

Comments on

Enhanced prudential standards under section 165, and early remediation requirements under section 166 of the Dodd-Frank Act

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Introduction

Our comments will focus primarily on capital requirements. While we believe that liquidity issues are a legitimate concern, liquidity problems often arise, and are most severe and costly, in distress situations when there are concerns about the solvency of a bank or financial entity. Solvency concerns, in turn, are best addressed by reducing excessive leverage and risk in the system. For a variety of reasons discussed below and in attached research, private actors in the banking system have strong incentives to choose excessive leverage that is not only unnecessary, but is harmful to the ability of the system to serve the economy. Since addressing the problem of excessive leverage is in our view the most important and critical concern, we begin by discussing capital requirements and related issues.

Measures of regulatory capital based on accounting numbers, and the use of risk weights to calculate capital ratios, can both mask important systemic risks. Regulatory capital ratios were not informative during the crisis. What matters is meaningful loss absorbency. It is also important to note that critical sources of systemic risk that cannot be easily seen from balance sheets and from regulatory capital ratios are those associated with the interconnectedness of the system and, more specifically, with counterparty risks. We encourage the Fed to pay close attention to this in stress testing, and we view single party exposure limits as potentially useful tools.

After focusing primarily on capital requirements, we will offer at the end of this note some comments on liquidity, stress tests, and position limits. We also attach excerpts from two papers we have written on the subject of capital regulation. These papers, and additional materials, including academic and policy papers and commentary, can be found at <http://www.gsb.stanford.edu/news/research/Admati.etal.html> .

The critical role of capital regulation, and relevant costs and benefits

Our financial system has become global and greatly interconnected. This means that the distress and even worse the actual default or “failure” of one institution can have severe negative effects on many others through various contagion mechanisms. Some of these are direct effects, which are transmitted through contractual claims to counterparties. Others are less direct but can be just as significant, if not more so. For example, because institutions often make similar

investments, a type of “information contagion” can occur when observed distress in one institution leads to concerns about the decline of asset values in others, and to possible runs and liquidity problems. At the same time “fire sales” can occur in distressed situations when deleveraging multiples are high. This can create downward pressure on prices, and these externalities in asset markets can result in a “deleveraging spiral.” All of these systemic risks harm financial stability and can ultimately interfere with the ability of the financial system to support the economy. The biggest credit crunch in recent memory was due to the chain reactions that followed the Lehman bankruptcy in fall 2008. We have seen that these risks are not hypothetical and their consequences can be devastating.

The key to reducing fragility in the financial system is to reduce the likelihood of distress, and the risk of insolvency and default of systemically important financial institutions. High levels of leverage are fundamental to all the mechanisms mentioned above that create fragility. The capital regulations in place before the crisis, which were based on Basel II, allowed the system to become highly leverage and very fragile and proved to be flawed and insufficient. Part of the failure stemmed from requirements not being enforced effectively throughout the system, which allowed leverage and risk to “hide” in off-balance-sheet entities, such as conduits and SIVs. Entities outside the banking system (such as AIG) were used to push risks off the regulated institutions’ balance sheets – only to come back in the form of counterparty credit risk that was correlated with the underlying risks that were being “insured.” Another significant problem stemmed from unrecognized “tail risk” that led to AAA securities being treated as totally safe when in fact they were not.

The system that was in place to make sure there was sufficient loss-absorbing capacity clearly failed to protect the system and massive intervention was necessary. The models that were used to assess value at risk were fundamentally flawed. In addition, the models that had been used by regulators to justify any of the specific numbers in the regulations were shown to be ill suited for the purpose. Regulatory Tier I and Tier II capital buffers that were not equity did not absorb any losses and proved ineffective.

Basel III recommends a modest increase in capital requirements. While strengthening some definitions and rules, Basel III retains the approach of calibrating capital requirements to risk-weighted assets, with 4.5 % of risk-weighted assets (plus a 2.5% capital buffer) for common equity, 6% for Tier 1 capital and 10% for Tier 1 plus Tier 2 capital.

Bankers claim that the proposed increases in capital requirements are very substantial or even harsh, presenting them in terms of multiples of previous requirements, and arguing that anything higher would have negative consequences. However, 4.5% or even 7% of risk-weighted assets is still very small. The fact that this is a twice or three times the previous requirement for common equity just indicates how low the previous requirement was. As a percentage of total assets, the numbers are even lower. The problem with risk weights should be abundantly clear by now. In the crisis, and even since, the realization of many risks that had been given zero weight in assessing risk weighted assets caused considerable distress and insolvencies.

The new leverage ratio that is introduced in Basel III seeks to reduce reliance on risk weights that are misleading measures of the true risks and that can be manipulated. It requires that equity be at least 3% of total assets. This is extremely low, allowing assets to be more than 30 times the book value of equity. For banks such as UBS, with equity equal to 2.5% of total assets, this leverage ratio would not make much of a difference, and we have seen that this 2.5% of total assets did not provide adequate protection in the crisis.

The fact that Basel III only makes relatively small changes to Basel II and maintains the same approach is of great concern, since systemic risks and system fragility have not been reduced significantly through any other means. We still have several institutions whose failure would be too damaging to be imaginable (the so-called “too big to fail” or “too interconnected to fail” institutions, now called Systemically Important Financial Institutions). If anything, the too-big-to-fail problem seems to have become more severe with the consolidation of some of the large banking institutions that occurred during the crisis. The implicit subsidies created by the implicit, too-big-to-fail guarantees are still present and still lead to enormous moral hazard problems. They distort pricing and incentives and increase the risk to the system. All of this has serious adverse consequences for the entire economy.

