issued by a discretionary decision of its management. This point by itself may be a good reason for regulating banks' equity based on transparent public information.

Taxes can provide one other basic reason why the profitability of investments could

depend on the mix of debt and equity that are used to finance them, if the tax laws treat interest payments to creditors differently from dividend payments to share-holders. Admati and Hellwig urge reform of current tax rules that tend to subsidize debt over equity by treating interest payments more favorably than dividend payments. Such provisions in the tax code increase the fragility of the financial system by encouraging corporations to use more debt instead of equity in financing investments. This effect is especially perverse when applied to banking, where capital regulation then must act to reverse it.

When equity is too small, the possibility of default can begin to distort investment decisions in the bank. When evaluating a potential new investment, the bank's owners would put no value on any prospective returns from the investment that would accrue after the event of the bank's failure, as any returns in this event would only benefit the bank's creditors. Thus, the possibility of default can reduce the bank's willingness to make productive investments from retained earnings. Conversely, the bank's willingness to take risks with borrowed funds may increase. Once there is some serious possibility of the bank's equity being wiped out by losses in its investments, any additional losses will not affect the owners of the bank, since they cannot get less than zero from their equity shares in the bank. Additional losses would then be borne by the creditors (or by the taxpayers who guarantee the creditors), but the owners who control the bank have no incentive to take these downside risks into account. Thus, a bank with insufficient equity has distorted incentives that can encourage its owners to take excessive risks or gamble for resurrection (as in "heads our equity value rises, tails the creditors lose more").

Admati and Hellwig call these distorted incentives for underinvestment and excessive risk-taking the "dark side of borrowing." Notice that the problem of equity owners undervaluing prospective returns in the event of default does not depend on deposit insurance; it can arise in any corporation with a given burden of debt that is large enough to create a substantial possibility of default (see Myers, 1977). Deposit insurance can exacerbate the problem, however, by making the cost of new borrowing insensitive to prospective returns in the event of default.

Unfortunately, when the time comes that investment losses begin to deplete the bank's equity, the bank may not have the right incentives to raise new equity. If the bank were to increase its capital by selling new equity shares, the result would be to transfer to the owners some of the downside risks that are being borne by the creditors, and so the net value of the existing owners' shares would be decreased. Thus, as Admati and Hellwig emphasize,

borrowing can become addictive, as the primary advantages of increasing the ratio of equity to debt would accrue to the creditors, but not to the owners who control the bank. The bank's long-term ability to attract deposits may depend on a commitment to force the bank to increase equity when it becomes too small. Thus, for long-term sustainability, a bank needs regulation.

3. Capital, liquidity, and lenders of last resort

Before the 1980s, bank regulation focused more on liquidity reserves than on equity capital. Gorton (2012) has expressed some concern about the focus on capital requirements instead of liquidity requirements. But Admati and Hellwig, while criticizing the parameters of current capital regulation, support the focus on equity capital itself. To see the logic of this position, we must consider the basic function of a central bank in the economy. The basic idea is that a central bank should be able to solve general liquidity problems in the banking system as long as banks have adequate capital or equity. Let me try, in this section, to enlarge on this point, to indicate the fundamental informational nature of the problem

The primary liquidity requirement for banks has been that they should hold some fraction of cash or safe government bonds against their deposit liabilities. A bank's cash reserve does not have any logical relationship with its equity value. On the balance sheet, cash is just one asset in which a bank can invest, one which typically has a low expected return as it generally pays little or no interest. As legal tender, however, cash is the most liquid store of value, the one that can be immediately used to pay out on the bank's obligations. Other investments with higher expected rates of return typically must be held over some period of time to yield their returns. But if a bank holds good long-term investments, then it should generally be able to sell some portion of these investments to other investors when it needs more cash to meet its obligations. To understand why illiquidity could sometimes be a problem, then, we need to understand why a bank might sometimes be unable to quickly liquidate some investments when it needs cash.

