Contingent Capital*

BY YARON LEITNER

Government bailouts during the recent financial crisis were controversial because of the burden on taxpayers and because even if taxpayers eventually get their money back, such bailouts can undermine banks' incentives not to take excessive risk in the future. New regulatory reforms aim to avoid such crises in the future. One proposal is to require banks to hold "contingent capital." In this article, Yaron Leitner explains what contingent capital is and discusses some of the arguments in favor of it. He also discusses potential implementation problems and looks at some of the alternatives.

The recent financial crisis has illustrated the problems that can be caused by a failure of a large financial institution and the government's reluctance to let it fail. These government interventions, or bailouts, have been controversial because of the burden they impose on taxpayers and because even if taxpayers eventually get their money back, such bailouts can undermine banks' incentives not to take excessive risk in the future. New regulatory reforms aim to avoid such crises in the future. One proposal is to require banks to hold "contingent capital."

Indeed, the Dodd-Frank Wall Street Reform and Consumer Protection Act, passed by Congress on July 21, 2010, allows the Federal Reserve to require large banks and other financial firms supervised by the Fed to "maintain a minimum amount of contingent capital that is convertible to equity in times of financial stress." However, this can be mandated only after a study by the Financial Stability Oversight Council to be completed by June 2012.[1] Regulators in several other countries have also shown interest in adding contingent capital to their supervisory toolkit to improve crisis management.[2]

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[1] The Financial Stability Oversight Council was established by the Dodd-Frank Act to identify threats to the financial stability of the United States, promote market discipline, and respond to emerging risks to the stability of the U.S. financial system. The act contains details about the council's organizational design (members, meetings), duties, and authority.

*The views expressed here are those of the author and do not necessarily represent the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

WHAT IS CONTINGENT CAPITAL?

Before explaining what contingent capital is, it is useful to say what we mean by capital. *Bank capital* is the value of the bank's assets minus the value of its liabilities (its debt). Alternatively, this is what the bank's shareholders own, or their equity.[3] Examples of banks' assets are loans that banks make to households and firms and financial securities that banks hold, such as government bonds. Examples of banks' liabilities are the amounts of money that banks obtain by borrowing or by taking deposits from households and firms. Essentially, banks earn interest on their assets and pay interest on their debt.[4, 5]

[2] See, for example, the recent regulatory proposal (July 20, 2011) by the European Commission. More details are available at http://ec.europa.eu/internal_market/bank/regcapital/index_en.htm.

[3] Regulators may define capital a bit differently to account for the fact that, in practice, banks hold complex securities other than simple debt and equity (see *Bank Capital Regulation* in the *Business Review* article by Mitchell Berlin). But, to simplify, we will use the simple definition in the text.

[4] Throughout the article, we use the word banks, but the article also applies to other financial firms that might pose systemic concerns.

[5] People sometimes confuse capital requirements and liquidity requirements. The terms "capital," "capital requirements," and "capital structure" refer to the way the bank is funded and, in particular, to the mix between debt and equity. In contrast, the term "liquidity requirements" refers to the type of assets and the asset mix the bank holds. For example, if the bank has a lot of cash and Treasury securities, it is considered

Contingent capital refers to debt that automatically converts into equity in times of financial stress if certain prespecified triggers are hit. For example, in November 2009, Lloyds Bank issued a bond that converts into common stock if the bank's tier 1 capital ratio falls below 5 percent. Tier 1 capital is a measure of a bank's capital used by regulators.[6] The tier 1 *capital ratio* is the value of the bank's tier 1 capital divided by the risk-weighted value of the bank's assets.[7] It is a measure of the bank's financial health and its ability to absorb losses. When the bank's capital ratio is high, a significant loss can be absorbed by the bank's shareholders and does not trigger bankruptcy. In contrast, when the ratio is low, losses may trigger bankruptcy, since the bank may not be able to pay off its debt or make the required interest payments.