Clearly, the issue of what capital requirements are appropriate depends on an understanding of the social costs and benefits of reducing leverage, which includes understanding adjustment costs and implementation issues.

We have carefully examined claims that have been made that there are costs to significant increases in capital requirements. In two papers that are attached, we show that the arguments made that equity is expensive are either flawed or based on confusions between private and social costs. This means that the view that we must “economize” on bank equity and accept a

fragile system is entirely false. When systemic risks and implicit government subsidies create externalities and distortions, it is actually the *excessive leverage* of financial institutions that is “expensive” for the economy, even if debt seems “cheap” and equity seems “expensive” to decision makers in banks. Reducing the leverage of systemic institutions from levels currently discussed to significantly lower levels, *involving even 20% or more equity as fraction of total assets*, will produce significant social benefits at little (if any) social cost. We have seen no well-grounded model or empirical evidence that argues against this.

In the paper “Fallacies, Irrelevant Facts and Myths in the Discussion of Capital Regulation: Why Bank Equity is *Not* Expensive,” (last draft March, 2011), we have undertaken an extensive examination of the various arguments that are made to justify the view that equity is “expensive” in any relevant sense in the context of the regulation. We show that the only reason that the funding costs of systemic institutions might increase with higher capital requirements is the loss of subsidies, which would indicate that current funding costs are artificially low and distorted by subsidies, particularly implicit guarantees but also including the tax subsidies to debt funding.

In “Debt Overhang and Capital Regulation,” we consider more closely claims that shareholders would be “diluted” if forced to reduce leverage. We show that while there can be a dilution effect as leverage is reduced, it is critically important to understand its source. The source is due to what has come to be called “debt-overhang.” As a result of debt overhang, leverage becomes “addictive” through a ratchet effect. Significant inefficiencies can result, particularly in the context of the systemic risk externalities associated with high leverage. Regulation is essential.

The debt overhang effect comes about because, in a highly-leveraged financial institution, much of the downside risk is borne by institution’s creditors and by the FDIC and taxpayers, in those cases where creditors are explicitly or implicitly insured. While other parties are exposed to substantial downside risks, the shareholders and managers of the financial institution retain all the benefits of the upside. The dilution of the shareholders’ and managers’ interests that occurs when leverage is reduced is the direct result of transferring some of the downside risk away from creditors – especially government and the taxpayers where it does not belong – and onto the shareholders and managers where it more properly belongs. In other words, any dilution of existing equity when leverage is reduced comes about *because the*

financial institutions have already placed excessive risk on creditors and taxpayers. Although it is in managers' narrow interest to resist leverage reduction, making sure that adequate equity buffers are established is essential for the system. This is true even though it is not something that incumbent managers would choose to do on their own and will in fact actively resist. The debt overhang effect creates significant social inefficiencies that must be corrected through regulation.

This effect holds even without any subsidies given to debt funding, but it is greatly exacerbated by their presence. Indeed, the cost of borrowing for any highly leveraged corporation would rise or restrictive covenants would be put in place if creditors had to bear the costs and inefficiencies of distress and bankruptcy. This does not seem to be the case for banks, and it is regulators that are charged with making sure that the public is protected from the costs and inefficiencies of high leverage.

In both papers we emphasize that the easiest way to build up capital is by retention of earnings. We consider the recent decision by the Federal Reserve to allow most large U.S. banks to make payouts to shareholders to be misguided and a move in the wrong direction. In our paper on debt overhang we discuss ways in which institutions might choose to reduce leverage. Based on our analysis and considering the current situation, we conclude that preventing cash payouts to shareholders and managers is one of the best ways to facilitate efficient transitions to a much less fragile system.

We will not comment in detail on liquidity regulation except to note that the likelihood of institutions running into liquidity problems would be greatly reduced with more equity funding. It is concern with insolvency and default that creates or exacerbates liquidity problems, and it is *insolvency* (or suspected insolvency) that makes those problems harder and costlier to solve. The lender-of-last-resort function of central banks was specifically designed to help alleviate pure liquidity problems in the absence of solvency concerns.

Chairman Bernanke told the Financial Crisis Inquiry Committee that "If the crisis has a single lesson, it is that the too-big-to-fail problem must be solved." He also emphasized in a recent speech that the vulnerabilities in the system, including high leverage and a lack of effective supervision of shadow market institutions, were critical reasons for the crisis.¹ It is clear

¹ See speech before Russel Sage Foundation and the Century Foundation, April 16, 2012, available at <http://www.federalreserve.gov/newsevents/speech/bernanke20120413a.htm>

that, despite the resolution authority given FDIC under Title II of Dodd Frank Act, financial markets do not view current regulatory effort as reducing significantly the “too big to fail” problem. Capital requirements can play a critical role in reducing this problem.

It is also critical that capital requirements be designed to give the FDIC the best chance of meeting its mandate to resolve systemically important financial institutions without using taxpayer money. To this end, there must be sufficient loss-absorbing funding for these institutions. Equity is the best source of such funding. In addition to earnings retention, publicly held banks have access to markets where they can issue new shares.

What is the “optimal” level of required capital?

