

A Contingent Capital Requirement for Banks

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Although debates still rage over the causes of the financial crisis of 2007 - 2009, one thing is clear: several of the world's largest financial institutions – including Fannie Mae, Freddie Mac, Citigroup, UBS, AIG, Bear Stearns, Lehman Brothers, and Merrill Lynch – had amassed huge and concentrated asset risks relating to sub-prime mortgages and other risky investments, but they maintained equity capital that was too small to absorb the losses that resulted from those risky investments. In other words, relative to risk, equity capital proved inadequate to insulate these firms, and many others, from insolvency when their risks were realized.

Why did the regulatory system perform so badly? There were two central reasons that prudential regulation failed to require financial institutions to maintain adequate capital. Incentive problems that: (1) Distorted the measurement of risk, and (2) Discouraged the timely replacement of lost equity capital.

With respect to the first of these problems, the process for measuring risk, on which capital requirements are based, encourages the understatement of risk. Under existing rules, banks and rating agencies control the measurement of risk used by regulators. Bankers and rating

agencies, however, suffer from conflicts of interest that offer benefits to them when they understate risk.

With respect to the second problem – the failure to replace lost capital in a timely fashion – it is instructive to consider how long it took Citigroup and other financial institutions to deplete their capital during the recent financial crisis. Many months passed between the initial financial shocks of the crisis – the first revelations of the spring of 2007, the August 2007 run on asset-backed commercial paper, the Bear Stearns bailout of March 2008 – and the systemic collapse of mid-September 2008. Global capital markets were open, but many of the financial institutions most deeply affected by the crisis prior to September 2008 chose not to raise sufficient capital.

A top executive at one of those banks confessed to one of us over breakfast during the summer of 2008 that, despite the need to replace lost equity, the price of stock was too low. Issuing significant equity in the summer of 2008 would have implied substantial dilution of stockholders – including existing management. Institutions that had suffered large losses preferred to wait, hoping for an end to the crisis in the summer of 2008, and a reversal in the sharp decline in the prices of risky assets that would accompany recovery. After the bailout of Bear Stearns, they also believed that if their situation deteriorated severely, the government likely would step in. On balance, the best strategy was to wait and hope for the best.

In this paper, we show how a properly designed requirement for Convertible Contingent Capital (CoCos) can provide unique incentives that will both (a) motivate Systemically Important Financial Institutions (SIFIs) to implement strong systems of risk governance to measure and manage risk and (b) raise additional capital or sell assets in a timely fashion, when necessary, to minimize the chance of violating minimum capital adequacy standards. In

addition, our proposed requirement would supplement an institution's capacity to bear loss. Finally, a suitably designed CoCo requirement would supplement supervisory oversight with market discipline.

Why Equity Capital Requirements Are Not Enough

Although we support Basel III's proposed increases in shareholders' equity, those reforms will not solve the fundamental problems of risk measurement and maintenance of adequate capital. The measure of shareholders' equity employed by Basel tends to lag its true value, thus avoiding timely recognition of loss. Not only can supervisors be caught unaware, they may prefer to ignore losses.

One could argue, however, that making initial book equity capital requirements much higher would solve some of the incentive problems that distort risk measurement and risk management, even without properly incentivizing the timely replacement of capital. Would that approach encourage proper risk management by banks, and would it produce banking system outcomes consistent with the public interest?

We do not think so. First, a draconian increase in equity requirements would raise the costs of finance for banks. That increase in cost would translate into a contraction of banking activity, most importantly, bank lending.

That is not to say that we oppose a significant increase in capital requirements. We believe a significant increase is necessary, but we recognize that there are negative, not just

diminishing, social returns to achieving that higher amount of capital solely by raising equity capital requirements beyond some point.

Our proposed contingent capital requirement offers an alternative means of raising a credible loss-absorbing form of capital which retains tax-deductible debt finance as the dominant form of bank finance. Most importantly, it ensures that management would face strong incentives to manage risk, set capital appropriately, and replace any significant loss in the economic value of equity capital with new equity capital offerings on a timely basis.

Designing a CoCo Requirement

The essential idea of a CoCo has been widely discussed for a number of years by a number of authors. Proposals vary with regard to three critical features: (1) the amount of CoCos required to be issued; (2) the trigger for conversion from bonds to equity; and (3) the conversion rate – or the amount of equity to be issued when the CoCos are converted.

The particulars of the design characteristics of our proposal reflect our view that the primary objective of a CoCo should be to encourage the prompt replacement of any lost equity with new issuance of equity into the market. The incentive to issue equity pre-emptively is strengthened when the size of CoCos is large, when the trigger is credibly and observably based on market prices at a high ratio of equity-to-assets (long before concerns about insolvency arise), and when the conversion ratio is dilutive of existing common shareholders so that the prospective dilution from issuing equity into the market preemptively appears desirable by comparison). Under those conditions, a SIFI experiencing significant loss and approaching the neighborhood in which dilutive conversion would be triggered, would choose to issue significant

equity into the market, possibly combined with asset sales that would raise the market value of its outstanding equity relative to assets, thereby avoiding the conversion trigger.

