

## **Credible Resolution Policy Is Crucial for the Effective Regulation of Systemically Important Financial Institutions (SIFIs)**

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The starting point for any truly effective process to resolve cross-border SIFIs is an effective national resolution procedure. Although most observers might think this objective had been achieved long ago, *The Report and Recommendations of the Cross-border Bank Resolution Group* (Basel Committee, 2010) makes it clear that even among the relatively few countries that have national frameworks for resolving financial institutions, none of them adequately addresses the problems that arise in the resolution of a purely domestic SIFI much less a cross-border SIFI.

The Dodd-Frank legislation attempts to remedy this problem, but the framework it establishes is cumbersome<sup>1</sup> and at times contradictory<sup>2</sup> with multiple regulations and studies to be completed. Moreover, the Dodd-Frank Act fails to provide a viable framework for resolving a complex, cross-border financial conglomerate. A number of jurisdictions have special resolution regimes<sup>3</sup> or administrative arrangements for banks and other financial institutions, including Brazil, Canada, Hong Kong, Italy, Japan, Korea, Singapore, Switzerland, Turkey, and the United Kingdom. Yet no country has established effective procedures for resolving a financial group that encompasses not only a bank, but also a securities firm and an insurance company.

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<sup>1</sup> A large US SIFI recently released a chart showing that the Dodd-Frank legislation will nearly double its regulatory reporting lines. The already overly complex US regulatory system has been made still more byzantine.

<sup>2</sup> For example, The Dodd-Frank Act created the Financial Stability Oversight Council to identify which U.S. nonbank financial companies should be supervised by the Fed and subject to heightened prudential standards (i.e. identified as SIFIs) either because of material financial distress at a company or because of the company's nature, scope, size, scale, concentration interconnectedness, or mix of activities. Yet Title I of the Dodd-Frank Act requires SIFIs to prepare a detailed resolution plan which would be difficult at best for a newly identified SIFI suffering material financial distress.

<sup>3</sup> See Brierley (2009) and Cihak and Nier (2009)

The Group of Twenty (G-20), meeting in Pittsburgh in 2009 instructed the Financial Stability Board to find a solution to this problem within a year. But a year later, at the Seoul Meeting of the G-20, the FSB reported that it needed more time to find a solution.

Before the Dodd-Frank Act, the United States provided an especially clear example of one aspect of the problem. Despite the fact that concerns about systemic risk have been at the top of the US policy agenda for decades, a US bank financial conglomerate may be subject to numerous different resolution procedures, with no established approach for coordinating the actions of the multiple regulatory authorities involved. The bank would have been subject to the FDIC's prompt corrective action (PCA) measures and resolution will be an administrative process. But a systemically important bank in the United States will be a subsidiary of a holding company, which will be subject to resolution by a bankruptcy court (although the Federal Reserve Board may choose another approach). Since holding companies sometimes own 20% to 40% of the assets of the group, a lack of coordination between the bankruptcy court and the FDIC could easily lead to chaos.

In addition, if there is a securities subsidiary, a broker-dealer would be subject to Chapter 7 liquidation proceedings under the bankruptcy law or the special resolution procedures of the Securities Investor Protection Corporation (SIPC), while the rest of the securities firm will be subject to resolution by the bankruptcy court under Chapter 11 restructuring proceedings. Meanwhile, any insurance units will be subject to the differing resolution procedures established in each individual state.

Apart from the FDIC and the Federal Reserve Board, none of the other regulators considers systemic risk implications when making decisions about resolving the parts of the failed institution that fall within its jurisdiction. Protection of the customers of the failed entity who

reside in the regulator's jurisdiction has first priority. Inevitably, they will ring-fence the assets they control for the benefit of the customers they have a duty to protect. Only after this objective has been met will they consider releasing additional assets to the parent. In effect, this means that the United States lacks a coherent domestic resolution mechanism for a financial conglomerate, which adds to the complexity of resolving a cross-border institution.<sup>4</sup> The result has been a series of enormously costly bailouts that often result in Zombie institutions (Kane, 1989) that warehouse dead debt, weaken competitors, and cannot play a constructive role in the economy until, after sufficient subsidy, they can absorb their losses and recapitalize. The United States provides a particularly incoherent example because of the fragmented and overlapping nature of its regulatory system. But worse still, many countries have no special resolution system for financial institutions at all.

