

**The Compelling Case for Stronger and More Effective
Leverage Regulation in Banking**

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Abstract

Excessive leverage (indebtedness) in banking endangers the public and distorts the economy. Yet current and proposed regulations only tweak previous regulations that failed to provide financial stability. This paper discusses the forces that have led to this situation, some of which appear to be misunderstood. The benefits to society of requiring that financial institutions use significantly more equity funding than the status quo are large, while any costs are entirely private and due to banks' ability to shift some of their costs to others when they use debt. Without quantitative analysis, I outline improved regulations and how they can be implemented.

1. Introduction

Good decisions require balancing the benefits and costs of possible actions. A proper assessment of the impact of regulations must aggregate the various costs and benefits for society. Good regulations offset private costs to the regulated by significantly larger benefits to others.

The financial crisis of 2007-2009 highlighted the fragility of the financial system and the great harm it can cause. This fragility is greatly exacerbated by the fact that banks use extremely little equity (money from their owners and shareholders) to fund their investment. Requiring the banks use more equity offers the promise of a more stable financial system that serves the economy better and more consistently while being less prone to cycles of boom, bust and crises.

Bankers and others often argue that the benefits of requiring significantly more equity funding of banks must be traded off against the costs of such requirements, and they portray recent and ongoing reforms as tough. However, the cost of significant increases in equity requirements relative to the status quo are entirely private and due to banks' ability to shift some of their costs to others. The reforms amount to tweaks of previous failed regulations and maintain a dangerous and reckless system that distorts the economy.

In this paper I summarize the key issues in assessing regulation that would require financial institutions to use more equity funding. I draw heavily from Admati et al. (2013, 2014), which include a detailed review and analysis of the economics of funding and leverage as it applies to banking, and Admati and Hellwig (2013a, 2013c, 2014), which are aimed at a broader audience and which also discuss the structure of the regulation and of the politics of banking.

Following Admati and Hellwig (2013a), I also motivate and outline a specific proposal for improved regulation, and describe steps for its implementation. The proposal is crude and not based on a quantitative analysis of the tradeoffs or a precise empirical assessment of alternative proposals. I am not aware of any model that captures properly the relevant tradeoffs between this or other proposals and the status quo. Yet the benefits of the proposal, even if they cannot be measured precisely, appear significant.

The paper is organized as follows. Section 2 discusses the importance and the benefits of regulation to further reduce leverage in banking. Section 3 explains the key economic forces that make regulation essential. Section 4 explains why some of the claims pertaining to costs of increased equity requirements introduce false tradeoffs. In Section 5, I outline and motivate steps toward a specific proposal for improved regulation. Section 6 offers a brief discussion of the

political challenge, which is a key reason the regulation and its reform have failed so far. Section 7 concludes with additional comments on the agenda for financial reform.

2. The Benefits of Reducing Leverage in Banking

Financial leverage refers to the extent to which the funding mix of a business or a corporation relies on borrowing as opposed to funding from owners or shareholders. By promising to make specific debt payments at specific times, borrowers create leverage that magnifies risk. When investments made with borrowed money turn out poorly, borrowing can give rise to distress, insolvency, or default, which can have profound implications for borrowers, their creditors and possibly third parties.¹ This dark side of borrowing is particularly strong in banking, yet bankers do not experience it in the same way as other borrowers.

A highly leveraged company is like a homeowner who buys a large house with a small down payment. The down payment serves as the homeowner's initial equity, and the value of the equity fluctuates with any changes in the value of the house. With little equity, a subsequent decline in the value of the house might lead the homeowner to become underwater, owing more on the mortgage than the house is worth. Corporations become distressed or insolvent when their debt reaches near or above the value of their assets.

Heavy debt burden increases the likelihood of default, which can introduce deadweight costs that deplete the assets. Even before default, a high level of indebtedness creates distortions and inefficiencies because of the conflicts of interest between borrowers and creditors. Distressed or insolvent borrowers may underinvest in worthy projects because of the so-called debt-overhang problem, avoiding investments that do not produce enough gains to borrowers even if the investments would increase the value of the assets to all investors, including creditors. At the same time, heavy borrowers may make risky investments that benefit them and harm creditors even if the harm to creditors is larger than the borrower's gain, which thus reduces the value of their combined claims. These bankruptcy costs and the distortions of distress and insolvency are more intense the heavier is the reliance on borrowing.

Many financial institutions became distressed or insolvent starting in 2007. The bankruptcy of Lehman Brothers in September 2008, which had enormous ripple effects throughout the globe, exposed the fragility of the global financial system. The fragility is due to the high

¹ On leverage and risk see Admati and Hellwig (2013a, Ch. 2). The “dark side of leverage” is discussed in Ch. 3.

leverage of the institutions, their opacity, the extensive use of short-term debt funding, and the high level of interconnectedness in the system. All of these elements created runs and contagion when housing prices declined and indebted homeowners started defaulting, a shock that by itself was not large relative to the global economy.²

To prevent a complete meltdown of the system, central banks and governments provided extraordinary loans, guarantees and bailouts to the banking system. Today, hundreds of millions of people are still feeling the impact of the severe downturn and recession that followed. Whereas most financial institutions avoided defaults and were able to pay their creditors in full, underwater homeowners were given relatively little relief because lenders were not obliged to restructure their mortgages and often preferred to avoid doing so.

In the run-up to the financial crisis, the equity of many institutions accounted for less than 3% percent of their total assets, in some cases as low as 1%.³ Many of those institutions failed or were bailed out because investments that the regulations classified as perfectly safe turned out to be quite risky. Securities stamped AAA by credit-rating agencies, for example, inflicted significant losses. More recently, the French-Belgian bank Dexia and banks in Cyprus failed after investing in Greek government bonds that had been, and still are considered safe by the regulation. Credit insurance contracts issued by insurance company AIG prior to 2008, which were assumed to eliminate risks, were honored in full only because AIG was bailed out by the US government.

Basel III, which supposedly put forth tough new standards, still allows banks to fund up to 97% of their assets by borrowing and to have as little as 3% equity that can absorb losses. Proposed regulations in the U.S. would set this so-called leverage ratio at 5% for bank holding companies and 6% for insured depository institutions. Other requirements are based on complex risk weights and use valuations based on accounting rules that often fail to provide timely signals of distress. No valid quantitative analysis justifies these requirements relative to alternatives that require significantly more equity.