This illiquidity problem could occur if the bank has special expertise in evaluating its long-term investments. Then when it tries to sell them early, other investors might infer that the bank got bad news about the prospective future returns from these investments, and so the bank with special expertise may find that it can only sell its investments early at a value much less than what they would expect to earn at maturity. That is, liquidity problems may be fundamentally informational, but informational problems are also why we need a banking system

in the first place. People lend their savings to banks and other financial institutions for investment because the banks have better information about how to find good investments.

Thus, liquidity for long-term economic investments can depend on the existence of other financial institutions that have the ability to evaluate the investments' quality and can bid competitively to buy them. The critical macroeconomic problem is the possibility of a general panic in which there is a general loss of confidence in such financial institutions. In case of such a panic, there would be a general surplus of good-quality investments offered for sale at a loss. But then a "lender of last resort" should be able to buy up these discounted assets and expect some positive long-term profit in providing short-term liquidity to the beleaguered banks.

This is the basic logic of central banking, where the central bank is the financial system's lender of last resort. The classic prescription of Bagehot (1873) is that, in a financial crisis when banks are generally short of cash, the central bank should stand ready to lend unlimited amounts (at a high interest rate) but only to solvent banks that have good collateral worth more than their liabilities. To do its job, then, the central bank needs more than just a deep ability to issue more money when necessary; it also needs some basic expertise in evaluating financial investments, so that it can identify when a bank's investments can be taken as good collateral.² In this sense, a *lender of last resort* may be better understood as a *monitor of last resort*, and its bold lending then serves as public signal that the borrowing banks have been found credit-worthy by the experts at the central bank. Thus, the central bank should be able to solve the liquidity problem for banks, but only when they are solvent, where solvency means that the value of the bank's equity is positive. From this perspective, we see that capital regulation is fundamental to liquidity, but also that a central bank's ability to apply stress tests to evaluate the solvency of banks is as essential to the central bank's function as its ability to print money.

To understand why this role of monitor and lender of last resort has been filled by a publicly controlled central bank, it may be useful to review the history of America's banking crisis in 1907. This was the last such crisis before the Federal Reserve System was created to serve as America's central bank. When a series of bank failures threatened to cause a loss of public confidence in the entire banking system, somebody had to do the hard work of providing credible information to the market about which banks were still solvent. In America in 1907, the

² This expertise must be complemented (perhaps in another agency) by reliable expertise in the resolution of insolvent banks, that is, in selling or reorganizing their assets and operations to achieve the greatest possible value.

monitor and lender of last resort was J. P. Morgan himself. Working with his expert staff, sometimes late into the night at his home in New York, Morgan reviewed the accounts of threatened banks and led a consortium of investors to supply liquidity to the banks that he found to be healthy. With his leadership, the extent of the panic was contained (see Bruner and Carr, 2007). In the same period, however, J. P. Morgan was often accused of using his great financial influence to create monopolistic cartels. Whether such allegations were true or not, his central power over channels of credit throughout the economy certainly had a potential to be used for such purposes, against the interest of the consuming public. Thus, the role of monitor and lender of last resort should be recognized as a vital natural monopoly, maintaining costly expertise to provide public information, but with monopoly power that should be publicly controlled.

4. Clear accounting is of the essence

The key question of bank regulation is how to define the amounts of equity capital that banks should be required to have. Since the 1980s, central banks around the world have formulated their regulatory rules under the coordinating guidance of an international committee on banking supervision based in Basel, Switzerland. Admati and Hellwig are deeply critical of the general framework that this Basel process has generated. Martin Hellwig was actually a professor in Basel for several years while international central bankers were meeting there to develop their principles of bank regulation, but the Basel Committee on Banking Supervision made very little use of outside professional advice from any social scientists in this period (see Goodhart, 2011, p. 572). Before 2008, the process of defining standards of bank regulation also did not get much attention from most economists (including the author of this review), but the banking industry was always paying attention. Admati and Hellwig's critique should raise concerns that the whole Basel-endorsed framework of bank regulation may need fundamental reconstruction.