### **1. What objectives should a good resolution procedure accomplish?**

Oliver Hart (2002, pp. 3-5) has identified several goals that all good<sup>5</sup> resolution procedures should meet. First, a good procedure should deliver an *ex post* efficient outcome that maximizes the value of the bankrupt business that can be distributed to stakeholders.

Second, it should promote *ex ante* efficient outcomes by penalizing managers and shareholders adequately in bankruptcy states so that the bonding role of debt is preserved. Debt

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<sup>4</sup> Most SIFIs in the U.S. have substantial cross-border operations. One knowledgeable market participant (Summe, 2010, p. 98) included the following institutions headquartered in the United States: Bank of America (primarily a bank, but also an investment bank); Citigroup (a bank, investment bank and insurance company); Goldman Sachs & Co. (a bank holding company, migrating a portion of its derivatives portfolio to the bank, a broker-dealer (repo), and other corporations); J.P. Morgan Chase Bank (primarily a bank and investment bank); Morgan Stanley (a bank holding company migrating a portion of its derivatives portfolio to the bank, a broker-dealer (repo) and other corporations); Wells Fargo (a bank); also major custodians that operate as banks including the Bank of New York Mellon, Northern Trust, PNC Financial Services Group, and State Street Corporation. She identified this group of institutions based on their participation in the payment and settlement systems, as well as in clearing transactions, plus the significance of their role in particularly interconnected financial markets such as the \$600 trillion+ over-the-counter derivatives market or the \$5 trillion daily repo market.

<sup>5</sup> Given that economists do not have a satisfactory theory of why parties cannot design their own bankruptcy procedures, Hart is careful not to describe these procedures as 'optimal'.

can serve as a disciplinary device to mitigate agency problems in the firm. The increased probability of financial distress puts managers' jobs at risk and may encourage greater effort and efficiency.

Third, a good resolution procedure should maintain the absolute priority of claims in order to protect incentives for senior creditors to lend and to avoid the perverse incentives that may arise if some creditors have a lower priority in bankruptcy than they would if the firm were a going concern. These three objectives apply equally to financial and non-financial firms, but in the case of SIFIs, three additional objectives should be included.

Fourth, a good resolution procedure should also be mindful of the costs of systemic risk. It should be cognizant of, and attempt to limit, the spillover effects that may not only damage other institutions but also markets, the financial infrastructure, and, ultimately, the real economy.

Fifth, a good resolution procedure should protect taxpayers and other potential sources of bailout funds from loss, since imposing losses on parties that do not share in the *ex ante* gains creates perverse incentives that encourage excessive risk taking by SIFIs<sup>6</sup>.

Sixth, a good resolution procedure should lead to predictable results. Markets abhor negative surprises, particularly if they result from unexpected behavior by regulators because they cast doubt over the rules of the game. The response is often a withdrawal from risky markets and a flight to quality until market participants regain confidence in the legal framework.

Figure 1 outlines an integrated system for the regulation, supervision and resolution of SIFIs. It begins with identification of SIFIs by their characteristics: size relative to the economy, complexity as measured in terms of number of affiliates, opacity as measured in terms of operational and financial interdependencies, performance of systemically important functions and

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<sup>6</sup> The fact that the guarantees and subsidies which regulators in the United States and Europe were forced to provide amounted to 25% of world GDP (Haldane, 2009) indicates how far current efforts fall short of this goal.

the number of regulatory agencies or courts that would have to approve the resolution of a group.

Once the group is identified, triage begins in an attempt to separate healthy SIFIs that require no special monitoring from potentially troubled SIFIs that require more careful scrutiny to determine whether they have problems that can be remedied or whether they are headed for resolution. This determination is based partly on the factors that determine a SIFI's vulnerability to a shock: the amount of leverage employed by the group, the group's vulnerability to a liquidity shock, the alignment between subsidiary structure and lines of business and the resolvability of the SIFI as measured by the estimated time it would take to resolve. It is also based on examination reports and statistical analysis, which are routine in most modern supervisory systems. In addition, it depends importantly on an assessment of the SIFI's resolution plan, which surprisingly, is almost never part of the supervisory process.<sup>7</sup> This approach will permit most supervisory attention to be focused on SIFIs that are likely to experience problems.<sup>8</sup>