² For explanations of the contagion mechanism, see Admati and Hellwig (2013a, Ch. 5).

³ Measurements of equity ratios are subject to the caveat that they rely on an accounting system and conventions. See Admati and Hellwig (2013a, Ch. 6) and Section 5 below.

The benefits of requiring much more equity are substantial.⁴ First, with more equity, banks would be able to absorb much larger losses without becoming distressed or insolvent, and without failing or needing bailouts. Healthier banks are more trustworthy, and a system in which banks are stronger is therefore less fragile and more resilient. Second, banks funded with more equity make better, more appropriate, investment decisions, being less prone to agency conflicts.

Third, having more equity reduces the intensity of institutions attempting to reduce leverage quickly in response to losses (so-called deleveraging). If a bank has only 3% equity, a loss of even 1% of the assets wipes out a third of its equity and might lead to the sale of a large fraction of the assets in order to pay the debts and continue investing. When many banks experience losses at the same time and all are selling similar assets in a hurry, the sales can depress asset prices and further weaken the banks. With much more initial equity, e.g., 20%, a 1% loss in asset value constitutes only a 5% loss of the equity, and will not trigger extensive asset sales.

Fourth, having more equity reduces the likelihood of banks running into liquidity problems. (See Admati and Hellwig, 2013a, Chapters 4, 6 and 13.)⁵ A liquidity problem arises if you owe someone cash at midnight but forgot to go to the ATM. To prevent default, the debt must be renegotiated or rolled over by additional borrowing. Banks are prone to liquidity problems because they rely on deposits and other short-term debt that can be withdrawn or that need frequent renewal, while their assets might not be convertible into cash quickly and reliably, particularly in a stress situation.

Liquidity problems are not difficult to address if the borrower is known to be solvent, able to pay the debt. Central banks act as lenders to banks that face liquidity problems, but the loans are meant to be given only against good-enough collateral. Although deposit insurance has largely solved the problem of inefficient runs by depositors, uninsured creditors may start a run, and they are more likely to do so if a bank is distressed such that its solvency is in doubt.⁶ Higher equity requirements, by reducing the likelihood that banks run into distress and insolvency, also reduce the likelihood and the severity of liquidity problems.

⁴ For more details see Admati et al. (2013, Sec. 2, 2014) and Admati and Hellwig (2013a, Ch. 6), which also discusses alternative regulatory approaches.

⁵ Gorton (2013, p.5) argues that the main function of banks is to “produce debt” in order to provide liquidity, but when banks take on debt (to produce liquidity) and take risk with borrowed money, someone must absorb the losses they might incur.

⁶ See Admati and Hellwig (2013a, Ch. 3).

Fifth, higher equity requirements reduce the taxpayer subsidies associated with implicit guarantees, which perversely encourage recklessness and further endanger taxpayers and the economy. Debt guarantees, particularly to those institutions considered too big to fail, encourage and reward institutions for excessive borrowing, risk taking, growth and complexity. Requiring that banks rely on more equity reduces their ability to benefit from these distortive and outsized subsidies. With reduced subsidies, inefficiently large institutions might become smaller because of pressure from investors, similar to the breakup of conglomerates in the late 1980s.

Creditors who are insured or believe they will be paid no matter what the bank does do little to control the risk of the bank or interfere to force an insolvent bank to close. Thus, banks are more likely to persist in distress or insolvency unless regulators interfere. Higher equity requirements that force banks to retain earnings and raise new equity when they become distressed would expose institutions that are too weak. As was seen in the 1980s savings and loan crisis in the U.S. or in the Japanese crisis, weak or insolvent banks do not make good new loans and can become reckless, thus increasing the harm to the economy, and it is harmful for regulators to show forbearance rather than interfere. (See Admati et al. (2013, Sec. 9) and Admati and Hellwig (2013a, Chapters 4 and 11.)

3. The Key Economic Forces

If having more equity is so beneficial, why do banks choose to have so little of it? Would there be a cost to society to requiring much more equity and, if so, what would be the optimal regulation? It is useful first to understand the key forces that play a role in the discussion.

Corporations can grow and invest without borrowing, using their own profits and selling shares as a source of funding profitable investments. Thus, corporations must choose how to change their funding mix over time. A key insight about the economics of corporate funding came from the celebrated analysis of Modigliani and Miller (1958). Their insight, taught in basic finance courses everywhere and explained in most basic books on corporate finance, is based on a basic conservation principle. (See, for example, Berk and DeMarzo, 2013 and Admati and Hellwig (2013a, Chapter 7.) If all the risks taken in investments are borne by those who fund the firm, simply rearranging the risk among those investors cannot *by itself* change the overall cost of funding for a corporation. If the funding mix matters, therefore, it must be for reasons *other than* the fact that some securities are riskier than others.

This observation is sometimes framed by saying that under some strong assumptions, the total value of the firm to its investors is independent of the funding mix. However, as Modigliani and Miller (1963) recognized, the assumptions that lead to this irrelevancy of the funding mix do not hold in the real world. For example, for all corporations and in many countries, interest expenses on debt can be deducted as a business expense. Thus, corporations generally save on taxes the more debt they use in their funding mix. The tax code therefore penalizes equity funding and biases corporations towards borrowing. There is no good economic rationale for this tax preference, and it has long been viewed as highly distortive. The tax advantage of debt is especially perverse for banks, because it rewards and feeds their already strong incentives to borrow too much.⁷

Despite the tax advantage of debt, most corporations do not borrow heavily and some borrow little. Among the key reasons are the deadweight costs of bankruptcy and the agency distortions associated with distress and insolvency, discussed in Section 2, which, being anticipated by creditors, are reflected in the terms of the debt. (See Admati and Hellwig, 2013a, Ch. 9) and Berk and DeMarzo, 2013.)⁸ The so-called tradeoff theory of capital structure suggests that firms increase debt to a level where the tax advantage of debt is just offset by these other costs.

This approach, and much of the analysis of funding in the academic literature, treats the funding decision as if it occurs once, at the start of the corporation's life. The chosen funding mix is assumed to generate the highest value of the firm to its investors, which at the initial stage is the same as the value to the initial owners of the corporation. Once debt is in place, however, managers and shareholders typically retain significant flexibility. Debt contracts rarely cover all future decisions, and the ability of the initial owners to commit in advance to specific decisions over a long horizon is limited.