Figure 1 illustrates how contingent capital works. The numbers are for illustration purposes only and are chosen so that the algebra is simple. Suppose that initially (Panel A) the value of the bank's assets is $10 billion and its capital ratio (equity divided by assets) is 30 percent. The bank also has $2 billion of contingent capital. Suppose that the trigger for conversion is a 15 percent capital ratio; that is, conversion is automatic whenever the capital ratio falls below 15 percent. If this trigger is hit, $1 of the face value of contingent capital converts to $1 of common stock (i.e., the conversion ratio is that $1 of contingent capital converts to $1 of equity). Now suppose the bank suffers a loss and the value of its assets drops to $8 billion. The loss is absorbed by the banks' equity holders, and the bank's capital ratio falls to 12.5 percent, which is below the trigger (Panel B). Since the trigger is hit, the $2 billion of contingent capital converts to $2 billion of equity. The bank's capital ratio then rises to 37.5 percent (Panel C) and has returned to a safe level.

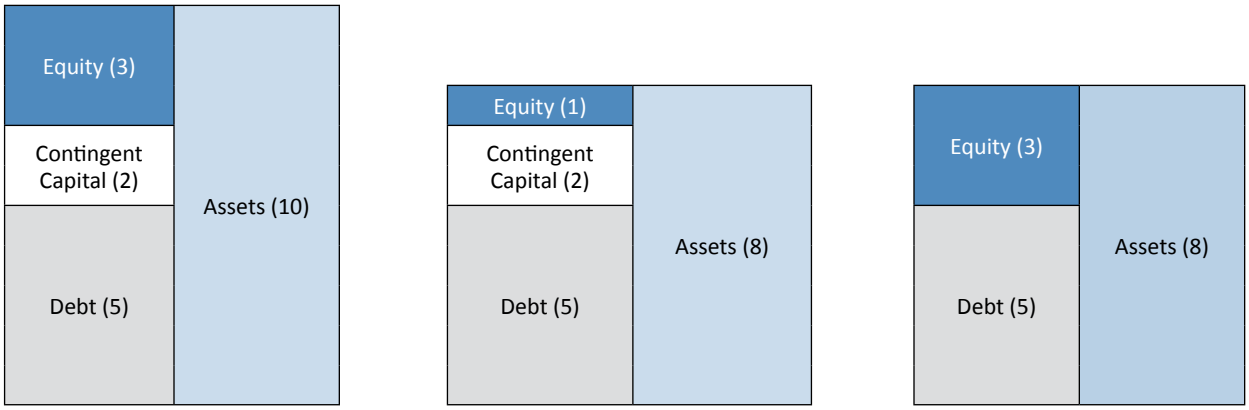
very liquid. Otherwise, the bank is considered less liquid because even though the bank may own a lot of assets, it may not be able to sell them at short notice, or it may obtain less than the fair value in a sale.

[6] Tier 1 capital consists mainly of the bank's common stock and retained earnings, but it may also include more complex securities, such as preferred equity, which is a special type of equity that is senior to common stock but subordinate to bonds.

[7] For a definition of risk-weighted assets, see *Bank Capital Regulation* in the *Business Review* article by Mitchell Berlin.

FIGURE 1

How Contingent Capital Works



Panel (A)
Initial Balance Sheet

(Capital Ratio = 30%)

Panel (B)
Balance Sheet After Loss, Before Conversion

(Capital Ratio = 12.5%)

Panel (C)
Balance Sheet After Loss, After Conversion

(Capital Ratio = 37.5%)

Panel A shows the balance sheet of a bank that has contingent capital in its capital structure. (Numbers in brackets represent billions of dollars.) Panel B shows the balance sheet of the same bank after it suffers a loss. As you can see, the bank's capital ratio (equity over total assets) falls drastically, and so the trigger for conversion occurs. Panel C shows the balance sheet of the bank after conversion occurs. Now the bank's capital ratio is back to a "safe" level.