The discussion above suggests that there are large social benefits to greatly reducing the leverage of important financial institutions. We have not seen any valid arguments or compelling evidence suggesting that there are *social* costs to offset the gains that come with significant increases in capital requirements relative to existing or proposed levels.

We are aware of the models that were used to justify the Basel III “numbers,” but we find that these are weak and inadequate. For example, they do not capture properly the negative externalities and the distortions created by high leverage. At the same time they make assumptions that clearly exaggerate the social costs of reducing leverage. For example, one of the models that have been used is based on the assumption that higher capital requirements lower the ability of banks to provide deposit-type liabilities to the household sector.² Since in this model deposits enter directly into the utility function of households, this creates a purported social cost of higher requirements. However, since deposits are only a fraction of bank liabilities and there are many ways banks could meet higher capital requirements without changing outstanding deposits, this assumption, which is critical to the model, is dubious at best. At the same time, this model assumes that there are no systemic risks and no costs to the economy created by fragility in the financial sector, costs of the sort we witnessed in the last crisis.

² See Skander J. Van den Heuvel, The Welfare Cost of Bank Capital Requirements. *Journal of Monetary Economics*, march, 2008

One of the studies attempting to calibrate the precise Basel III requirements states:³ “The regulatory minimum is the amount of capital needed to be regarded as a viable going concern by creditors and counterparties.” By this criterion, capital regulation would not be necessary: A bank that fails this criterion would not be viable because creditors and counterparties would refuse to deal with it. Good regulation should focus on the negative impact that undercapitalized banks impose on the rest of the financial system and on society when they are distressed. It is this external or “polluting” impact that the regulation should seek to limit.

The challenges involved in developing models to assess the costs and benefits of capital requirements lie in the extraordinary complexity of the financial system and the many ways it can adversely affect the rest of the economy. By necessity models must be simplifications, but a good model must have at least the following two characteristics:

- It must capture those risks and other effects that are of first order importance.
- It should not be driven by assumptions that are not at all in accord with the actual world in which we live and do not pass the common sense “smell test.”

The models that are used to support the high leverage levels that are permitted under Basel III fail to meet one or both of these criteria.

Basel specifies only *minimum* requirements. If these numbers are deemed too low, any national regulator can choose to set higher requirements. While banks often bring up “level playing field” arguments, and while it is desirable for all regulators to set the same (high) requirements, the failure of others to implement the regulation or to go beyond the Basel minimum should not alter the objective of regulators in the US. *It is not a national priority that US banks are successful in global competition if this exposes US taxpayers to excessive risks and costs.*⁴ Regulators in UK, Sweden, Switzerland and Spain, and elsewhere might in fact follow the US lead if it sets higher and better designed capital requirements.

³ Basel Committee on Banking Supervision, (2010), “Calibrating regulatory minimum capital requirements and capital buffers: a top-down approach,” Discussion Paper 180, <http://www.bis.org/publ/bcbs180.pdf>

⁴ See “Global Level Playing Field Arguments are Invalid” by Anat Admati and Martin Hellwig, Financial Times, June 3, 2011, available here <http://www.gsb.stanford.edu/news/research/admati-battle-begun.html>

Risk calibration and the flaws in the risk weights approach

Basing capital requirements on risk weights might seem like a sensible way to calibrate requirements to the risk that different investments bring to the banks' balance sheet. However, the risk weight system as implemented in Basel II, and which is essentially maintained as an approach in Basel III, is inherently flawed. It creates distortions, it can exacerbate systemic risk, and it is far too easily manipulated.⁵

We briefly summarize the problems. First, when regulation is based on risk weights, banks often attempt to move some of the major risks off their books. Interest rate swaps, currency swaps, credit default swaps – all can be used to shift the risks from certain positions to third parties. Such developments increase the interconnectedness of the system and raise the danger of contagion effects. The effectiveness of the hedges depends on the counterparties' ability to pay. If, following a shock, the counterparties' ability to pay is impaired, the risk may come right back, now in the form of a counterparty credit risk whose incidence is driven by the very risk that was to be hedged.⁶ Prior to the recent crisis, banks tried to hedge the credit risk of mortgage-backed securities through credit default swaps with AIG or with monoline insurers. The bailout of AIG ended up covering for the downside counterparty risk that banks took in those transactions.

Second, the risk weighting system gives incentives to banks to hide both risk and leverage by heavily favoring investments that have relatively low risk weights but are actually exposed to underlying risks that create a risk premium and “enhance” yield and return. A clear recent example can be seen in investments made in AAA securities or in sovereign debt. Many banks ran into trouble in the crisis, and more recently Dexia had to be bailed out even while presenting high regulatory capital. This is because many of the supposedly “safe” but “enhanced” return assets ended up leading to significant losses.

⁵ For a more detailed discussion on the issues see the paper “Capital Regulation after the Crisis: Business as Usual?” by Martin Hellwig, available at <http://www.ucl.ac.uk/economics/seminarpapers/november10/dept03nov10.pdf>

⁶ An example is provided by Thailand in the crisis of 1997. In the run-up to the crisis, much lending, from foreign banks to Thai banks and from Thai banks to Thai firms, had taken place in dollar terms in order to eliminate exchange rate risks for lenders. After the devaluation of the Baht, however, Thai firms could not pay their dollar debts to Thai banks, and, with their debtors in default, Thai banks could not pay their dollar debts to foreign banks.