First and foremost, we should recognize that the fundamental problem of finance is about people having different information. Millions of people entrust their savings to bankers and other financial intermediaries who have better information about where the money should go than the average investor. The whole system depends on monitoring to maintain investors' trust in their financial intermediaries. Thus, measurement is of the essence here.

In the financial report of any private corporation, the values of all assets that the

corporation owns are listed on the left side of the balance sheet, and the values of debts owed by the corporation are listed as liabilities on the right side. The estimated book value of the capital or equity that belongs to the owners of the corporation is then computed to be the total value of all assets minus the total value of all debt obligations, and it is listed also on the right side as the last liability, so that the balance sheet balances. The accounting profession has defined standards for estimating the values of all these assets and liabilities, but ultimately the value of capital that is computed from these accounting estimates must be recognized as only an estimate of the value of the owners' equity.³

For any publicly traded corporation, the market also provides an estimate of this equity value, which can be computed by multiplying the current price per share of stock in the corporation by the total number of shares outstanding. With the passions of a dynamic stock market, one cannot say that the market's values are necessarily more accurate than the accountants' values, but one may suggest that a low value of either should be cause for concern by bank regulators.

Given our best measures of equity, we must then face the central question of how to determine how much equity is enough. From the Modigliani-Miller argument, we may infer that the total cost of credit from a bank should be relatively insensitive to its fraction of equity financing within some broad range where its chance of bankruptcy is small, but effective regulation requires that a bright regulatory line must be drawn somewhere.

Of course, equity requirements can only be defined in proportion to other elements of the bank's corporate balance sheet. So formulas are generally constructed to express equity requirements as a fraction of the bank's assets. However, there is something fundamentally misleading about putting the question in these terms, because a bank does not need equity for its assets; it needs equity for its liabilities, to make them credible to its creditors. In particular, banks need capital regulation where other corporations do not because banks issue deposits, which are debts on the liability side of their balance sheet. Of course any formula that specifies required equity for a bank as some fraction X of its total assets is equivalent to a formula that

³ Accounting for regulatory purposes might appropriately evaluate an asset differently when the asset that has been assigned to a creditor as collateral for a loan. The purpose of offering an asset as collateral in a secured loan or repurchase agreement is to achieve better terms on the loan by giving its creditors a claim on the asset ahead of depositors in the event of default. Regulators whose job is to protect depositors might reasonably take the value of the secured loan as the creditors' estimate of the expected value of the asset in the event of the bank's failure. Applying this standard to the valuation of pledged assets in regulatory accounting would exclude from regulatory capital any benefits that the bank might expect from such transactions that put other creditors ahead of depositors.

specifies required equity as a fraction $X/(1-X)$ of its total debt liabilities. Under either approach, however, the equity requirement would depend on a calculation either of total assets or of total debt liabilities.

Unfortunately, some accounting conventions may allow closely linked assets and liabilities to be netted out, so that their gross amounts do not appear on either side of the balance sheet. Consider, for example, two banks which enter into an interest rate swap that is equivalent to each bank selling the other a five-year bond that has value \$1 million now, but with one bond paying a fixed interest rate, and the other bond paying an interest rate that will vary with short-term interest rates in the future. Banks may use such swaps to transfer interest-rate risks among themselves at a mutually agreeable price. But how should these swaps be listed on the balance sheet? A conservative accounting standard might list each bank as having added \$1 million to both its assets and its debt liabilities by the transaction. Under such accounting, the swap would have no effect on either bank's equity value, but it would increase each bank's required equity by the factor X (if we think in terms of assets) or $X/(1-X)$ (if we think in terms of debt liabilities). On the other hand, some might argue instead that the assets and liabilities that each bank has gotten in this swap are so similar (both are five-year bonds with the same counterparty) that they should simply be cancelled out on the bank's balance sheet, so that the swap would have no effect on the required equity. But such swaps do entail potential liabilities that should not be ignored.