A suitably designed contingent capital requirement provides a powerful market incentive that is likely to induce a SIFI to recapitalize or sell lines of business or other assets in order to avoid setting off the contingent capital trigger<sup>9</sup>. Although the contingent capital trigger is

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<sup>7</sup> The absence of resolution plans is surprising not only because the potential endgame must be understood in order to supervise a SIFI properly but also because it is an internationally agreed precondition for effective banking supervision in the Basel Committee's (1997) Core Principles for Effective Banking Supervision. This is an international standard by which each country's financial system is judged during Financial Assessment Programs administered by the IMF and World Bank. Precondition 4 states: 'Sufficiently flexible powers are necessary in order to effect an efficient resolution of problem banks. Where problems are remediable, supervisors will normally seek to identify and implement solutions that fully address their concerns; where they are not. The prompt and orderly exit of institutions that are no longer able to meet supervisory requirements is a necessary part of an efficient financial system. The supervisory agency should be responsible for, or assist in, the orderly exit of problem banks.'

<sup>8</sup> What this approach ignores is the possibility that systemic risk may be caused by many small institutions moving the same way at the same time. The US S&L crisis is often mentioned as an example of this problem. But this was a regulatory structure that made mass failure inevitable with sufficient interest rate volatility. While the regulatory category should have been challenged, individual banks would not have been identified as SIFIs. Second, this approach leaves out second and third round impacts of the failure of a SIFI. Once a reliable methodology for identifying these effects is developed it may be worth including in the identification process. But if individual SIFIs can be resolved with minimal spillovers, these effects may be much less important.

<sup>9</sup> On January 13, 2011 the Basel Committee (2011) required capital to be able to fully absorb loss at a bank that is not viable. Non-common equity instruments in Tier 1 and Tier 2 capital will be required to have compliant contractual terms. Existing non-compliant capital must be phased out beginning in 2013. The contractual terms of eligible CoCos must allow a write-off or conversion upon a trigger event. The trigger must be the earlier of a decision to inject public capital or a regulatory decision that write-off is necessary. As explained below, the trigger point should be set much higher to provide an effective incentive for the

designed to restore their equity position, it will cause substantial dilution of existing shareholders. This is very much like the recovery plan emphasized in the UK FSA's recovery and resolution plan.

If the SIFI is unable to restore its capital ratio, conversion will automatically take place and its equity will be roughly doubled. This may well enable the SIFI to execute a restructuring plan or negotiate a merger. But if its capital ratio continues to decline to the mandatory conversion point, it will be subject to PCA measures. Although most countries do not have a statutory basis for applying PCA measures,<sup>10</sup> such measures are advocated under Pillar 2 of Basel II and appear as Principle 22 in the *Core Principles for Effective Banking Supervision*.<sup>11</sup> PCA measures should consist of a series of escalating interventions designed not only to conserve the bank's liquidity, but also to intensify pressure on the bank to find a private solution to its problems before it must be resolved. If, nonetheless, the SIFI hits the regulatory insolvency trigger, the resolution plan will be implemented. Whether the resolution process is conducted more effectively in a streamlined bankruptcy process or by a resolution agency remains an open question in the eyes of many experts.<sup>12</sup>

Meanwhile, ISDA Master Agreements have played an important role in dampening spillovers in derivatives markets, but at the cost of some reduction in market discipline. This raises the question of whether it may be useful to reduce the range of instruments covered by

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institution to undertake self-corrective action. Compensation to instrument holders as a result of a write-off must be paid in common stock. The issuance of any shares a result of the trigger must occur prior to a public capital injection and the bank must always maintain prior authorization to immediately issue the required number of new shares.

<sup>10</sup> I am indebted to Dr. Christos Gortsos for emphasizing this point.

<sup>11</sup> For example, Core Principle 22 states: "Banking supervisors must have at their disposal adequate supervisory measures to bring about timely corrective action when banks fail to meet prudential requirements.... Supervisors should have the authority not only to restrict the current activities of the bank but also withhold approval for new activities or acquisitions. They should have the authority to restrict or suspend dividends or other payments to shareholders as well as to restrict asset transfers and a bank's purchase of its own shares."