Third, the system of risk weights can lead to distortions. We have seen, both before the financial crisis and currently in Europe, that banks may find traditional business lending less attractive than trading securities and other types of investments. To the extent that this is driven by the rather arbitrary risk weights assigned to various investments and does not reflect the underlying economic and social value associated with them, this results in a clear distortion and social loss.

Conflicted incentives and the gap between private and social considerations

Bank managers have incentives to increase leverage and risks because debt funding is subsidized relative to equity, and because their compensation, which is either directly or indirectly tie to ROE (return on equity), often encourages leverage and risk. Their perspective with respect to leverage and risk is also colored by debt overhang, as explained above. Since the choices made by market participants do not fully account for the systemic effects of their actions, these choices can be socially inefficient. Capital regulation is of critical importance in correcting the resulting distortions.

Quite unfortunately, the tax code also encourages the use of debt funding over equity. Since leverage exacerbates systemic risk and thus creates a negative externality, this is a perverse effect. The tax treatment of debt relative to equity creates a strong divergence between banks' preferences regarding their funding and what is good for the public. This presents even more of a challenge for banking regulation and supervision. It would be highly desirable that tax codes change to equalize the treatment of equity relative to debt funding.

We realize that tax policy is not controlled by the Federal Reserve. However, it would be useful for the Fed to clarify this issue and to call on policy makers to change the distortion associated with subsidizing debt funding through tax policy. This issue is broader than banking, but because leverage is so high and so damaging in banking, this tax distortion is particularly severe in this sector. It is, however, critical to recognize that, other than the distortions that they create, taxes are not *per se* a social cost. Thus, if even banks were to pay more taxes as a result of increased capital requirements, this does not constitute a social cost of the requirement.

As suggested above, compensation structures in banking, which often depend on short-term performance and on measures that encourage risk taking, are an issue. The incentives that such compensation structures create can exacerbate systemic risk. It would be desirable that at

least some cash payments in banking are deferred and can be clawed back if losses that harm the bank and the economy occur.

Comments on stress testing

The Fed relies on periodic stress tests to determine whether banks are sufficiently well capitalized and whether they should be authorized to make distributions to shareholders in the form of dividends and share buybacks. While stress tests can provide useful information, we urge extreme caution in trusting the results and in allowing payouts to equity in the near future. Projections of credit risks and future losses under certain scenarios invariably involve the use of models and assumptions. We have seen very clearly the limitations of models and the possibility that assumptions prove wrong when it is too late. The regulatory capital of many institutions seemed adequate around the time of the financial crisis. As mentioned above, even Dexia, shortly before it had to be bailed out and nationalized last summer, seemed to have had substantial regulatory capital.

We would also like to flag the differences between netting conventions under GAAP in the US and under International Financial Reporting Standards (IFRS). Stress testing and single counterparty regulation might be useful in addressing the critical issue of counterparty risk. It is important that any scenario analysis or stress test take seriously the actual exposure to counterparty risks. Even if netting is allowed under GAAP, if a counterparty default does not void a liability for a covered entity, this can increase the risk to the entity and to the system.

As argued above, there are no social costs associated with additional bank equity that are anywhere near in magnitude to the social benefits of significantly reducing leverage. It is therefore ill advised to deplete capital on the basis of stress tests at a time when so much uncertainty looms in Europe and when many uncertainties remain with respect to existing loans and other assets held by financial institutions. The risk and cost to financial stability is significant, and there is no social benefit associated with the depletion of capital, only costs. Instead of making equity payouts, banks could either make prudent investments with the earnings or reduce their debt.

Comments on single counterparty exposure limits

The dangerous interconnectedness in the financial system manifests itself in so-called counterparty risks, which leads to the contagion that causes cascading effects from the distress or default of one entity to the entire system. It would be alarming if the default of any counterparty could wipe out 10% of the loss absorbing capital of a systemically important financial institution. This is particularly so if such a default might be correlated with the distress of others in the system, such as in a financial crisis.

We note that the exposure limit is specified as a ratio of total exposure relative to regulatory capital. If covered companies had more equity, and thus more regulatory capital, this requirement would be less onerous. Even at current levels of capital, however, it is hard to imagine a legitimate reason, from a regulatory perspective, for a systemically important institution to have such exposure to unaffiliated entities that 10% of its capital would be put at risk. This exposes the entity and the system to unnecessary risk. To the extent that banks find the single counterparty position limit onerous, this should only alarm us with respect to the great interconnectedness of the system.⁷

Comments on liquidity requirements

With respect to liquidity regulation, we wish to offer the following comments. First “liquidity” is a property that pertains to certain asset markets and to certain assets at certain times.⁸ It is not a fixed property and it may change quickly. As we saw in August 2007, certain markets and assets can be highly liquid one day and highly illiquid the next. This variability over time poses a challenge for any system of liquidity management, whether from the perspective of the bank or from the perspective of the regulator.

Some assets are liquid even though they have long economic lifetimes, because there is a well functioning market for them. This would typically be true of a Treasury bond or many of the stocks traded on exchanges. As for private debt, we have seen that, for some debt-like securities, markets can turn from being highly liquid to being completely illiquid in a matter of days if not hours. Similar issues arise with respect to short-term debt, including repo and asset-backed

⁷ The comment letter by the Clearing House submitted for this regulation on April 27, 2012 actually provides evidence of dangerously large exposures that should be a concern.