In fact, different accounting standards make significantly different judgments on such questions. Admati and Hellwig offer a shocking perspective on how the balance sheet of JP Morgan Chase Bank on December 31, 2011, would be affected by a change of accounting standards from the generally accepted accounting principles (GAAP) used in the United States to the international financial reporting standards (IFRS) used in the European Union. Under both accounting standards, the bank's net equity value could be reported as \$184 billion. But under the IFRS standards, the bank would have to report \$1.79 trillion more of assets and liabilities from swaps and other derivative trades that could be netted out under the GAAP standards. This discrepancy is almost ten times larger than the total equity of the bank. Under GAAP standards, JP Morgan Chase Bank could claim that its equity value was about 8 percent of assets, but under IFRS standards this fraction would shrink to a mere 4.5 percent.

When such technical details of accounting can make such a great difference to the

representation of a well-known bank, one may be tempted to give up and concede that it is all too complex for the layman to hope to understand. This has to be the wrong answer. Banks are in the business of issuing deposits that people can count on as safe. The process of assuring depositors and taxpayers (if they offer deposit insurance) that these deposits are safe must involve some form of communication that the general public can understand. Of course, the average depositor or taxpayer wants professional regulators to do the work of monitoring our banks' balance sheets, and we want our elected officials of government to make sure that the professional regulators do their job. But with so much money in the banking system, our hope that regulators and officials will not be induced to falsely certify unsafe banks must depend on confidence that a failure of appropriate regulation could be discovered, reported in the press, and understood by voters well enough to cause a ruinous scandal for the responsible officials.

We want our country to have a banking system that can reliably channel millions of people's savings into credit for investments in our growing economy. But this requires that the banking system must be able to maintain broad public trust, and so we need a bank regulation system that operates according to reliable principles of accounting that can give people some sense of the risks that their banks have undertaken. If there are abstruse financial transactions that generate risks which cannot be adequately represented in standard public accounting statements, then perhaps such transactions should be off-limits for banks that are in the business of issuing reliably safe deposits. Otherwise, there is a danger that regulated banks may be attracted to some transactions precisely because they enable the banks to hide risks off their balance sheets. If society needs market-makers for such abstruse transactions, then perhaps we should let other specialized corporations fill that role.

Many forms of creative accounting have been devised to keep assets and liabilities off balance sheets. But one advantage of basing capital requirements on liabilities rather than assets is that it can be easier to motivate full reporting of liabilities on the balance sheet, when regulators have the right to restrict a distressed bank's payouts on any unreported liabilities. Off-balance-sheet transactions only work for the bank if it can use its good credit to reassure the parties who hold the bank's liabilities. By accepting the transaction in a form that the bank can keep off its regulated balance sheet, however, those parties are undermining the reliability of the regulatory system for others, even though they want to rely on it themselves. It may be appropriate, then, to deter such investors from funding off-balance-sheet liabilities by a threat

that a regulator could prevent them from getting their funds when they want them.⁴

5. Dangers of risk-weighting assets in capital adequacy formulas

In the work of the Basel Committee on Banking Supervision to coordinate international standards for bank regulation, a major theme was the effort to make equity capital requirements more finely calibrated to the risks of the bank's investments. The effort to define the minimal equity requirement as precisely as possible would make sense if there were some substantial social cost to requiring banks to have more equity than they need. But Admati and Hellwig have cogently demonstrated that, from the perspective of society as a whole, bank equity is not a particularly costly source of funds for economic investments. Indeed, Admati and Hellwig lead us to ask whether the entire Basel-led attempt to fine-tune capital requirements may have done more harm than good.

The first Basel standards from 1988 called for a bank's equity capital to be at least 8 percent of its total risk-weighted assets. Risk weights were introduced into this calculation to reduce the required equity for a bank that made safer investments. Assets that were considered safe were given small risk weights less than one. Then the required equity under this system would be computed by multiplying the value of each asset by its appropriate risk weight, summing these weighted asset values, and then requiring equity to be worth at least 8 percent of the total. At the low end, loans to sovereign governments of high-income nations could even get risk weights of zero, and so this system would allow a bank to make arbitrarily large investments in sovereign debt financed entirely by borrowing. In later Basel standards, the concept of risk-weights was refined by more sophisticated formulas that could be based on the bank's own models of risk.