ARGUMENTS IN FAVOR OF CONTINGENT CAPITAL

When a large bank fails, its failure can spread to other banks in a domino effect, which economists call contagion. Regulators may then be forced to bail out the bank, using taxpayers' money, because of the potential damage a single bank's failure can do to the banking system and to the whole economy. Even if taxpayers eventually get their money back, bailouts have a social cost because they may induce banks to take excessive risks, i.e., risks that benefit the bank's shareholders but are harmful to society. If the risky investment succeeds, the bank's shareholders gain a lot; if the risky investment fails, the shareholders are protected by their limited liability.[8]

Contingent Capital May Reduce the Need for Bailouts. The idea behind requiring banks to hold contingent capital, or more generally capital, is that a bank that suddenly loses money can absorb losses and does not need to be bailed out. First, since the debt is converted to equity, the bank is relieved from paying interest on its debt. Second, since the bank obtains more equity, it is easier for the bank to absorb additional losses in the future.

In one view, the main role of contingent capital is to prevent failures of large banks to begin with. Under this view, the trigger for conversion should be hit at a relatively early stage, when there is still a chance to save the bank by recapitalizing it (i.e., increasing its level of capital). Conversion would then be a relatively frequent event and would not be limited to financial crises.[9]

In another view, the purpose of contingent capital is not to prevent single bank failures but instead to create procedures to deal with the failure of large banks in situations in which many banks experience problems at the same time. More generally, the idea is to have an out-of-court resolution mechanism so that if large banks get into financial problems, the regulator does not need to rely on ad hoc measures or lengthy and costly bankruptcy procedures. In this case, the trigger should apply at a later stage and conversion would occur only during a full-blown financial crisis.[10]

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A Distressed Bank May Not Take Appropriate Measures on Its Own. When a bank suffers a loss, the value of its assets drops, and this reduces the value of its equity (assuming the value of its liabilities remains unchanged). Hence, the bank has a smaller capital cushion to absorb additional losses in the future, and its chances of going bankrupt increase.

To reduce the likelihood of bankruptcy, the bank can recapitalize by issuing more equity. However, the bank may be reluctant to do so because of a problem that economists call *debt overhang*, one variant of stockholders' incentive to take excessive risks. A debt overhang problem refers to a situation in which a bank has a lot of outstanding debt and there is a significant likelihood of default. Since the money raised by issuing equity must first go to satisfy existing debt obligations (debt holders get first priority in payments), and since new shareholders must at least break even on their investment or else they would not provide the bank with any capital, issuing new equity is essentially a transfer from existing shareholders to existing debt holders. In particular, issuing equity increases the likelihood that existing debt holders will be repaid but, at the same time, dilutes the shares of existing shareholders. Moreover, if some of the bank's debt is insured, issuing new equity is not only a transfer from equity holders to debt holders, but it is also a transfer from equity holders to the deposit insurer. Hence, if a bank is managed in the interests of existing stockholders, it will not issue equity unless it is forced to do so.[11]

The bank can also recapitalize by selling assets. But again, the bank may be reluctant to do so because of the debt overhang problem. Moreover, selling assets can also impose problems on other banks and on the whole economy. If other banks, which are the potential buyers of the assets, also face financial problems, they may be reluctant to buy the assets. Alternatively, they may agree to buy, but only at "fire sale" prices, which are well below the price they would normally pay. Such a significant drop in prices further amplifies problems because it reduces the value of assets that other banks own and, thus, the banks' capital ratios.

[8] I talk about contagion in my 2002 *Business Review* article and in my paper. I also discuss private-sector bailouts, in which banks help each other without using taxpayers' money and the regulator acts only as a coordinator.

[9] See, for example, Mark Flannery's proposal.

[10] See, for example, the Squam Lake Group's proposal.

[11] The problem of debt overhang was first discussed in the seminal paper by Stewart Myers. More generally, it refers to a situation in which a firm with a lot of debt forgoes profitable investment opportunities.

Instead of selling existing assets, the bank can simply stop acquiring new assets, but this means that the bank will lend less to households and firms. The regulator may then be forced to step in to avoid the potential damage to the economy.

Contingent capital may reduce the need for bailouts because when the bank gets into trouble and its capital ratio drops, its debt converts to equity automatically, and so its capital ratio increases back to what the regulator perceives to be a safe level.

One lingering question is whether contingent capital has an advantage (to banks or to society as a whole) over simply requiring banks to hold more capital. There are views on both sides.