<sup>12</sup> Indeed, while the Dodd-Frank Act establishes the FDIC as the resolution agency, it also mandates a study for an expedited bankruptcy process.

ISDA Master Agreements to those that are essential for the functioning of the financial system so that holders of longer-term derivative instruments may have greater incentive to monitor and discipline SIFIs.

## **2. Resolution planning**

Since the integration of resolution planning with regulation and supervision is crucial, this section begins with a description of a well-crafted resolution plan. This tool is at least as important to systemic stability as the disaster recovery and business continuity plan that is now required of most large institutions. But the resolution plan must be carefully defined and, because SIFIs typically have complex international corporate structures, the plan must also be carefully reviewed by the college of supervisors (or crisis management group) formed to oversee the SIFI.<sup>13</sup> Although there will undoubtedly be considerable experimentation as members of the G-20 fulfill their pledge to develop such plans, the FSB should make efforts to establish best practices as soon as possible, not only to minimize compliance costs for SIFIs, but also to ensure that the resolution plans yield comparable, useful results for each SIFI as a whole.

The resolution plan should begin with the assumption that the SIFI is insolvent under the regulatory definition of insolvency. This definition should be above the point of economic insolvency and standardized across countries because differing insolvency standards can lead to

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<sup>13</sup> Within the last year 'internationally-consistent firm-specific contingency and resolution plans' have been endorsed by the Group of Twenty (2009), experimented with by the FSA as recovery and resolution plans (known popularly as living wills), introduced by the US Treasury to Congress as rapid resolution plans and proposed in the Dodd Bill as funeral plans. The FSB Principles for Cross-Border Cooperation on Crisis Management of April 2009 commit national authorities from relevant home and host country jurisdictions to ensure that firms develop adequate resolution plans. The resolution plans will include both plans to be prepared in the first instance by each firm, to reduce its risk-exposures and make its structure more effective in a 'going concern' scenario, and wind-down plans, to be prepared by the authorities, in a 'gone concern' scenario (FSB, 2009c). The FDIC (2010) has issued a notice of proposed rulemaking regarding 'Special Reporting, Analysis and Contingent Resolution Plans at Certain Large Insured Depository Institutions'. Although the concept has been broadly endorsed, little has been written about what the details of such a plan should include. Exceptions are to be found in Avgouleas et al. (2010), Huertas (2010) and Herring (2009b, 2010). This section draws heavily from Herring (2010).

disorderly insolvencies or massive, improvised bailouts. The plan should be a joint undertaking of the institution, its board of directors, and the principal supervisors. Although clearly the supervisors must have decisive control, it is equally important that the resolution plan be perceived as a fundamental part of good corporate governance.<sup>14</sup> The plan should contain several elements.

First, the SIFI must map its lines of business into the corporate entities that must undergo some sort of resolution process in the event of insolvency. Each of these separate entities and its location must be justified to the board of the SIFI and, ultimately, to the primary supervisors for each of the different lines of business and to the college of supervisors established for the SIFI. Fragmentation of lines of business across numerous legal entities will be difficult to justify to the board and the authorities because it would impede any attempt to salvage going-concern value from a line of business if it cannot be easily separated from the rest of the group and sold.<sup>15</sup> The resolution procedures must be described for each entity, including an estimate of how long they will take to complete.

The dialogue between the SIFI and its primary supervisor will inevitably be contentious at because it will represent a dramatic change from past practice<sup>16</sup> and will cause the SIFI to focus on possibilities it would rather not contemplate.<sup>17</sup> As Lord Turner (Giles et al., 2009), chairman

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<sup>14</sup> Ron Feldman (2010) has argued that the planning must be driven by supervisors, not firms. Although supervisors must have the final word, much can be gained by maintaining a dialogue between the firm, its board and the authorities. His point that, to be effective, resolution plans must lead to changes in the operations of financial institutions and supervisors, before a crisis hits, is on the mark.

<sup>15</sup> The collapse of Lehman Brothers presents a particularly good example of this problem. It had lines of business that were fragmented across numerous subsidiaries that were caught up in multiple insolvency procedures on three different continents with no prospect of reassembling the line of business even though this may have preserved substantial going-concern value.