Presumably the original idea behind the risk-weighted capital adequacy formulas was to encourage banks to make safer investments by offering to relax equity requirements when a bank made investments that seemed safe. But this idea should have been considered a very questionable way to provide such an incentive, as the basic reason for requiring some minimal fraction of equity in a bank is to guarantee that the bank's owners have a substantial incentive to

⁴ Such a provision for regulators to block payments on a distressed bank's unreported liabilities could require a more conservative form of regulatory accounting for derivative contracts, each with a liability equal to the maximal potential cost of the contract for the bank in a worst-case scenario, and with a corresponding asset value equal to the surplus of the contract's current expected (mark-to-market) value for the bank over this worst-case scenario. The reported maximal liability would have to be clearly stated also to the counterparty in the contract.

invest prudently. Worse (as critically observed by Haldane and Madouros, 2013), we should recognize that any such attempt to codify what kinds of investments should be considered safe by regulators can itself create serious systemic risk for the entire financial system when a class of assets turns out to have been incorrectly categorized as "safe."

We may assume that regulators, being sophisticated professionals, are often right in their evaluations of what is safe, but they will be wrong occasionally. When that happens, normal investors' concerns about risk may make them less willing to hold these assets that have been wrongly categorized as "safe," and so the expected rates of return on these assets may begin to increase. Then banks throughout the financial system will be tempted to borrow at low rates of interest and earn surplus profits from the higher rates of return on these officially "safe" assets. The temptation to do so increases when the amount invested becomes large enough that it could cause the bank to fail if the officially-unrecognized risk were to materialize. At this point the bankers can tell themselves: officially these assets are safe, and if not then we will be bankrupt anyway, so why not borrow more and invest more, to earn even greater profits in the likely event that all the worriers are wrong? Then, when the unlikely risk actually does materialize, it can bring down a large portion of the banking system. We have seen such a process unfolding at least twice in the past decade, once for AAA-rated mortgage-backed securities in America, and then again for sovereign debt in the euro zone.

Indeed, the current problems of the euro zone should be understood in the context of the Basel approach to capital regulation. At the beginning of the Basel process in the 1970s, the first concern was to make sure that foreign currency risks were adequately taken into account in bank regulation (see Goodhart, 2011). Also from almost the beginning of the Basel process, governments called for regulatory standards that would encourage banks to hold their sovereign debt. This bias to ignore risks of sovereign government debt in its own currency was not revised when the sovereign nations in the euro zone lost the ability to print their own currency. Thus the creation of the euro zone converted large debts between European nations from a risk category that bank regulators were directed to particularly scrutinize into a category that bank regulators were directed to ignore. This illogic of bank regulations has been fundamental to recent crises of the euro zone.

The risk-weighted capital adequacy system may have harmed the economy in other ways. Well-rated marketable securities were given lower risk weights than loans to individuals or small

businesses. This incentive to shift banks away from lending to individuals and small businesses would become particularly acute when bank capital became scarce in the financial crisis, and the resulting loss of credit for small businesses would increase unemployment thereafter.

Moves to bundle and repackaging small loans into marketable securities may have been substantially motivated by the incentive to convert these assets into a category with lower risk weights. But in the financial crisis, enthusiasm for such securitization waned when it was found to exacerbate moral hazard in lending standards. More broadly, we should ask how much of recent financial innovation has been motivated by the goal of exploiting regulatory loopholes, which effectively encouraged banks to enter a network of complicated transactions that could make the allocation of risks harder to trace.

Rules that allow equity requirements to be based on the banks' own models for risk management add another layer of complexity against any hope of public validation of regulators' decisions. Furthermore, these rules can effectively reward banks for using models that understate their own risks, which raises the serious danger that senior managers could deliberately blind themselves to some portion of the risks that their organization is bearing.