Contingent Capital May Be "Cheaper" Than Capital. Some economists argue that contingent capital is cheaper than standard capital. Underlying this argument is the trade-off between debt and equity and the notion that contingent capital captures the benefits of debt while avoiding most of its problems. In particular, they argue that contingent capital captures the tax benefits and disciplinary role of debt while avoiding the problems of debt when the bank is in financial distress and may not be able to pay off its debt.[12]

Under existing tax law, debt has an advantage over equity (to the issuing bank) because the bank can deduct interest payments, but it cannot deduct dividend payments. In addition, in some economic models, debt has a disciplinary role. To make sure they get their money back, debt holders monitor the bank so that the bank's managers don't waste money or take excessive risks. Moreover, if the debt is short term, debt holders may choose not to renew it after poor performance. The threat of insolvency if short-term debt holders refuse to roll over their claims imposes discipline on bank managers.[13]

However, as we saw earlier, too much debt can create problems both to the issuing bank (e.g., debt overhang) and to society as a whole (e.g., contagion and costly bailouts). Assuming that investors are willing to hold it, contingent capital can help avoid these problems because the automatic conversion helps to recapitalize the bank before the problems spill over to the rest of the economy.

Contingent capital might also help banks avoid the costs of lengthy bankruptcy procedures. Once a bank is in bankruptcy, it may take a long time for creditors to get paid (either partially or fully). The automatic conversion of contingent capital helps to avoid this problem.

Later in this article we discuss alternative views as to whether contingent capital is indeed less costly than equity, but before that, we discuss some issues with implementation.

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HOW SHOULD CONTINGENT CAPITAL BE DESIGNED?

Suppose we believe that contingent capital is beneficial. How should we design it? In particular, what event should trigger conversion? What should the conversion ratio be? That is, how many shares of stocks should $1 of face value of debt convert to?

We start with the event or events that should trigger conversion. Table 1 provides examples of three different proposals. We explain the features in these proposals below.

[12] Note, however, that it is unclear whether *any* form of contingent capital will qualify as debt for tax purposes. See the discussion of this issue in the paper by Robert McDonald.

[13] See, for example, the paper by Douglas Diamond and Raghuram Rajan.

TABLE

Examples of Specific Proposals for Contingent Capital

Proposal	Trigger for Conversion	Dual Trigger?	Book or Market Values?
Mark Flannery	1. Bank's stock price falls below some threshold.	No	Market
Squam Lake Group	1. The regulator declares a systemic crisis. 2. The bank's tier 1 capital ratio falls below some threshold.	Yes	Book
Robert McDonald	1. A broad financial stock's index falls below some threshold. 2. Bank's stock price falls below some threshold.	Yes	Market

The Trigger for Conversion. Some economists have suggested that conversion should depend only on the bank's own condition; that is, conversion should occur whenever the issuing bank has serious financial problems. Other economists have suggested using a dual trigger, meaning that conversion should occur only if both the issuing bank and the whole financial system are in trouble. Clearly, under a dual trigger, conversion occurs less often, and any individual bank with financial problems is less likely to be recapitalized. One advantage of this is that the disciplinary role of debt is enhanced, since the threat of bankruptcy is stronger. One disadvantage is that the failure of a single large bank can have negative consequences for the whole economy.

Now suppose we decide on a dual trigger. How should we determine whether the financial system is in trouble? Should we rely on the regulator to declare a systemic crisis, or should we use a more objective criterion, such as a broad financial stock index? Each option has some pros and cons. One problem with regulatory discretion is that market participants may be uncertain as to how the regulator will interpret the data. A second problem is that regulators may be concerned about maintaining confidence in the financial system and, hence, may be reluctant to declare a financial crisis until it is too late. An objective rule may avoid these problems. However, it is impossible to come up with a rule that is always accurate, and blindly following some decision rule may be misleading. The more likely outcome is that regulators would choose not to follow the rule when it looks like it is mistakenly calling for conversion. Thus, they are likely to use discretion in practice. Nonetheless, specifying some rule for intervention may help to the extent that regulators may have difficulty pre-committing to declaring a crisis. At the minimum, regulators will have to explain to the public why they are acting contrary to the rule.