⁸ Hicks (1935): An asset is liquid if there is little uncertainty as to its being realizable at short notice without loss.

securities. The debtor's ability to repay this debt may change from one day to the next, due to a run by (other) creditors or to a freeze in the markets for the assets that the debtor holds.

Given the fluidity of "liquidity" as a property of assets, any attempt to regulate liquidity coverage is fraught with a risk that liquidity may disappear precisely when it is needed. This could be avoided if the regulation restricted banks to holding cash and short-term treasuries only for liquidity coverage.⁹

Whereas liquidity requirements can affect the assets the banks hold, capital requirements do not. They only affect the way in which banks fund their investments. If banks are required to fund with more equity, they have better loss absorbency and better incentives to avoid unconscionable risks. If banks have more funding by equity, market participants will also be less worried about the possibility of insolvency and will be more willing to provide banks with liquidity if needed. In a very real sense, therefore, effective capital requirements contribute to improving the banks' liquidity.

In summary, effective, well designed capital requirements provide a powerful tool, and are the most cost-effective approach, for creating a healthier, safer, and less distorted banking system.

⁹ Holding these assets could be costly to extent that the amount paid for the liquidity provided by these assets is excessive to the need.

Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is *Not* Expensive

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Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is *Not* Expensive

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Abstract

We examine the pervasive view that “equity is expensive,” which leads to claims that high capital requirements are costly and would affect credit markets adversely. We find that arguments made to support this view are either fallacious, irrelevant, or very weak. For example, the return on equity contains a risk premium that *must* go down if banks have more equity. It is thus incorrect to assume that the required return on equity remains fixed as capital requirements increase. It is also incorrect to translate higher taxes paid by banks to a *social* cost. Policies that subsidize debt and indirectly penalize equity through taxes and implicit guarantees are distortive. Any desirable public subsidies to banks’ activities should be given directly and not in ways that encourage leverage. And while debt’s informational insensitivity may provide valuable liquidity, increased capital (and reduced leverage) can *enhance* this benefit. Finally, suggestions that high leverage serves a necessary disciplining role are based on inadequate theory lacking empirical support.

We conclude that bank equity is *not* socially expensive, and that high leverage is not necessary for banks to perform *all* their socially valuable functions, including lending, deposit-taking and issuing money-like securities. To the contrary, better capitalized banks suffer fewer distortions in lending decisions and would perform better. The fact that banks choose high leverage does not imply that this is socially optimal, and, except for government subsidies and viewed from an *ex ante* perspective, high leverage may not even be privately optimal for banks.

Setting equity requirements significantly higher than the levels currently proposed would entail large social benefits and minimal, if any, social costs. Approaches based on equity dominate alternatives, including contingent capital. To achieve better capitalization quickly and efficiently and prevent disruption to lending, regulators must actively control equity payouts and issuance. If remaining challenges are addressed, capital regulation can be a powerful tool for enhancing the role of banks in the economy.

Keywords: capital regulation, financial institutions, capital structure, “too big to fail,” systemic risk, bank equity, contingent capital, Basel, market discipline.

JEL classifications: G21, G28, G32, G38, H81, K23.

Executive Summary

There is a pervasive sense in discussions of bank capital regulation that “equity is expensive” and that higher equity requirements, while beneficial, also entail a significant cost. The arguments we examine, which represent those most often made in this context, are fallacious, irrelevant, or very weak. Our analysis leads us to conclude that requiring that banking institutions are funded with *significantly* more equity entails large social benefits and minimal, if any, social costs. We list below some of the arguments made against high equity requirements and explain why they are either incorrect or unsupported.

Some common arguments made against significantly increasing equity requirements:

- *Increased equity requirements would force banks to “set aside” or “hold in reserve” funds that can otherwise be used for lending.* This argument confuses capital requirements with liquidity or reserve requirements. Capital requirements refer to how banks are funded and in particular the mix between debt and equity on the balance sheet of the banks. There is no sense in which capital is “set aside.” Liquidity or reserve requirements relate to the *type* of assets and asset mix banks must hold. Since they address different sides of the balance sheet, there is no immediate relation between liquidity requirements and capital requirements.
- *Increased equity requirements would increase banks’ funding costs because equity requires a higher return than debt.* This argument is fallacious, because the required return on equity, which includes a risk premium, must decline when more equity is used. Any argument or analysis that holds fixed the required return on equity when evaluating changes in equity capital requirements is fundamentally flawed.
- *Increased equity requirements would lower the banks’ Return on Equity (ROE), and this means a loss in value.* This argument is also fallacious. The expected ROE of a bank increases with leverage and would thus indeed decline if leverage is reduced. This change only compensates for the change in the risk borne by equity holders and does not mean that shareholder value is lost or gained, except possibly if increased leverage brings more government subsidies.
- *Increased equity requirements would increase banks’ funding costs because banks would not be able to borrow at the favorable rates created by tax shields and other subsidies.* It is true that, through taxes and underpriced explicit or implicit guarantees, debt financing is subsidized and equity financing is effectively penalized. Policies that encourage high leverage are distorting and paradoxical, because high leverage is a source of systemic risk. The subsidies come from public funds. If some activities performed by banks are worthy of public support, subsidies should be given in ways that do not lead to excessive leverage.
- *Increased equity requirements would be costly since debt is necessary for providing “market discipline” to bank managers.* While there are theoretical models that show that debt can sometimes play a disciplining role, arguments against increasing equity requirements that are