Investment and funding decisions made to benefit the shareholders of an indebted firm may not be in the combined interests of all the firm's investors. The presence of existing debt colors the decisions by shareholders or managers, including about the firm's leverage over time. Similar to the underinvestment problem discussed earlier (and identified in Myers, 1977), debt overhang

⁷ For a brief discussion and some references, see Admati et al. (2013, Sec. 4.1). Most recently Cochrane (2014) proposes instead using taxes to discourage banks from using excessive short term debt.

⁸ As discussed also in Admati et al. (2013), the total value of a heavily indebted firm may also be lower than that of a firm with less debt and more equity because of the debt overhang problem that leads to underinvestment in worthy projects by the leveraged firm.

creates pervasive resistance to leverage reduction by shareholders because the benefit of leverage reduction often accrues entirely to creditors at the expense of shareholders. Moreover, shareholders may prefer to increase leverage excessively to benefit at the expense of the creditor. Admati et al. (2014) explore this *leverage ratchet effect*, which creates a sort of addiction to borrowing by heavy borrowers.

The leverage ratchet effect and the other agency conflicts are particularly relevant for banks. Nevertheless, the distortions do not act to restrict banks' leverage, because they are not fully reflected in the cost of bank borrowing. Many of their creditors, such as depositors, do not write detailed contracts concerning subsequent actions. Explicit and implicit guarantees, which are special to banking, feed and enable the sort of addiction to leverage and risk that are already in place because of high levels of leverage. The guarantees convert the standard borrower-creditor conflict into a conflict between bank managers and at least some shareholders and taxpayers. The standard moral-hazard problems associated with insurance exacerbate the problems.

Banks' high levels of leverage can therefore be easily explained by noting that guarantees enable bank to avoid the impact of deadweight bankruptcy costs or the harsher borrowing terms when they take more risk. These guarantees allow banks to keep borrowing under attractive terms despite their high levels of leverage and the risks they take.⁹ Once debt is in place, banks' shareholders view leverage reduction and thus equity requirements as costly because they require them to take on risk that is currently borne by others and give up subsidies.¹⁰ The eagerness of banks to make payouts to shareholders is another manifestation of the leverage ratchet effect and the borrower-creditor conflict. Money paid out to shareholders is no longer available to pay creditors.¹¹

Bankers and banking experts often claim that the insights of Modigliani and Miller do not apply to banks. The battle over the question Does M&M apply to banks? goes back decades. Merton Miller – one of the M's in M&M – gave the answer to this question in the three-word

⁹ See Admati et al. (2013, Sec. 4, 2014, Sec. 5) and Admati and Hellwig (2013a, Ch. 9) for discussions of the effect of guarantees and subsidies. Admati (2014b) which also includes more detail on attempts to measure the value of the subsidies as well related policy issues in the implementation of the Dodd Frank Act.

¹⁰ The leverage ratchet effect is explored in Admati et al. (2014). The analysis assumes that it is not possible for shareholders to renegotiate the terms of debt with dispersed creditors, an assumption that is certainly true for banks, whose creditors include depositors.

¹¹ Brunnermeier and Oehmke (2013) show how lack of ability to commit creates a “maturity rat race” where banks repeatedly shorten the maturity of their debt as a way to take advantage of previous creditors and reassure new creditors that they would be paid. See also Admati et al. (2014) and Admati and Hellwig (2013a, Ch. 10).

abstract of a 1995 paper: “yes and no.” This answer holds for every company, namely yes for the general insight and no for the irrelevance of the funding mix, especially from the perspective of shareholders.¹²

The case for much more equity in banking is *not in any way* based on the presumption that the funding mix is irrelevant for banks or for any firm. Rather, it is based on the appropriate comparison of the costs and benefits *to society* of different funding mixes for banks. None of the private costs to bankers or shareholders from using more equity translate to a cost to society, because they are entirely based on transferring some costs to others, and creating collateral damage by increasing the fragility of the system.

Imagine, for example, that there was a tax subsidy given to tobacco companies that reduced their costs and made cigarette smoking cheaper and more attractive, thus making people sick and increasing our healthcare costs. Removing the subsidy would create private costs to the tobacco companies and may increase the price of cigarettes. In the short term it would harm those addicted to smoking, but it is hard to come up with a social cost for doing so. The benefit clearly outweighs the cost. Indeed, because of the great harm and negative externalities associated with smoking cigarettes, they are heavily taxed.

The same considerations apply to bank leverage at the current levels. The excessive and harmful leverage we see is enabled and encouraged by underpriced guarantees and further encouraged by a tax preference for debt over equity. If banks’ funding costs increase as a result of higher equity requirements, this would only *correct* the current distortions that lead banks, responding to their incentives, to increase the instability of the financial system. If the government wants to subsidize businesses or home ownership, it must find better and more direct ways to deliver the subsidies than by subsidizing banks to borrow excessively. (In the U.S. borrowing to buy a home is also subsidized through mortgage interest deductibility, which thus possibly encourages excessive mortgage debt.)

Subsidized funding gives banks unfair advantages, which the large institutions are able to use for numerous non-banking activities, indeed often finding them more attractive than making traditional but relatively boring business loans. The subsidies also encourage and enable

¹² For more details, see Admati and Hellwig (2013a, Ch. 7 and 2014, Claims 3-6), and Pflleiderer (2010).

excessive growth and recklessness.¹³ Managerial compensation pegged to return on equity contributes to the incentives to borrow excessively.¹⁴ The unstable system creates booms and busts and makes the economy prone to costly crises. In sum, *having banks funded with too little equity is expensive for society*.

Who benefits from banks' high level of leverage? The key beneficiaries are bankers themselves and individuals whose fortunes are tied closely to the banks. The banks' diversified shareholders, who are also taxpayers and members of the public, suffer from the fragility of the system, from inefficient lending, and from the collateral damage of financial crises, including damage to their investments in other companies (see Admati and Hellwig, 2013a, Ch. 8 and Admati, 2012).

4. False Tradeoffs

Why has capital regulation failed? One reason is that the key economic forces discussed above appear to be misunderstood or ignored in the policy debate and invalid claims impact policy instead. Clarifying the issues is essential if we are to improve the regulation.