Another issue is whether the triggers for conversion should be based on book values (meaning accounting numbers) or market values. An example of a trigger based on book values is regulatory tier 1 capital, which is derived from the bank's financial statements. Examples of triggers based on market values are the bank's stock price or its credit default swap spread (see *Examples of Market-Based Triggers*).

One advantage of using market values is that they are more forward looking and rapidly adapt to changes in the bank's financial condition. In contrast, financial statements are updated only periodically and reflect the bank's financial condition with a lag. In addition, accounting numbers can be distorted by the bank. For example, if a bank is subject to mark-to-market accounting, meaning that assets are valued based on the recent market price of identical or similar assets, the bank may stop trading in these assets so that losses are not reflected on its balance sheet.[14]

However, relying on market prices may also create problems because market prices could trigger conversion based on factors other than the bank's true financial condition. One such problem is that market prices create opportunities for manipulation. Second, market prices may create the possibility of multiple self-fulfilling equilibria.

Manipulation. An investor who holds contingent capital may attempt to drive down the stock price, so that conversion will occur, and then drive the price back up to make a profit.[15] For example, suppose an investor has $1000 of face value of debt that converts into 20 shares of stock when the

Examples of Market-Based Triggers

While most proposals that use market values as triggers rely on stock prices, it is also possible to use the prices of credit default swaps.[a,b] Credit default swaps are a form of insurance against default on the bank's debt, and so their prices reflect whether the bank is in financial trouble. The advantage of using prices of credit default swaps over stock prices is that prices of credit default swaps capture only the likelihood of default, whereas stock prices capture both the expected profits of the bank when it doesn't default as well as the likelihood of default. One disadvantage is that credit default swaps may also reflect the likelihood of government bailouts, and at another extreme, they can also reflect the likelihood that the firm that provides insurance may itself default.

[a] See, for example, the article by Oliver Hart and Luigi Zingales.

[b] A credit default swap is a contract that is written between the seller of the swap and the buyer of the swap in reference to some credit event, such as a default by Bank ABC on a specific bond (long-term debt) it issued. The buyer of the swap pays a premium to the seller of the swap, just like the buyer of car insurance pays a premium to the company that sells insurance. In return, the seller of the swap promises to make a payment to the buyer of the swap if the credit event occurs.

[14] See, for example, my paper with Philip Bond and the paper by Konstantin Milbradt.

[15] One way to drive down the price is by short selling the stock. Short selling is explained in Ronel Elul's *Business Review* article.

stock price falls below $50. Suppose the stock price is currently $51 (the true value of the firm) and the investor can drive the price down to $49. Then conversion occurs, and instead of owning $1000 of debt, the investor now owns 20 shares of stock. When the price returns to $51, the investor has a position worth $1020, which is $20 more than what he originally had; that is, he gained 2 percent.

One way to minimize this problem is to set a low conversion ratio so that the value of equity that the holder of contingent capital obtains after conversion is lower than the debt's face value. For example, if the original $1000 of debt converts into 19 shares of stock, rather than 20 shares, then after conversion occurs, the price would need to go up to $52.63 (=1000/19) for the investor to make a profit. Hence, manipulation becomes harder.[16]

Triggers that are based on the average stock price over some given period rather than just one day may also make it more difficult to manipulate conversion.

Multiple Equilibria. Another possible problem when conversion is based on market prices has to do with what economists call "multiple equilibria."[17] We usually think of stock prices as aggregating investors' views about the firm's true value, given the information they have. However, stock prices may also reflect investors' expectations as to what other investors will do, which may affect whether the debt will convert to equity. This may lead to situations in which conversion depends on self-fulfilling expectations rather than on whether the bank is truly facing financial problems. It may also lead to situations in which the market "breaks down," as it is impossible to come up with a price that is consistent with investors' expectations. The problem in both cases is that the information role of the stock price in aggregating investors' views about the bank's true value is reduced.