In the search for a basic statistical benchmark for evaluating when equity is sufficient to assure that owners have appropriate incentives to avoid risks of failure, it may be helpful to consider data about the size of public losses from failed banks as a fraction of their deposit liabilities. American banks that failed during the decades from 1978 to 2007 generated public losses that averaged about 19% of deposits, according to the FDIC's historical statistics on banking.⁵ One could argue that, when a bank's equity as a fraction of deposit liabilities is less than this average, the public would statistically expect to lose more from the bank's failure than its owners, and so greater public oversight of the bank's investments may then be appropriate.

6. Other more radical solutions?

Admati and Hellwig argue persuasively for requiring banks to have equity worth at least 20% of assets, but a reader should ask, why stop there? What goes wrong with the argument for requiring X% equity as X% approaches 100%? One answer is that people have a real demand for bank debt, because monetary-denominated deposits serve as the basic medium of exchange in the economy. Bank accounts are money that people can use to pay for groceries, but shares of

⁵ Accessed from <http://www2.fdic.gov/hsob/selectrpt.asp?entrytyp=30> on July 17, 2013.

stock in a bank are not. People agree to make transactions in dollars or whatever is the accepted legal tender of our country, and we need to make these payments in some liquid asset that has a clear reliable value in these units. Checking and debit accounts in reliable banks provide this vital service for our economy, and so banks' issues of safe debt can provide real economic value.

This basic point of monetary theory raises some difficulties for Admati and Hellwig's argument, however, as the use of bank debt as a medium of exchange provides a fundamental reason why people may be willing to hold bank debt with a lower rate of interest. It implies that a system of financial intermediation that financed investments only by equity might indeed have a higher cost of credit than one which issued some form of liquid debt. We should admit that going to 100% equity financing would be going too far. There is a real transactions demand for bank debt, but the price that people are willing to pay for it should decrease as its supply increases. Once the banks' fraction of debt financing is large enough to meet people's basic demand for a medium of exchange, then presumably any further increase in equity financing would not elicit substantially more savings at any given overall expected rate of return for the average investor.

On the other hand, as Admati and Hellwig have emphasized, there is a real moral-hazard cost to banks' issue of debt, as it can generate incentives for inefficient risk-taking by banks. But marginal moral-hazard costs of debt should be small when the amount of equity is large enough to keep the risk of insolvency negligible. So we may hope to find a broad range of possible equity requirements that would generate enough bank debt to meet people's basic transactions demand for deposits but would also maintain enough bank equity to assure that the owners of a bank will expect to bear virtually all of its investment risks.

Within this broad range, the Modigliani-Miller argument could affirm that marginal changes in the fraction of equity financing would not significantly affect total costs of credit. But to make an effective regulatory system we need to specify some required fraction. It seems reasonable to argue that Admati and Hellwig's recommended standards of 20% to 30% equity may be in this range, while current regulatory standards may be substantially below it.

A related idea that Admati and Hellwig might have usefully discussed further is the narrow-banking proposal that was advocated by Henry Simons, Frank Knight, and Irving Fisher in the 1930s. Under narrow banking as described by Fisher (1935), all bank accounts that could be used as money (such as checking accounts and debit accounts today) would have to be backed

100% by reserves of cash or deposits at the central bank. Fisher argued that this narrow banking rule would have prevented the large fluctuations in the money supply that he saw as a factor in causing the Great Depression.

But this argument raises a fundamental question about how waves of bank failures could cause macroeconomic downturns. Would the effect be through a contraction of the money supply or through a disruption of credit channels? The recent recession did not involve any great monetary contraction, but the shock to the banking system strongly affected the supply of credit to individuals and small business that depend on bank loans. Under Fisher's original narrow-banking proposal, bank loans would depend on funds from savings accounts, which would have remained vulnerable to runs and instability when banks are weak.