Admati et al. (2013), first posted in August 2010, goes through a set of claims in support of the mantra that “equity is expensive.” The claims are classified to three types: fallacies – claims that are false or inconsistent with basic economic principles, irrelevant facts – claims that confuse private and social costs, and myths – claims based on implausible and unsubstantiated theories that ignore many of the forces discussed above.¹⁵

One set of false claims suggests that changing the banks' funding mix would force them to reduce socially valuable activities. A particularly insidious source of confusion is due to misunderstanding of the words being used. In banking, but not elsewhere, the word “capital” represents, essentially, unborrowed funds such as shareholders' equity. Confusingly, banks are said to “hold” or “set aside” capital.¹⁶ The unusual usage of the word “capital,” and the attached verbs “hold” or “set aside,” leads to the false impression that bank capital is an idle cash reserve that cannot be invested. In fact, capital requirements do not constrain what banks can do with

¹³ This point is elaborated in Admati et al (2013, Sec. 4), which responds to the criticism in Levitin (2014) that it is not clear that the benefits outweigh the costs. See also Section 6 in this paper.

¹⁴ See Admati and Hellwig (2013a, Ch. 8).

¹⁵ Admati and Hellwig (2013a, b, 2014) use the term “bankers' new clothes” to refer to flawed claims. Many, but not all of these claims, concern capital regulation.

¹⁶ As already mentioned, some non-equity securities, such as long-term debt that in principle can be loss absorbing, are counted as part of the regulatory capital. In the financial crisis, however, such securities did not absorb losses even as banks received bailouts and other supports from governments.

their funds. The pervasive confusion allows false claims, such as that higher capital requirements will prevent banks from making loans, to resonate and go unchallenged.¹⁷

Another set of fallacious claims imply that higher equity requirements would be costly if they reduce banks' return on equity (ROE). As Admati et al. (2013, Sec. 3.3) and in Admati and Hellwig (2013a, Ch. 8) explain, however, arguments based on ROE are fundamentally flawed.¹⁸ Not only is the statement actually false when the bank incurs losses, it contradicts the basic insight of Modigliani and Miller (1958) discussed above, that the mere fact that equity is riskier than debt does not imply that a funding mix that involves more equity is more expensive. Setting ROE targets for bank managers is dangerous. Shareholders too might be harmed by being exposed to excessive risk taken to achieve ROE targets without proper compensation.

A pervasive but false presumption is that any bank's equity funding is fixed and unchangeable. Claims are made that requiring more equity would force banks to reduce deposit taking or other forms of liquidity creation.¹⁹ Models in the academic banking literature commonly assume that banks are fully owned by their managers and have no external equity. In reality, of course, most banks are corporations, and the large ones have the same access to equity investors as other companies. Even privately owned banks can increase their equity by retaining their profits. Yet the lack of equity and the resulting fragility of banks are often treated as if they were inherent or inevitable.

Bankers and academics specializing in banking often ask, where would additional equity come from? They seem to believe that new equity funding of banks requires new savings and new inflows into capital markets. This view however, rests on a fundamental misunderstanding about capital markets. If a bank issues more equity and uses the funds it obtains to buy listed securities, capital markets will adjust to a new equilibrium in which investors who have sold the other securities will hold additional bank shares because, like an investment fund, the bank's returns partly reflect the returns on those other securities. No new savings and no new inflows of funds into capital markets are required.²⁰

¹⁷ See a (partial) list of references in Admati and Hellwig (2013a, Chapters 1 and 6, and 2014, Claims 1-2).

¹⁸ For a summary of the argument, see Anat Admati and Martin Hellwig, "The Case Against Banking's Case for Less Capital," Bloomberg View, February 4, 2013. See also Anat Admati, "Beware of Banks' Flawed Focus on Return on Equity," *New York Times*, July 25, 2011. Remarkably, as noted in Admati and Hellwig (2013a, 115, 280), such fallacious claims are also made in popular textbooks by Fredric Mishkin, who served in a high level position in the Federal Reserve.

¹⁹ For examples, see Admati et al. (2013, Sec. 3.2) and Admati and Hellwig (2013a, Ch. 6, 2014, Claims 13, 14).

²⁰ See Admati et al. (2013, Section 7) for a discussion of the big picture.

Since banks are fragile, many economists who believe that free markets create efficient outcomes presume that there must be a good reason for it. If free markets create efficient outcomes, then there is little or no distinction between private cost and social cost, and one tries to find a model where the observed behavior is shown to be the efficient outcome and claim that the model explains what we see.

However, as discussed in the Section 3, banks' choices are easily explained as due to their own incentives and the failure of markets to produce efficient outcomes and despite the inefficiency and harm to society. Such explanations, and the distinction between private and social costs and benefits, tend to be dismissed, because they emphasize the need to counter the distorted incentives and correct the distortions.

Among the reasons that banks are considered special is the notion that they “create money,” which involves taking on debt. The liquidity from deposits and other forms of short-term debt is convenient for the bank's depositors and other creditors. However, this fact by itself does not establish that banks must be highly leveraged or that the high levels of leverage we observe is socially efficient. If returns on the banks' investments are risky, solvency problems can easily make their short-term debt illiquid – because in bankruptcy the debt is frozen or because even before bankruptcy other parties will not accept claims on the bank in lieu of payment or as collateral.²¹

To forestall such destruction of liquidity benefits, the bank needs equity, but the mechanisms discussed above, particularly the distortions from existing high levels of leverage, may cause the level of equity funding to be socially inefficient. This observation is often ignored in the academic literature on banking, where most models that focus on liquidity creation assume that equity is scarce or unavailable for banks.²² When liquidity problems threaten banks' solvency, the liquidity-based narrative is used to justify central bank supports and bailouts.

²¹ Debt-only funding might work in a world without risks, as is assumed in the formal model of DeAngelo and Stulz (2013). Their analysis is also flawed by the assumption that consumer benefits from the liquidity of deposits can be appropriated by the banks. But according to basic microeconomics principles, in competitive markets producers cannot generally appropriate consumer benefits, except if increasing marginal costs of deposit provision create room for “producers' surplus.” For an analysis of the relation between liquidity and leverage see Hellwig (forthcoming).

²² In recent years, money market funds and markets for various forms of short-term borrowing and lending, such as so-called repo markets (where borrowing involves “selling” an asset and promising to “repurchase” it) have grown dramatically. Admati and Hellwig (2013a, Ch. 10) discuss the issues around money and liquidity provision by banks, and argue that liquidity provision is harmed by high leverage and would be helped by higher equity requirements. See also Admati et al. (2013, Section 7), Admati and Hellwig (2014, Claims 5-6).