based on this notion are very weak. First, high leverage actually *creates* many frictions. In particular, it creates incentives for banks to take excessive risk. Any purported benefits produced by debt in disciplining managers must be measured against frictions created by debt. Second, the notion that debt plays a disciplining role is contradicted by the events of the last decade, which include both a dramatic increase in bank leverage (and risk) and the financial crisis itself. There is little or no evidence that banks' debt holders provided any significant discipline during this period. Third, many models that are designed to attribute to debt a positive disciplining role completely ignore the potential disciplining role that can be played by equity or through alternative governance mechanisms. Fourth, the supposed discipline provided by debt generally relies upon a fragile capital structure funded by short term debt that must be frequently renewed. Whereas capital regulation is intended to reduce fragility, fragility is a necessary by-product of the purported disciplining mechanism. Finally, one must ask if there are no less costly ways to solve governance problems.

- *Increased equity requirements would force or cause banks to cut back on lending and/or other socially valuable activities.* First, higher equity capital requirements do not mechanically limit banks' activities, including lending, deposits taking and the issuance of liquid money-like, informationally-insensitive securities. Banks can maintain all their existing assets and liabilities and reduce leverage through equity issuance and the expansion of their balance sheets. To the extent that equity issuance improves the position of existing creditors and/or it may be interpreted as a negative signal on the bank's health, banks might privately prefer to pass up lending opportunities if they must fund them with equity. The "debt overhang" problem can be alleviated if regulators require undercapitalized banks to recapitalize quickly by restricting equity payouts and mandating new equity issuance. Once better capitalized, banks would make better lending and investment decisions and issuance costs would be reduced.
- *The fact that banks tend to fund themselves primarily with debt and have high levels of leverage implies that this is the optimal way to fund bank activities.* It does not follow that just because financial institutions choose high leverage, this form of financing is privately or socially optimal. Instead, this observed behavior is the result of factors unrelated to social concerns, such as tax incentives and other subsidies, and to frictions associated with conflicts of interests and inability to commit in advance to certain investment and financing decisions.
- *High equity requirements will drive banking activities from regulated to unregulated sectors and would thus be ineffective or even harmful.* First, in the run-up to the crisis, many activities and entities in the so-called "shadow banking system" relied on credit backstops and other commitments made by *regulated* entities. Thus, these activities and entities were, and continue to be, within regulators' reach. Second, defining on a continual basis the entities and activities that should be regulated will always be a challenge. It is far from clear that, given the tools already, and potentially, available to lawmakers and regulators, the challenge of effective capital regulation cannot be met.

Recommendations

- *Since, as we have argued, bank equity is not expensive, regulators should use equity requirements as a powerful, effective, and flexible tool with which to maintain the health and stability of the financial system.* High leverage is *not* required in order for banks to perform all their socially valuable functions, such as providing credit and creating liquid securities. Not only does high leverage create fragility and systemic risk, it is in fact leads to distorted lending decisions.
- *Regulators should use restrictions on equity payouts and mandate equity issuance to help banks, and to assure that they maintain adequate and high equity capitalization.* If this presents a governance problem, such problems can be solved with the help of regulators. Prohibiting, for a period of time and for all banks, any dividends and other equity payouts, and possibly imposing equity issuance on a pre-specified schedule, is an efficient way to help banks build their equity capital quickly and efficiently without leading to the contraction of credit. If done under the force of regulation, withholding payouts or issuing additional equity would not lead to negative inferences about the health of any particular bank. It would also alleviate the debt overhang distortion that might lead banks to reduce lending.
- *If certain activities of the banking sector are deemed to require subsidies, then subsidies should be given in ways that alleviate market frictions and not through a system that encourages high leverage.* Tax shields and implicit government guarantees subsidize debt finance and thus create a wedge between the private incentives of the banks and social concerns. This policy is undesirable given the systemic risk and additional frictions brought about by high leverage.
- *Better resolution procedures for distressed financial institutions, while necessary, should not be viewed as alternatives to having significantly better capitalized banks.* Since such procedures are not likely to eliminate the cost of financial distress, reducing the likelihood that a resolution procedure is needed is clearly important, and higher equity requirements are the most effective way to do so.
- *Higher equity requirements are superior to attempts to fund bailouts through a “bailout fund” supported by bank taxes.* While charging banks upfront could potentially remove the subsidy associated with bailouts, failure to properly adjust the tax to the risk of individual banks could create significant distortions, particularly excessive risk taking. Equity requirements, as a form of self-insurance where the bank backs up its liabilities more directly, would be priced by financial markets and be more effective in reducing the need for government intervention.
- *Approaches based on equity are superior to those that rely on non-equity securities such as long term debt or contingent capital to be considered part of capital regulation.* Contingent capital, and related “bail-in” proposals, where debt is converted to equity when a trigger event occurs, are complicated to design and present many implementation issues. There is no compelling reason that the “debt-like” feature of contingent capital has social value. Simple approaches based on equity are more effective and would provide more reliable cushions.