<sup>16</sup> Hupkes (2009, p. 515) made the point clearly in an article titled "Complicity in complexity: what to do about the 'too-big-to-fail problem,'" in which she argues that policy-makers need to give more attention to how the complexity of an institution's legal structure affects the resolution process. She explains that the size of an institution is not the crux of the matter. "Rather it is the complexity of large financial institutions that makes rapid and orderly wind-downs virtually impossible."

<sup>17</sup> The very rumor that a SIFI was making a resolution plan might set-off a run in the absence of a general legal requirement that all SIFIs must do so. The legal obligation will enable the SIFI to do something it should be doing as a matter of good governance, without fear of undermining its reputation.



of the Financial Services Authority in Britain, has noted, “In the past, authorities around the world have tended to be tolerant of the proliferation of complex legal structures designed to maximize regulatory and tax arbitrage. Now we may have to demand clarity of legal structure.”<sup>18</sup>

Second, the SIFI must identify key interconnections across affiliates, such as cross-guarantees, stand-by lines of credit, contractual commitments or loans that link the fate of one affiliate to that of another. The plan should also identify operational interdependencies such as information technology, service agreements, staffing allocations human resource and related support systems, trading and custody systems, as well as liquidity, and risk management procedures that would impede the separation of one unit from another.

Third, the SIFI should be required to develop and maintain a virtual data room that contains information that an administrator or resolution authority would require to make an expeditious resolution of the entity. This is likely to require investment in an improved management information system that provides details such as organizational structures, loan and counterparty exposures disaggregated by borrower or counterparty, and legal entity.<sup>19</sup> The SIFI must also identify key information, trading and custody systems, indicating where they are located, and the essential personnel to operate them. Plans must be made to make these systems available to all entities at home or abroad during the resolution process, whether they are operated by the SIFI or outsourced to a third party. As a practical matter, this may require that backup IT operations be segregated in a separate subsidiary that could continue to function if the rest of the firm were to be resolved.

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<sup>18</sup> This notion has generated a considerable amount of controversy in Britain, with bankers generally taking the view that the supervisory authorities have no business monitoring their tax avoidance strategies. Alistair Darling, Chancellor of the Exchequer, has tartly responded (Giles et al, 2009) “I do worry when an organization is structured for tax purposes rather than for the efficiency of its business and the strength of its business.”

<sup>19</sup> This too is likely to be a contentious point as demonstrated by the years it has taken the FDIC to gain authority to require insured banks to identify insured deposits to facilitate rapid payouts. Banks successfully resisted for a number of years claiming that it would be an overwhelming technological challenge.

Fourth, the SIFI must identify any activities or units it regards as systemically important, and demonstrate how they could continue to operate during a resolution process. This will usually require that they be separately incorporated and made bankruptcy-remote so that they could easily be detached from the group if necessary in order to keep the systemically important function operating while other parts of the group are resolved.<sup>20</sup> Arrangements should also be in place to make a rapid transfer of customer accounts to another institution in the event of resolution.

Fifth, the SIFI must consider how its actions may affect exchanges, clearing houses, custodians, and other systemically important elements of the infrastructure. Ideally it should identify how it can disconnect from these highly automated systems without creating serious knock-on effects. This will require cooperation with these systemically important parts of the infrastructure. A particularly good example of a successful effort of this sort was the CHIPS (Clearing House Interbank Payment System) initiative enabling its bank participants and key central banks to withstand the simultaneous failure of its four largest participants.

Sixth, the SIFI must identify the procedures it would follow during resolution. This report should be quite detailed including, at a minimum, a list of bankruptcy attorneys and administrators who might be called upon, individuals who would be responsible for press releases and various notifications to counterparties and regulators, and a good faith estimate of the time it would take to resolve each separately chartered entity.

Seventh, the resolution plan should be reviewed at least annually and updated if the institution executes a substantial merger or a restructuring introduces additional complexity.