Some academic research claims that short-term debt addresses a conflict of interest between managers and investors and provide discipline for bank managers. For example, in a book by prominent academics that proposes to provide policy guidance, the authors state *as a matter of fact about the real world*: “Capital requirements are not free. The disciplining effect of short-term debt, for example, makes management more productive” (French et al. 2010, p. 69).²³ These claims are based on highly implausible theoretical models that lack valid and relevant empirical evidence.²⁴

In fact, depositors and short term creditors cannot and do not provide discipline if they are insured and have little incentives or ability to collect information, and if managers can keep borrowing repeatedly. Leverage ratchet and maturity rat race, which shows the *opposite* of discipline, explain banks’ behavior entirely.²⁵ If runs happen, that does not prove the discipline theory just as seeing people smoke does not prove a theory claiming that smoking is good for our health. Such a theory does not explain why people smoke.

Interestingly, the liquidity and the discipline narratives about bank debt give mutually *incompatible* accounts of the roles of depositors and short-term creditors. In the liquidity narrative, depositors specifically *do not* monitor bankers; they only want to count on the bank’s debt to be safe and liquid. Those who adhere to the liquidity narrative view deposit insurance and guarantees as useful for financial stability. The discipline narrative, by contrast, extols the virtues of fragility, presuming that depositors spend time and money to monitor managers. Deposit insurance, put in place because of the enormous cost to society of the runs that are required for discipline, remove incentives to gather information and counter the realism of the narrative. Should deposit insurance be abolished to solve a governance problem in banks that other firms obviously find other ways to solve?²⁶

²³ Rajan (2013) asserts that “the need to repay or roll over debt imposes discipline, giving the banker a stronger incentive to manage risk carefully.” How this purported discipline actually comes about is unexplained.

²⁴ As we report in Admati and Hellwig (2013b), a 30 year veteran from the banking industry, upon reading the long section devoted to “debt discipline” an earlier version of Admati et al. (2013), wondered why we wrote so much about this topic, asking “Is this some academic thing?” See Admati and Hellwig (2013b) and Admati et al. (2013, Sec. 5) for extensive discussion. Pfleiderer (2014) also discusses the implausibility of these models and their misuse.

²⁵ See Admati and Hellwig (2013b) and Admati et al. (2013, Sec. 5) for a detailed discussion. Brunnermeier and Oehmke (2013) show how a “maturity rat race” can be due to the inability to commit not to harm previous creditors.

²⁶ Gorton (2012) alludes to the “quiet period” brought about by deposit insurance and believes guarantees protect the valuable liquidity of bank debts. By contrast, Diamond and Rajan (2012) state in the abstract, as a matter of fact about the real world: “Banks finance illiquid assets with demandable deposits, which discipline bankers but expose them to damaging runs” and suggest that deposit insurance interferes with this benefit of having deposits.

The statement that equity is costly is sometimes justified in the banking literature by alluding to asymmetric information and citing Myers and Majluf (1984).²⁷ The Myers-Majluf argument, however, is limited to new common-share issues; it does not apply to rights offerings (new shares issued to existing shareholders), nor can it explain the resistance to earnings retentions. Myers and Majluf (1984) actually emphasize that with the information asymmetries they consider, raising funds by retaining earnings should be preferred to new borrowing, and their paper is considered to be the basis of the so-called pecking order theory, where retained earnings are the preferred funding source. Moreover, when leverage reductions are imposed by regulation, adverse selection becomes irrelevant. Any “dilution costs” for the shareholders of firms with above-average return prospects would be matched by benefits for the shareholders of firms with below-average return prospects.²⁸

In sum, much of the academic literature has accepted banks’ fragility as inherent or inevitable, and some has attempted to explain it as useful. Before using a theoretical model for policy, however, it is essential to make sure that it is relevant, particularly if it ignores the plausible economic forces discussed in Section 3. The distortions and agency problems created by high levels leverage do not vanish for banks, indeed, they are often critical for understanding the distortions in banking and thus trying to correct them. Yet they are frequently left out in favor of other, more convenient, frictions. The academic culture also treats all or most models as relevant until rejected by definitive empirical tests, even when some models can be rejected on the basis of simple filters based on what else we know. These points and the possible misuse of theoretical models are discussed in detail in Pfleiderer (2014).

Bank lobbyists threaten that higher equity requirements will reduce lending. But no theory or empirical study has shown that lending would be reduced *if banks were instructed to retain their earnings or issue new equity* when their equity levels are reduced by losses. There is significant evidence that better-capitalized banks maintain lending in a downturn and that it is *insufficient*, not too much equity that harms lending.²⁹ Credit booms often involve excessive and wasteful lending, only to be followed by busts that restrict loans to worthy borrowers.

²⁷ Such a claim is made, for example, in Bolton and Freixas (2006) and Calomiris (2013).

²⁸ For a detailed discussion see Admati et al. (2013, Sec. 6) and Admati et al. (2014, especially Sec. 4.2.5) which show that resistance to leverage reduction is pervasive and that asymmetric information does not provide a full explanation to banks’ observed behavior.

²⁹ See Admati et al. (2013, Sec. 9) and Cole (2013).

5. Toward Better Regulation of Leverage

Equity levels in banks have declined in the last 150 years. This decline is at least partly related to the extensive and expanding safety nets of banking in the form of central bank support, deposit insurance and implicit guarantees. At the same time, the nature and extent of the risks banks take, the nature of their non-deposit debts, the legal and regulatory environment and banks' global reach, have also evolved, which makes historical comparisons difficult to interpret.³⁰ The economic forces discussed in Section 3, however, suggest that even if banks have always been fragile, it does not follow that their level of fragility is unavoidable, essential, or efficient. The status quo today, which reflects banks' choices and ineffective regulation, is therefore not a useful benchmark for what regulation should seek to achieve.

Quite clearly, the regulations in place before 2008 failed to control leverage effectively. Martin Wolf, the economics editor of *Financial Times*, said appropriately referring to the Basel III reforms: “Tripling the previous requirements sounds tough until you realize that tripling almost nothing does not give you very much” (Wolf, 2010).

But how much equity should be required? The spirit of the answer is captured by Cochrane (2013): “Enough so that it doesn’t matter! Enough so that we never, ever hear again the cry that “banks need to be recapitalized” (at taxpayer expense)!” Admati and Hellwig (2013a) propose that the equity requirement should be set at 30% of total assets, with graduated regulatory intervention if the requirement is not satisfied. The idea is that when equity is below 30%, the bank would not be allowed to make payouts to shareholders and if it goes below 20%, it would be required to recapitalize with new equity.