Table 2: Summary of Reasons and Critiques

<p>“Reasons” given for why increased equity capital requirements would be costly</p>	<p>Is the statement true?</p>	<p>Would this “reason” give incentives to bank managers to object to increased capital requirements?</p>	<p>Would this “reason” give incentives to bank shareholders to object to increased capital requirements?</p>	<p><u>From a public policy perspective</u>, is this a legitimate reason for not significantly increasing capital requirements?</p>
<p>Increased equity requirements would prevent banks from operating at the optimal scale.</p>	<p>No. Equity can be added to the balance sheet without changing the bank’s core business.</p>	<p>It should not, because it is false.</p>	<p>It should not, because it is false.</p>	<p>No! It is false.</p>
<p>Increased equity requirements reduce the average ROE (Return on Equity) for banks.</p>	<p>Generally Yes.</p>	<p>Yes if compensation depends on ROE.</p>	<p>It should not, because risk is reduced and the value of equity would not change.</p>	<p>No! This is irrelevant to value creation.</p>
<p>Increased equity requirements would increase banks’ total funding costs, because banks would be forced to use more equity, which has a higher required rate of return.</p>	<p>No. Changing the capital structure changes how risk is distributed but not the overall cost of funding.</p>	<p>It should not, because it is false.</p>	<p>It should not, because it is false.</p>	<p>No! It is false!</p>
<p>Increased equity requirements would decrease the size of the interest tax shields banks can obtain through debt financing.</p>	<p>Yes.</p>	<p>Perhaps, but this depends on their compensation and preferences.</p>	<p>Yes, because shareholders benefit from subsidies.</p>	<p>No! Tax shields subsidize the use of debt, but it makes no sense to encourage leverage since it generates negative externalities and distortions.</p>
<p>Increased equity requirements reduce banks’ ability to use cheap debt financing that is subsidized by implicit government guarantees.</p>	<p>Yes.</p>	<p>Yes if compensation is related to equity value.</p>	<p>Yes, because shareholders benefit from subsidies.</p>	<p>No! Guarantees subsidize the use of debt, but it makes no sense to encourage leverage since it generates negative externalities and distortions.</p>
<p>Increased equity requirements would reduce managerial discipline and thus interfere with effective governance.</p>	<p>Very unlikely to be true.</p>	<p>No.</p>	<p>It should not, because there are alternative ways to create effective governance.</p>	<p>No! Claims that debt disciplines managers are not supported by adequate theories or by empirical evidence.</p>
<p>Increased equity requirements would lead banks to restrict lending if they perceive their equity to be under-valued.</p>	<p>Possibly true.</p>	<p>Perhaps.</p>	<p>Perhaps.</p>	<p>No! Better capitalized banks have more retained earnings for lending; any negative impact of equity issuance or payout restrictions can be mitigated by reducing banks’ discretion.</p>

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Abstract

We analyze shareholders' incentives to change the leverage of a firm that has already borrowed substantially. As a result of debt overhang, shareholders have incentives to resist reductions in leverage that make the remaining debt safer. This resistance is present even without any government subsidies of debt, but it is exacerbated by such subsidies.

Our analysis is relevant to the debate on bank capital regulation, and complements Admati et al. (2010). In that paper we argued that subsidies that favor debt over equity are the key reason that banks' funding costs would be lower if they "economize" on equity. Subsidies come from public funds, and reducing them does not represent a *social* cost. It is thus irrelevant for assessing regulation. Other arguments made to support claims that "equity is expensive" are flawed.

Like reduction in subsidies, the effects of leverage reduction on bank managers or shareholders do not represent a social cost. In fact, we show that debt overhang creates inefficiency, since shareholders would resist recapitalization even when this would increase the combined value of the firm to shareholders and creditors. Moreover, debt overhang creates an "addiction" to leverage through a ratchet effect. In the presence of government guarantees, the inefficiencies of excessive leverage are not fully reflected in banks' borrowing costs.

Since banks' high leverage is a source of systemic risks and imposes costs on the public, resistance to leverage reduction leads to *social* inefficiencies. The main beneficiaries from high leverage may be bank managers. The majority of the banks' shareholders, who hold diversified portfolios and who are part of the public, are likely to be net losers. Our analysis highlights the critical importance of effective capital regulation and high equity requirements, especially for large and "systemic" financial institutions.

We analyze shareholders' preferences when choosing among various ways leverage can be reduced. We show that, with homogeneous assets, if the firm's security and asset trades have zero NPV, and the firm has a single class of debt outstanding, then shareholders find it equally undesirable to deleverage through asset sales, pure recapitalization, or asset expansion with new equity. When these conditions are not met, shareholders can have strong preferences for one approach over another. For example, if the firm can buy back junior debt, asset sales are the preferred way to reduce leverage. This preference for asset sales, or "deleveraging," can persist even if such sales are inefficient and reduce the total value of the firm.

Keywords: capital regulation, financial institutions, capital structure, "too big to fail," systemic risk, bank equity, debt overhang, underinvestment, recapitalization, deleveraging, bankruptcy costs, Basel.

JEL classifications: G21, G28, G32, G38, H81, K23.

A Non-Technical Summary of Results and Policy Implications

In a previous paper entitled “Fallacies, Irrelevant Facts and Myths in the Discussion of Capital Regulation: Why Bank Equity is Not Expensive,” we reviewed arguments claiming that substantial increases in capital requirements would be costly for the economy.¹ In the context that is relevant to regulation, we showed that these arguments are invalid. Some of them rest on confusions about how debt and equity are priced in financial markets. Others involve confusing the bank’s private costs, which are distorted by government subsidies to debt, with the true economic costs that are relevant for the economy.