Given the strong incentives embedded in our version of CoCos to promote timely equity offerings, we believe our CoCos would almost never actually convert into equity. Not only would the corrective action of a pre-emptive stock issue or asset sale preserve high ratios of equity to assets in the wake of significant shocks ex post, but the knowledge of the existence of CoCos and the anticipation of the possibility of facing dilutive CoCo conversion would create strong incentives for management to maintain high ratios of capital, accurate measures of risk, and effective controls on risk at SIFIs. CoCo conversion would be a CEO's nightmare: not only would existing stockholders who are diluted by the conversion be calling for his head, but he would also face an onslaught of sophisticated new block holders of stock (institutional investors who formerly were holders of CoCos) who are likely to be eager to sack senior management for their demonstrated incompetence.

Setting an Appropriate Trigger, and Conversion Rules

An appropriate trigger must be accurate, timely, and comprehensive in its valuation of the issuing firm. And the trigger should be defined so that it can be implemented in a predictable way, so that CoCo holders can price the risks inherent in the instrument at the time of its offering. This latter point has been emphasized by the ratings agencies that refuse to rate CoCos in which the conversion is contingent upon the decision of a regulator or bank management.

Some proposals for contingent capital assume that book values of the institution's equity relative to its assets would be the appropriate conversion trigger for CoCos. But book value is an accounting concept, subject to manipulation and, inevitably a lagging indicator of deterioration in

a bank's balance sheet. The problem of using book value as the trigger is not just one of managerial reluctance to recognize loss. As we have argued above, regulators and supervisors have shown time and again that they are hesitant to opine negatively about SIFIs in a way that will become public. Such forbearance leads to protracted delays in recognizing problems. Thus, a central purpose of employing non-equity capital is to reinforce official supervision with market discipline.

What market-based measures could be employed as the trigger? Equity values, if used properly, would provide the best source of information to design a trigger. Indeed, some of the best-known cases of the failures of large firms that surprised rating agencies and regulators were signaled long in advance by a *severe and persistent decline in the aggregate market value of their equity*.

Managers who are maximizing the value of shareholders' claims in the firm will have a strong incentive to prevent the triggering of the conversion of CoCos by strengthening the governance of risk and, if necessary, preemptively issuing equity into the market or selling assets, *so long as the dilution effect of the CoCo conversion is sufficiently large*. Even managers that are not maximizing shareholder value, per se, will want to avoid the potential corporate governance consequences of a massive CoCo conversion, which would almost certainly lead to a shareholder revolt to oust them, which would be facilitated by the presence of newly converted and concentrated holdings of shares held by sophisticated institutional investors.

We suggest employing a 90-day moving average of the ratio of the market value of equity relative to the sum of the market value of equity plus the face value of debt to smooth fluctuations in share prices and reduce the noise in market value signals. We define this ratio as

the quasi market value of equity ratio, or QMVER. A trigger based on the QMVER would be desirable based on the criteria of predictability, timeliness, comprehensiveness and accuracy.

Because the comparative efficacy of CoCos as an incentive device depends crucially on their dilutive effects on equity holders, it is important that CoCos be issued in sufficient quantity, especially relative to the amount of equity capital required (since relative dilution is key to ensuring pre-emptive offerings of equity). For that reason, we suggest – alongside a roughly 10% requirement for the ratio of the book equity relative to book assets – a similar magnitude for the required ratio of CoCos relative to book assets.

Similarly, to ensure incentives for pre-emptive equity offerings, the conversion ratio should be set such that stockholders face significant dilution from conversion. Conversion should require a sufficient number of shares per face value of CoCos such that the market value of shares received is greater than the face amount of the CoCos.

To be concrete, and to ensure adequate incentives for timely equity offerings while the bank still has access to the equity market, we propose the following combination of CoCo design features: Commensurate with the current Basel III book equity requirement for SIFIs – which envisions as much as a 9.5% tier one equity requirement relative to risk-weighted assets – we propose that the amount of CoCos be set at 10% of book assets. To ensure adequate dilution risk to shareholders, we propose that all CoCos convert upon hitting the trigger with a conversion ratio that is 5% dilutive of equity holders (relative to face value). We suggest an 8% QMVER trigger for CoCo conversion based on a 90-day moving average.

Judging as best we can from the experience of the recent crisis, our proposed requirement would have been very effective in encouraging the timely replacement of lost capital early in the

crisis. Arguably, if a CoCo requirement had been in place in 2007, the disruptive failures of large financial institutions, and the systemic meltdown after September 2008, could have been avoided.

* This is an abridged version of “Why and How to Design a Contingent Convertible Debt Requirement,” which is available at <http://fic.wharton.upenn.edu/fic/papers/11/11-41.pdf>. Calomiris is the Henry Kaufman Professor of Financial Institutions at Columbia Business School. Herring is the Jacob Safra Professor of International Banking at the Wharton School, University of Pennsylvania.