These crude numbers were not meant to be taken literally, only to suggest that equity levels must be *much higher* than current proposals. Stating specific figures, in the context of a non-

³⁰ See Admati and Hellwig (2013a, Ch. 2) and references (particularly in notes 20-27, pp. 242-243). Calomiris (2013) and Levitin (2014) take issue with the historical figures we state, but our references bear the point. Most important, our proposed leverage ratios *do not stand* on these historical figures, but are rather based on the economic arguments and observations of leverage in other, unregulated industries and the social cost of banks' leverage. As articulated in Admati and Hellwig (2013a, 2014), the economics of equity markets and of high leverage are not fundamentally different for banks even if some of banks' debt is useful for providing liquidity. Levitin (2014) also points out that the market does not demand 20% or 30% of small banks that can fail or of investment banks. But small banks have insured deposits that do not bear deadweight bankruptcy costs, and Lehman Brothers' creditors may have well believed that they would be paid in full, as were the creditors of Bear Stearns even though they were not explicitly insured. Quite clearly, the bankruptcy of Lehman Brothers had significant collateral damage. As Admati et al. (2013, 2014) explain, markets may allow leverage to get socially, and even privately, inefficiently high. Requiring investment banks, which can scale up risk and become systemic, to have 30% equity has social benefits with minimal relevant cost.

technical book, was meant to say only that we mean a radical reform of capital regulation, not a tweak. In the implementation of regulation, the devil and challenge are clearly in the details.

In fact, specifying such ratios is meaningless without discussing how the numerator and the denominator are determined. For example, Admati and Hellwig (2013a, Ch. 6), show that the ratio of equity to total assets for JPMorgan Chase at the end of 2011 was about 8% if assets were measured according to US accounting standards but only 4.5% by accounting standards used in most European countries. The difference is related to the treatment of derivatives.

How regulators treat assets that accounting convention permit leaving off reported balance sheet matters greatly, as do the numerous ways to value assets and liabilities. If, for example, liabilities can be marked to market, a distressed company whose debt becomes less valuable can suddenly appear to have more equity, even though its actual debt commitments are determined by the promised payment on the debt, and not by its market value.

At the same time, accounting-based book values, which often rely on historical transactions, tend to adjust slowly to new information, particularly about losses in the banks' loan book. Haldane (2011a) shows that book-based ratios did not distinguish between weak and stronger banks during the financial crisis, whereas market values provided more useful and timely information. Recognizing this problem, Admati and Hellwig (2013a, p. 190), state, “Regulators should consider other information [than book values], such as stock prices and other market indicators, in trying to maintain the safety and soundness of the financial system. Any concerns about the buildup of risks should lead to prudent steps, such as a ban on payouts to shareholders, to prevent the depletion of equity.”³¹

Unfortunately, there do not appear to be a well-calibrated mathematical models and reliable relevant data to tell us what capital requirements should be with great precision, particularly given the measurement issues. But, again, it does not follow that we should stay at a dangerous status quo. The current and proposed capital regulations are themselves arbitrary, and higher levels are easy to justify even if they are crude, on the basis of the forces discussed in Section 3

³¹ Calomiris (2013) criticizes Admati and Hellwig (2013a) for focusing on book equity and not on what he calls actual or true equity. This criticism misses this passage, which clearly recognizes the difficulty with using book values for regulation, as well as the nature of our crude numerical suggestions. Our recommendations for how to make the regulation work are based on the use of true loss-absorbing equity in the form of retained earnings and new share issuance. We did not go into technical details in a book for general audience, but our views are shared by many prominent academics in finance and banking; see, e.g., Admati et al. (2010).

and banks' ability to use their profits and to access the same markets that other companies routinely use in order to increase their equity.

The question of why 30% can be turned on its head to ask: *Why not?* In over 5 years of asking this question, I have not received any valid answer. After all, without regulation, healthy corporations often use their profits to fund investments. Shareholders are entitled to the profits as long as debts are paid, and stock prices reflect investors' expectation about these future profits. The fact that, with equity levels below 10% of their assets, banks routinely make payouts to their shareholders and deplete their equity reflects their incentives to remain highly leveraged, but there is no social cost if they are required to use it to reduce their debt or invest on behalf of their shareholders while making their debt safer.³²

Banks whose shares trade in the stock market can be asked to issue a specific amount of new equity. If a bank cannot raise equity *at any price*, there are substantial reasons to believe that it may be insolvent, too opaque or too weak to survive without subsidies. Such a market-based stress test would be more informative than those run by banks and regulators that are used to justify payouts. Insolvent banks are dysfunctional and harmful; they should not persist.

Another flaw in current capital regulations is their attempt to calibrate requirements using a highly complex and manipulable system of risk weights. As discussed in Admati and Hellwig (2013a, Ch. 11), this approach is based on the illusion of science but it ignores important risks and has exacerbated the fragility for the system. It also creates distortions and biases that tend to discourage traditional business lending in favor of other investments. If equity requirements were much higher relative to total assets, banks would have better incentives to measure and manage risk more effectively, and fine-tuning by regulators would be less important.

In addition, current regulations permit, and many have advocated, debt-like securities that convert to equity in some scenarios, so called contingent capital or Co-Cos, to be counted as regulatory capital instead of just equity.³³ As discussed in Admati and Hellwig (2013a, Ch. 11) and Admati et al. (2013, Sec. 8), these are untested and problematic substitutes. Although they appear to save on bankruptcy costs, it is interesting to note that such securities are not used much by non-banks to replace equity.

³² For a discussion of the “big picture,” see Admati et al. (2013, Sec. 7). A model of the economy that would capture the insight might provide an analytical justification for higher equity requirements.

³³ Some continue to advocate hybrid securities with a variety of design features. See, for example, Calomiris (2013).

Other approaches to regulation are based on resolution and bail-in mechanisms that essentially try to allow banks to default on some of their debts, imposing so-called haircuts on some creditors. These approaches raise many concerns, because by the time resolutions or bail-in processes are triggered, markets may well be destabilized by concerns about the trigger being reached and uncertainties about how the process would work. Requiring more equity is aimed at preventing distress and default. When losses occur, *someone* must bear them, and the shareholders who benefit from the upside are the most appropriate candidates. Because there is no legal commitment to pay shareholders, they bear losses automatically, without the need for cumbersome and possibly lengthy and costly legal procedures.³⁴ (See also Admati and Hellwig, 2014, Claims 19-20.)