The high leverage of large financial institutions imposes significant negative externalities by increasing the fragility of the financial system. However, given subsidies to debt funding, and a (flawed) focus on raw return on equity, banks have incentives to maintain excessive leverage.

Summary of Results

In this paper we show that, due to the effect of debt overhang, shareholders and managers of highly leveraged banks would not find it in their interest to reduce leverage. Leverage reduction benefits existing creditors and anyone providing guarantees to the debt. Resistance to leverage reduction can persist even if the total value of the bank might increase, thus creating an inefficiency. This inefficiency does not depend on the presence of debt subsidies. Rather, it involves a fundamental conflict of interests between incumbent shareholders on the one hand and debt holders and possibly taxpayers on the other.

When high leverage imposes negative externalities on third parties, the resistance to leverage reduction creates social inefficiencies. In the banking regulation context, in fact, the main beneficiaries may be bank managers. The majority of the banks’ shareholders, who hold diversified portfolios and who are taxpayers and part of the public, are likely to be net losers.

For all firms, debt overhang effect creates an “addiction” to leverage through a ratchet effect. In the presence of debt overhang, shareholders would not voluntarily reduce leverage even when this would increase the total value of the firm. By contrast, shareholders may choose to *increase* leverage if they can legally do so. In the absence of government guarantees, these inefficient distortions and conflicts might be mitigated through covenants in debt contracts. Inefficiencies that could not be addressed in this way would be reflected in the cost of borrowing. With government guarantees, however, debt holders have fewer incentives to address these problems through covenants, and the inefficiencies associated with excessive leverage are not fully reflected in the cost of debt.

We examine three ways a bank can reduce its leverage. Pure recapitalization involves buying back debt using new equity, without changing the assets held by the bank. Alternatively, leverage can be reduced by selling assets and using the proceeds to buy back debt (“deleveraging”), or by issuing new equity and acquiring new assets. We show that under some conditions, shareholders are indifferent among these approaches to reducing leverage; all are equally undesirable. For example, if there is one class of debt, and asset sales or purchases do not, by themselves, generate value or change the risk of the assets,

¹ In banking jargon the misleading phrase “hold more capital” is often used instead of the much more accurate “funding with more equity.” This misleading phrase leads many to believe that “holding” capital is similar to holding idle reserves. Nothing could be further from the truth, since capital (equity) concerns how assets are funded, not what assets are held.

then all three approaches to leverage reduction lead to the same loss for shareholders. Asset sales, however, are the preferred way to reduce leverage in a number of situations. One example is when there are multiple classes of debt and shareholders can repurchase the most junior classes. In this case, debt buybacks financed by asset sales create a wealth transfer from senior debt holders to shareholders. Such preference for “deleveraging” can persist even if such sales are inefficient and reduce the total value of the bank to its investors and to the economy.

Policy Implications

Debt overhang creates distorted incentives and conflicts of interests with respect to reductions in leverage. Specifically, bank managers have incentives to make decisions that are in direct conflict with creditors and the public, and which may not even be in the combined interest of the banks’ investors. This highlights the critical importance of regulation.

The harmful effects of debt overhang, which can include reduction in lending when banks are distressed, are created by high leverage. The inefficiencies can be reduced if banks are funded with significantly more equity on a regular basis. This calls for much higher equity requirements. This is particularly important for large banks that are “systemic,” because market participants would not address the inefficiencies in the presence of government guarantees.

The analysis in this paper reinforces the conclusions of our previous paper that equity requirements significantly higher than those currently considered would provide large social benefits at little if any social cost. The studies that have been put forth to support the specific Basel III “numbers” are flawed. For example, by treating the required return on equity as fixed, or neglecting the inefficiencies, distortions and externalities that high leverage generates, the studies over-estimate the cost of equity requirements and ignore some of their benefits.

If banks “deleverage” through asset sales, or avoid making loans due to debt overhang, lending may be reduced inefficiently. If this is a concern, regulators should limit banks’ discretion. Rather than targeting a *ratio*, the focus should be on restricting payouts that deplete equity, and possibly mandating specific amounts of new equity, e.g., through rights offering. Such actions would make sure banks have sufficient funds to make worthy loans even as they become better capitalized.²

Conflicts of interests similar to those analyzed here give incentives to bank managers to make large cash payouts such as dividends and share buybacks that maintain high leverage and harm creditors and the public. Cash paid to shareholders or managers is no longer available to pay creditors. European countries whose banks are clearly in distress should have banned such payouts long ago. Similarly, recent decisions by the Federal Reserve to allow most large US banks to increase their payouts before even reaching Basel III levels were misguided. Some of these banks face significant risks and would impose large costs on the economy if they became distressed. By contrast, a useful approach was recently used by the Bank of England’s Financial Stability Committee, which pressed UK banks to issue new equity in order to pay bonuses to executive, rather than using cash.

² Our discussion does not distinguish assets by their contribution to risk and focuses on leverage measured as equity to total assets. The impact of capital requirements can be distorted by the use of risk weights that bias banks’ decisions away from traditional lending and create other risks. For example, bank managers compensated on the basis of ROE have strong incentives to bias their investments away from lending and towards risky investments such as sovereign debt that have low regulatory risk weights but have a higher yield to compensate for their actual risk.