The managers of the SIFI must demonstrate to their board of directors that the resolution plan is complete and feasible. Boards should recognize that oversight of resolution plans is as

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<sup>20</sup> Hupkes (2005) wrote about this in the context of global financial institutions, much like the SIFIs that are the focus of this chapter.

much their responsibility as oversight of business continuity plans. Indeed, when the SIFI approaches insolvency, the board's fiduciary duty becomes one of maximizing the bankruptcy estate than can be passed on to creditors.<sup>21</sup> If the board finds the plan is excessively complex or time consuming, it has a duty to require management to simplify the corporate structure of the firm, invest in more powerful IT systems or reduce the scope of its activities so that it can be resolved in a reasonable amount of time.<sup>22</sup>

This process may also have a useful side benefit. Considerable research in cognitive psychology shows that decision-makers are likely to be more risk averse when they are forced to confront worst case scenarios even if they consider them unlikely to happen.<sup>23</sup>

Next, the primary supervisor<sup>24</sup> must evaluate the resolution plan in cooperation with both any other domestic supervisors of business in which the firm may be active and the international college of supervisors established for each SIFI. This group must certify that the plan is feasible, and the estimated time for the resolution is plausible and acceptable. In addition, it must ensure that all systemically important activities have been identified and properly insulated, so that they could be spun-off to another firm in the event of insolvency.<sup>25</sup> If the primary supervisor and the college of supervisors find the plan is not feasible or would take an unacceptable amount of time to execute, it should have the power to compel the SIFI to propose alternative options.

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<sup>21</sup> The absence of a credible plan would be presumptive evidence of a failure to carry out this fiduciary duty.

<sup>22</sup> Precisely what is "a reasonable amount of time" will likely change as the approach is implemented. The ultimate goal ought to be a plan that can be implemented over a weekend, but earlier iterations will clearly take much longer. Some have advocated the need for a twilight ('cotton wool') period between intervention and the decision to start liquidation to allow resolution to proceed more smoothly.

<sup>23</sup> See Guttentag and Herring (1984) and the references cited therein.

<sup>24</sup> In countries with a unified regulatory system, this is clear. In others, like the United States, it may not be unless the entity is a Bank Holding Company or a Financial Services Holding Company. Clearly this is one of the first problems to be resolved if there is ambiguity about who has overall responsibility for an institution--e.g. AIG-- or whether the primary supervisor is competent to carry out its duties -- e.g. Lehman Brothers.

<sup>25</sup> Hupkes has emphasized this point repeatedly. See, for example, Hupkes (2005).

The SIFI might propose alternatives such as simplifying its corporate structure, improving its IT infrastructure, spinning off activities or placing a line of business in an affiliate with no financial connections to any other affiliates and financed completely by equity.<sup>26</sup>

The supervisory authorities, however, must have substantially greater resources than currently, and power to compel action if the SIFI does not propose an acceptable alternative. If they lack such power, no meaningful action is likely to be taken, and the entire exercise will become a senseless and costly ticking of boxes. It may even prove counterproductive to the extent that it encourages market participants to believe that a problem has been solved when in fact it has not. The temptation to cut corners will be severe because the process will be enormously costly for both SIFIs and the authorities. Yet these costs will surely be small relative to the very large support - direct loans, asset purchases, collateral swaps, guarantees, asset insurance and direct equity injections - provided by American and European governments to their financial systems during the crisis.

Since many financial firms have become much too complex to take through any kind of resolution procedure in a reasonable amount of time, it seems naive to expect these firms to give up willingly the complexity that virtually assures them access to subsidies, a safety net, and a competitive advantage over other smaller, less complex institutions and so it is important that the process of resolution planning produces demonstrable improvements in the resolvability of these institutions. It may be necessary to appoint an independent commission to ensure that progress continues to be made.

Alternatively, Andrew Kuritzkes (2010) has suggested that a periodic tax of \$1 million be

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<sup>26</sup> One might question how these equity investments should be treated in computing consolidated minimum capital requirements. The equity investment should count fully because the purpose of imposing the equity requirement on these bits of the infrastructure, including the systemically important pieces, is to make them easy to detach from the failing institution. They should be relatively easy to sell because they are often systemically important parts of the infrastructure.

levied on each subsidiary of a SIFI. The tax would be deferred for five years, with the first collection in 2015 to incentivize firms to simplify their legal structures. The tax would be collected at five-year intervals thereafter. Based on current legal structures, the costs to international financial conglomerates would be significant, ranging from \$134 million to \$2.6 billion for the top thirty financial conglomerates.<sup>27</sup> The tax could be justified by the negative externalities associated with cross-border activity, legal complexity, and regulatory forum shopping. Others have suggested that capital requirements be calibrated to create similar incentives to simplify corporate structures, but capital requirements are already burdened with a number of objectives and have proven remarkably ineffectual in deterring risk-taking (IMF (2009, Ch. 3, p. 7)).