A legitimate question is: why not even higher equity requirements? The recent Nobel Laureate Eugene Fama suggested in 2010 that requiring 50% equity would be appropriate.³⁵ For institutions that can easily scale up their risk and which are highly connected to other financial institutions, higher requirements may indeed be desirable. Such equity levels were common in the 19th century when most banks were private partnerships with unlimited owner liability and there was no safety net from central banks or governments (see Haldane, 2011b).

Whereas banks are no longer partnerships, most have access to well-functioning equity markets where investors can share their risk. Increasing the fraction of limited-liability equity is similar to increasing the total liability of the institution. If the largest institutions shrink as a result of having to use more equity because they are no longer able to rely on subsidized debt funding, smaller size is likely to be more appropriate and efficient for the economy (if not for those currently in control of the institution).

There have been increasing voices recently calling for narrow banking where deposits are backed by 100% reserve (or government bonds). Some also call for relying entirely on equity funding for all financial intermediation, thus abolishing the liquidity and maturity transformation functions of banks altogether.³⁶ However, the information frictions that have given rise to these functions are unlikely to eliminate the fragility altogether, and might be as difficult to administer

³⁴ Of course, the idea of co-cos and bail-in is to try to make the losses to creditors somehow automatic. But this means that the debt contracts have to specify precisely how the losses are determined. Invariably, and given the complexity of banks' liabilities and the opacity of their structures, this specification and the way it might play out especially in a crisis situation pose nontrivial issues of control around the time triggers might be reached.

³⁵ CNBC interview, May 2010.

³⁶ See, for example, Cochrane (2014), and Wolf (2014).

as less extreme proposals that require significantly more equity but continue to allow banks' liability to be more liquid and subject to fewer informational frictions than their assets.³⁷

Placing insured depositors into narrow bank, thus reducing the strong leverage ratchet effect they create when included in the funding mix of risk-taking institutions, is an attractive feature of narrow banking proposals. But narrow banks would likely constitute a very small part of the financial system, as seen by the migration of deposits to money market funds that pay higher interest. Unless they are regulated effectively, non-deposit-taking institutions can become subject to runs and be systemically harmful failures. The aftermath of the Lehman Brothers' bankruptcy, which was an investment bank, are clear examples.

Having no debt in financial intermediation would not necessarily eliminate fragility and possible harm to small investors. Investors want much of their money to earn some interest and yet to be liquid so they can get it fairly reliably when they need it. If banks must operate as open-end mutual funds with no debt, investors who need cash would return (or sell) their shares and get whatever the shares were worth. Determining share values would be easy if the assets held by a fund (of the fund itself) were traded daily on a public exchange, but otherwise the mutual fund could also suffer something similar to runs if shareholders fear significant asset price declines returned their shares and the fund had to sell assets in a hurry.³⁸

Trading in stock markets exposes individuals who need to trade for liquidity reasons to losses from better-informed investors. The opacity of assets consisting of many mortgages and other loans would give rise to incentives to those with access to better information to engage in such trading if the shares of banks with 100% equity were traded on stock exchanges. The information insensitivity of banks' debt is valuable for liquidity provision and the idea of requiring significant equity (such as 30% or even more) but not as much as 100% is intended to preserve this function and strike a balance between liquidity provision and the stability of the banking system.

Minimal capital requirements are only the first of three pillars of the Basel regulatory framework. Others include recommendations for supervisory assessment and increased

³⁷ The experience of the crisis suggests that if money market funds are part of the payment system and compete with deposits, they should be treated as banks and regulated accordingly.

³⁸ Gordon and Gandia (2013), for example, show that money market funds with floating value were also quite unstable at the same time that those that promised fixed net asset value were experiencing runs in 2008. Because Germany has had such experiences with open-end mutual funds for real estate investments, the German Federal Ministry of Finance proposed in July 2012 to outlaw open-end mutual funds for real estate investments.

transparency. Prior to the financial crisis, supervisors failed to question the numerous reckless practices of the banks. This failure played an important role in allowing the risks to build up in the system. As Admati and Hellwig (2013a, p. 190) state, “supervisors must keep in mind that their basic job is to protect the public. Concerns about the details of regulatory requirements, accounting rules, and other measurements must not divert attention away from this objective.”

In the discussion of banking regulation, politicians, regulators and even academics often seem concerned with the competitiveness of their national banks (see, for example, French et al. 2010; Levitin, 2014). These concerns are misplaced and must not interfere with the critical need to maintain financial stability. As was recently seen in Ireland, Iceland and Cyprus, successful banks can cause great harm to the economy. Allowing reckless banks to endanger the public just because other countries foolishly allow their banks to do so is bad policy.³⁹

A related concern is that tighter regulation would lead activities to migrate to the lightly regulated or unregulated shadow banking system of money market funds, hedge funds, and other institutions. This concern, however, only points to the importance of effective enforcement of regulations, which must be addressed in any case.

Indeed, the rise of the shadow banking system (improperly called because the relevant entities interact with regulated institutions and are visible to regulators), is evidence of the failure to enforce prior regulations.⁴⁰ Regulators failed to trace the significant exposures of regulated institutions to such entities as special purpose vehicles and money market funds. The risks taken by unregulated entities materialized and affected all institutions exactly when the entire system was already weak. Rather than give up essential regulation and suffer the consequences, the ever-present challenge of designing and enforcing effective regulations must be tackled; it can be met.

6. The Political Challenge

Beyond confusions or misunderstandings, a key reason for the repeated failure to implement effective regulation is the politics of banking. Banks are as fragile as they are because they want to be and because policymakers often see benefits to themselves (or to other causes) from

³⁹ Admati and Hellwig (2013, Ch. 12) show arguments about level playing field are invalid. Although interconnectedness can lead the failure of an institution in one country to affect institutions elsewhere, it was primarily national taxpayers who paid to bail out the institutions regulated in their nations. To avoid a race to the bottom in regulation, each regulator should focus on what is in their power to do for global financial stability that affects the citizens in their nation.