For example, consider a situation in which the bank is not in financial trouble, so the stock price should remain high and conversion should not occur. Suppose that the conversion ratio is high, so after conversion the shares of existing equity holders are diluted and the value of each share drops. There are two self-fulfilling outcomes: In the first outcome, stock holders expect that conversion will occur (say, tomorrow) and their shares will be diluted; hence they attempt to sell their stock today before conversion occurs. But because of these sales, the stock price falls today, and this by itself induces conversion.[18] Alternatively, what happens if investors do not expect conversion to occur? In this case, the stock price remains high, and conversion indeed does not occur.

Now suppose instead that the conversion ratio is low so that stockholders' existing shares are not diluted and the price of each share rises after conversion. If investors expect that conversion will occur tomorrow, the price will increase today in anticipation, but then conversion will not occur. In contrast, if investors do not expect conversion to occur, the price remains low and conversion occurs as a result. Hence, in both cases, the stock price is inconsistent with investors' expectations. One interpretation of this is that the market breaks down, e.g., investors may not trade because they cannot determine what the price should be, which economists refer to as "no equilibrium." More broadly, the stock price may be arbitrary and may not reflect investors' views about the bank's true value.

Note that in the first case, when the conversion ratio is high, conversion induces a transfer of wealth from existing equity holders to investors in contingent capital, whereas in the second case, when the ratio is low, conversion induces a transfer in the other direction. To avoid the problems above, Suresh Sundaresan and Zhenyu Wang have argued that the conversion ratio must be such that there should never be any wealth transfers between equity holders and investors in contingent capital at the time of conversion. This means that the conversion ratio should depend on the market price of the convertible debt at the time of conversion. However, as for now, it is hard to tell whether the market for contingent capital, if introduced, will be liquid enough so that market prices will be readily available. In addition, the condition above (no wealth transfer) is inconsistent with the condition of a low conversion ratio, thereby removing one of the tools to prevent manipulation.

One may ask why we do not run into the problems above (multiple equilibria or no equilibrium) with the standard, widely used convertible debt. The reason is that the holder of convertible debt can *choose* whether to convert and so will convert only if conversion makes him better off. If conversion induces a wealth transfer from existing equity holders to holders of convertible debt, the holders of convertible debt will choose to convert their debt to equity. If the wealth transfer is in the other direction, they will choose not to convert. Hence, in both cases, we obtain a unique outcome. In contrast, holders of contingent capital cannot choose whether to convert, since the conversion occurs automatically whenever the stock price

[16] The numerical examples above are taken from Robert McDonald's paper.

[17] In a seminal paper, Douglas Diamond and Philip Dybvig have illustrated this problem in the context of bank runs.

[18] Such expectations may also cause a "death spiral," in which the price drops drastically. This can happen when the price after conversion is very low.

hits the trigger. As we saw above, this may lead to multiple outcomes or, alternatively, to a market breakdown.

ALTERNATIVES TO CONTINGENT CAPITAL

The technical issues above have raised concerns about whether contingent capital will satisfy its intended role. In addition, some economists have provided compelling arguments as to why we should not take the notion that "equity is costly" for granted.[19] Under this view, instead of requiring banks to issue contingent capital, the regulator should simply raise capital requirements, i.e., require banks to have more equity in their capital structure. Another suggestion is to increase the liability of equity holders in the event of loss.

Why Bank Equity Should Not Be Viewed as "Costly." The well-known Modigliani-Miller theorem says that in a frictionless world, it does not matter to the firm or to society whether the firm finances itself with debt or with equity. Although investors require a higher return to hold equity than the return they require to hold debt, equity should not be viewed as "costly." The higher return in equity simply compensates investors for the extra risk they take.

The importance of the Modigliani-Miller theorem is that it helps us identify the frictions under which capital structure does matter. When designing capital regulations, we should take these frictions into consideration, remembering that some of them are inherent, while others are created by policy. For example, conflict of interest between investors and firm managers is an inherent friction, while the tax advantage of debt is created by policy. We should also be aware that the "cost" to the bank and the "cost" to society are not necessarily the same.

For example, tax deductions make it cheaper for a bank to issue contingent capital (assuming that contingent capital qualifies for the same tax benefits as debt). However, instead of contingent capital, we can require banks to hold more equity, and we can neutralize the impact of increased equity requirements on the bank's tax liabilities by replacing any tax benefit lost due to the reduction in leverage with alternative deductions or tax credits.