Thus, when we focus on the need to maintain stable channels of credit, such narrow-banking proposals seem less persuasive. The distribution of credit must depend substantially on financial intermediaries that develop special expertise in the various sectors of the economy. The Myers-Majluf adverse inference provides a fundamental reason why such firms with special information may, in the absence of regulatory constraints, regularly choose to finance investments by issuing more debt instead of equity. But if many of these firms become excessively indebted and fail, then those who depended on them for credit will also suffer, and real productive investments that they should have financed will be lost in the years that it takes to rebuild a strong financial system. Thus, as Admati and Hellwig argue (in footnote 28 on p 271), narrow banking would not eliminate the problem that non-deposit-taking financial institutions might become too important to fail. The public interest in maintaining credit channels provides a basic rationale for equity requirements. Kotlikoff's (2010) modern extension of the narrow banking idea combines it with a requirement of equity financing for financial intermediaries that make risky investments.

7. Conclusions

In response to all their arguments against the increasingly complex provisions for minimizing banks' capital requirements, Admati and Hellwig report (p. 182) that they have never received a coherent answer to the basic question of why banks should not have equity levels between 20 and 30 percent of their total assets. They recommend that banks should be restricted from paying profits to stockholders until their equity value is above 20 percent of assets.

This recommendation is simple, but it is based on their deep command of theory. The book is long with many footnotes because it takes time to rebut all the bankers' arguments that society would suffer some substantial loss of economic growth if such a fraction of economic investments were financed by equity instead of debt. A bank may incur some real cost from equity financing, but it is primarily due to the fact that an increase of equity will transfer to the bank's owners a larger share of the bank's risks, which otherwise with debt financing might be passed on to creditors or taxpayers. To all the complex schemes for encouraging banks to manage risks prudently with less equity, the appropriate response is that requiring more equity is itself the single most effective way to ensure that a bank's owners have an incentive to manage its risks prudently. If more regulatory control of risk is needed, it can be achieved by basic diversification guidelines that prevent the bank from lending too much to a narrow group of favored borrowers.

I have suggested that it might be better to define equity requirements instead as a fraction of debt liabilities, to put the focus on the part of the balance sheet that actually makes equity necessary. A capital requirement of 20 percent of assets would correspond to 25 percent of debt liabilities. Talking about liabilities instead of assets has the virtue of moving the discussion as far as possible from any question of offering lower risk-weights for some approved assets. Instead, we could appropriately consider questions about whether the equity requirement should be on the excess of debt liabilities over cash reserves, or whether long-term debt should have a lower equity charge than short-term debt and deposits. Accounting standards and regulatory policies that prevent liabilities from being netted or hidden off the banks' balance sheets may be essential to effective regulation.

Bank regulation is obviously a complex technical matter, and we need to rely on specialists for the tasks of daily monitoring and stress tests in a crisis. But if nobody outside the elite circles of finance can recognize a failure of appropriate regulation, then such failures should be considered inevitable. We may want our country to have a banking system that can reliably attract savings from people all over the world, and that can then channel those savings into loans that will help build the homes and businesses of our communities. Ultimately, in a democratic nation, the whole system must depend on informed citizens having some basic understanding about what bank regulators are supposed to do.

So financial regulatory reforms are incomplete until somebody can explain to the general

public what the new rules are, at least well enough so that our officials can be held publicly accountable for implementing them. Professional economists can contribute to such reforms by articulating their essential principles and laying out their logical arguments as simply as possible. In this regard, Anat Admati and Martin Hellwig have done an enormously important service in this book. But economics professors cannot do it alone. Political leadership is also needed to get the public's attention and communicate the new principles by which the public should judge its financial institutions, regulators, and politicians.

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This paper was written while the author was a full-time professor of economics at the University of Chicago. Neither the author nor his spouse have had any paid position at any financial institution over the past three years, except that the author was paid to give a public lecture on moral hazard and macroeconomics by the Polish Financial Supervision Authority in July 2011. As an American taxpayer and a consumer with deposit and credit-card accounts at banks, the author has a normal basic interest in the stability of the banking system. Otherwise, the author has no relevant or material financial interests that relate to this paper.

This paper is available online at: <http://home.uchicago.edu/~rmyerson/research/newcloth.pdf>

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