⁴⁰ As discussed in Admati and Hellwig (2013a, especially Ch. 10 and pp. 224-226) the problem of enforcement is important, but it arose with previous regulations and must be tackled anyway.

tolerating, and at times even encouraging, this fragility and have little to gain from challenging it. Willful blindness to the harm caused by a fragile system helps bankers and policymakers to overlook and ignore risks and to deflect criticism.⁴¹

All industries lobby for subsidies, but subsidies given through implicit guarantees are particularly easy for policymakers to provide because they do not appear on budgets and seem invisible or free. Threats from the industry that tough regulations would be harmful, fear by politicians that banks would not fund their favored causes, and narratives that financial crises are similar to natural disasters and that reform efforts are on track obscure the failures of all of those involved.⁴² Despite public anger about the financial crisis and the enormous harm it caused, the issues and the details of the regulations are not widely understood. This situation allows misguided policies to persist.

An example of the political economy of flawed claims was the debate in the mid-1990s regarding changes in U.S. accounting rules to require that an expense be deducted from earnings when executive stock options were awarded. Many flawed claims of the types we find in the debate on bank leverage, namely fallacies, irrelevant facts and myths, were made. Unfounded assertions that innovation would suffer worked, and the proposed accounting change did not take place. A decade later, after accounting scandals at Enron, WorldCom, and elsewhere, with different politics, the change was implemented and none of the dire predictions made in the lobbying materialized.⁴³ Just because people say something does not make it true.

The symbiotic relations between banks and governments, and the lack of sufficient public involvement, are a barrier to reform. This realization, and our further observation that many of those involved in the debate either do not fully understand the issues or have reasons to hold on to flawed narratives, has led Martin Hellwig and me to try to explain the issues at a level accessible to a broader public. For policymakers to engage on the more technical issues of how to design and implement the regulations, they must first engage on the issues. Our experiences in trying to engage in the policy debate since 2010 have been disappointing.

⁴¹ The concept and examples of willful blindness are discussed in detail in Heffernan (2012).

⁴² Admati and Hellwig (2011, 2013, Ch. 12) discuss the need to focus on financial stability and the harm that can be caused by conflicting policy objectives. See also “Foreign regulators say U.S. OCC should improve bank oversight,” Reuters, December 5, 2013, which criticizes the Office of the Comptroller of the Currency for being concerned with the competitiveness of U.S. banks rather than focusing primarily on controlling risk to the public. Levitin (2014) provides a useful analysis of the regulatory environment in the US and the issue problem of capture.

⁴³ For a discussion and some references see the concluding remarks of Admati et al. (2013).

In the preface of the paperback edition of Admati and Hellwig (2013a, p.x), we stated: “we wrote this book to inform and empower more people to participate in the debate. By explaining the issues in plain language, we wanted to create a larger constituency for effective financial reform. Enlarging this constituency is essential for bringing about change.” We continue to engage in this effort in the hope that, despite the political challenge, it might pay off at least in the longer run.⁴⁴

The economic forces discussed in Section 3 also appear to be misunderstood or underappreciated by academic economists, including those focusing on macroeconomics and banking. This situation is reflected in the false tradeoffs discussed in Section 4, which are used to justify the status quo and thus contribute to its persistence. Better understanding of the issues would, we hope, improve research and teaching and contribute to the design and implementation of better regulation.

7. Concluding Remarks

Banking is fraught with conflicts of interests. Those who take or allow excessive risks do not bear the sufficient responsibility for the risks or their consequences, and those who are harmed have too little control (or may not realize that they are harmed). The severity of the financial crisis of 2007-2009 is due to flawed and ineffective regulations, but those responsible for the failure have not learned all the lessons.

The Dodd Frank Act in the U.S. gives plenty of authority to regulators, but it does not guarantee that they will use the authority effectively or efficiently.⁴⁵ The situation is similar elsewhere. Stronger and better designed regulation to increase the use of equity in banking would bring large benefits. Moreover, the regulation of leverage is highly cost-effective relative to

⁴⁴ The politics of banking and the way regulation is organized are different in different countries, but the incentives to choose excessive leverage are pervasive. Even without the problem of capture, regulation can fail if the relevant cost and benefit are misunderstood. Admati and Hellwig (2013a) and the books by Sheila Bair, Jeff Connaughton and Neil Barofsky that Levitin (2014) also reviews can help create public pressure on politicians, but as Levitin (2014) notes, regulations are not democratically responsive in part because of the lack of familiarity with the issues on the public’s part. In Admati and Hellwig (2013a, b, 2014) and elsewhere, we try to fill this gap by helping more people see through the narratives of bankers and policymakers, thus creating more voices for reform. This effort helps address the challenge of financial politics and is thus not “beside the point,” as Levitin (2014, 2067) seems to imply. (See also Admati (2014a); Admati and Hellwig, 2014, Claim 28).

⁴⁵ For example, under Title I of the Act, regulators must take action to reduce the risk to the public from institutions whose bankruptcy would be harmful. Yet, counterproductively, the Federal Reserve repeatedly allows most of them to make payouts to their shareholders, repeating its pre-crisis mistakes. The “stress tests” used to justify this action are not reassuring. See Admati and Hellwig (2013a, Ch. 11) for further discussion.

alternatives and might reduce the need for more costly interventions. Yet, the opportunity for major reform has been missed so far.

Related issues that would help make capital regulation easier to implement and contribute to financial stability include Improving disclosures, especially in derivative markets, to reduce the opacity of the system (see, for example, Eisinger and Partnoy, 2013), Requiring that most derivatives trading should be done in exchanges with publicly observable prices,⁴⁶ Changing the tax code to avoid penalizing equity funding, and Re-examining the wide exemptions to derivatives and repos in the bankruptcy code (see, for example Roe (2011), and Skeel and Jackson, 2012).

Unlike unsafe cars, airplanes or bridges, where the harm is visible and accountability can often be established, the harm from excessive risk in banking is abstract, and accountability for taking or tolerating excessive risk is limited. Yet the harm from banking can take down entire economies and can have lasting negative impact; and markets distorted by externalities, outsized subsidies and governance failures do not produce efficient outcomes. The case for better regulation of leverage in banking is strong. Creating sufficient *will* on the part of policymakers to engage on the issues and to take action, however, remains challenging.⁴⁷

⁴⁶ The London Whale episode showed that risks taken out of sight of management and regulators can be substantial and that banks don't seem to have enough incentives to manage the risks. Clearing houses can allow great concentration of risk and themselves become highly systemic.

⁴⁷ Regulators in most nations have sufficient legal authority to implement better regulations. Some other policy issues require changes to the law, e.g., to tax or bankruptcy laws and require international coordination, particularly in the context of cross border resolution.

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