More broadly, it is not clear that the tax advantage of debt over equity should exist in the first place. After all, this tax advantage is costly to society because it induces banks to take too much debt (relative to equity) and therefore too much risk, which can create contagion, costly bailouts, and other spillovers to the whole economy. The issue is then whether we should let the tax code, which may be suboptimal to begin with, drive new capital regulations. An even broader perspective might be to redesign the tax system, along with redesigning capital regulations.

Economists have also questioned the disciplinary role of debt. First, it relies on the idea that what disciplines managers is early liquidation or the fact that short-term debt may not be renewed if the bank performs badly. However, these forms of discipline increase the fragility of the banking system as a whole and may cause other problems to society, such as credit freezes.[20] Using long-term debt may also create problems, such as the debt overhang problem discussed earlier. In particular, when the bank is in financial distress, the managers may pass over some profitable investment opportunities because taking them hurts existing equity holders. Second, it is unclear whether debt is the only (or best) way to discipline the bank's managers. For example, the bank can commit to pay stock holders a prespecified level of dividends, which, if not maintained, would trigger a shareholder vote to replace the bank's managers. Third, since bank deposits are insured by the government through the Federal Deposit Insurance Fund, banks may still be induced to take excessive risk, since the cost is ultimately borne by taxpayers. The potential for bailouts also distorts banks' incentives.[21]

Some economists have provided compelling arguments as to why we should not take the notion that "equity is costly" for granted.

Increasing Equity Holders' Liability. Some economists have proposed increasing the liability of equity holders on the grounds that bank failures and financial instability have large social costs. For example, we can require that equity holders add money to the firm whenever there is an immediate risk that the firm will default on its debt. If equity holders don't add money, their equity will be wiped out and they will lose control.[22] In particular, Oliver Hart and Luigi Zingales propose that equity holders should be

[19] In particular, see the paper by Anat Admati, Peter DeMarzo, Martin Hellwig, and Paul Pfleiderer.

[20] See, for example, the paper by Viral Acharya, Douglas Gale, and Tanju Yorulmazer.

[21] A potential solution, suggested by Viral Acharya, Lasse Pedersen, Thomas Philippon, and Matthew Richardson, is to tax each bank during good times based on its expected loss conditional on the occurrence of a systemic crisis.

[22] This is analogous to margin accounts and margin calls that are in place to guarantee payments on future obligations.

forced to add money whenever the price of a credit default swap moves above some prespecified threshold, meaning that the price of insurance against default on the bank's debt is too high.[23] Anat Admati and Paul Pfleiderer also propose to increase the liability of equity holders, but in their proposal, equity holders must set aside some cushion of safe assets upfront to back up their guarantees. One way to think of these equity injections is as a more general form of contingent capital.

Viral Acharya, Hamid Mehran, and Anjan Thakor take the idea above even further by proposing that if a bank gets into financial trouble, a part of the safe asset buffer will belong to the regulator, rather than to the bank's creditors. Their idea is to provide both debt holders and equity holders with incentives to monitor. Since the regulator takes over part of the bank's equity cushion when the bank is troubled, debt is risky from the perspective of creditors and they are induced to monitor the bank managers. (If debt is completely safe, debt holders will have no incentive to monitor.) At the same time, since equity holders have a lot of equity at stake (if the bank fails, they lose the buffer of safe assets), they will make sure that bank managers are not tempted to take excessive risk.

CONCLUSION

Contingent capital may be a step toward reducing failures of large banks, but it is unclear whether it can fulfill its intended role. In particular, problems such as price manipulation, multiplicity of equilibria, and incentive issues must be addressed.

Some alternatives to contingent capital, such as increasing capital requirements and increasing shareholders' liability, also exist. Contingent capital must be evaluated against these as well as other alternatives.

[23] They also propose that equity capital protect only against "systemically relevant" obligations (such as bank deposits, short-term debt, interbank borrowing, and derivative contracts) but not against long-term debt obligations. Hence, long-term debt will sometimes need to absorb losses. This provides an extra protection, and it also provides an underlying asset on which credit default swaps can be traded

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