Imposing constraints on the size or structure of firms has traditionally been justified on grounds of competition policy, not as a way of enhancing financial stability. But what was once unthinkable is now being widely discussed. Governor of the Bank of England, Mervyn King (2009), former Governor of the Federal Reserve Board, Alan Greenspan (McKee and Lanman, 2009) and former Secretary of State and Treasury, George Shultz (2008) have all said, in effect, “Any bank that is too big to fail is simply too big.” Greenspan (2009) has also argued in addition that banks that are too-big-to-fail interfere with the creative destruction that is essential to a dynamic economy. Perhaps, most surprisingly, Jamie Dimon (Sender, 2009), CEO of JP Morgan Chase, has endorsed a resolution mechanism that would wipe out shareholders and impose losses on creditors but protect the financial system when a SIFI fails: “We think everything should be allowed to fail... but we need a resolution mechanism so that the system isn’t destroyed. To dismantle a bank in a way that doesn't damage the system should be doable.

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<sup>27</sup> See Herring and Carmassi (2010).

It's better than being too big to fail."<sup>28</sup>

During the process of evaluating resolution plans, the primary supervisor and the international college of supervisors<sup>29</sup> will gain an understanding of the regulations and tax provisions that provide SIFIs with incentives to adopt such complex corporate structures. It may be excessively optimistic to believe that these insights will help inform future regulatory, accounting and tax reforms, but it would be useful, nonetheless, to highlight some of the unintended consequences of regulatory actions in the hope that it might influence future reforms at the margin.

In addition, if a SIFI is involved in more than one line of business, the supervisors who oversee each of the important lines of business should be required to simulate a resolution each year under varying stress conditions. In this process, each supervisor must develop modes of cooperation with the others or make clear its intention to ring-fence the SIFI's operations within its domain. Unless supervisors within a single country can agree on how to resolve a SIFI, there is little hope of making progress in the much more complex international arena.

The primary supervisor must also conduct a similar exercise with the international college of supervisors and simulate a resolution annually under varying stress conditions. This will have the same virtues as the domestic exercise, and here too the supervisors will need to develop modes of cooperation or make clear their intent to ring-fence the portion they control. This will

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<sup>28</sup> The EU has a mechanism for taking account of competition policy in the case of a failing SIFI that receives state support. Former European Commissioner for Competition Neelie Kroes has required that Commerzbank, ING, the Royal Bank of Scotland, and Lloyds downsize to compensate for the anti-competitive effects of the subsidies they have received. The EU Competition Commissioner can force banks to take a range of actions, including mandates to 'sell billions of euros of assets, close branches, cut balance sheets drastically, restrict payments to investors, executives and staff, and focus more narrowly on retail banking' (Reuters, 2009). The United States lacks any mechanism for considering such issues except in the merger approval process (which is often given short shrift in the case of a shot-gun merger). And although the EU action is taken after the extension of a bailout, it seems preferable to the frequent US pattern of subsidizing the merger of a very large bank with another even larger bank with scant regard for competitive effects. See further Dewatripont et al. (2010).

<sup>29</sup> If not actually integrated with the supervisory authority, the resolution authority should be represented at these discussions. They will have the greatest expertise regarding how to implement an ordinary resolution.

enable the other key supervisors to anticipate what might happen and make appropriate preparations. Although these commitments will not be legally binding, the supervisors' personal integrity will be on the line, so there will be a strong incentive to be candid.

The potential benefits from developing resolution plans are substantial. First, the process should reduce moral hazard by making it clear to creditors and counterparties that a SIFI can be resolved in such a way that it may impose losses on them without catastrophic consequences for the rest of the financial system. An indication that this might have a powerful effect can be inferred from Moody's reaction (Croft and Jenkins, 2009) to the “recovery and resolution plans” proposed in the UK. It warned the British authorities that such an approach “would remove the necessity to support banks as banks would no longer be too interconnected or complex to fail. This could potentially result in rating downgrades where ratings currently incorporate a high degree of government support.” Of course, this benefit will be realized only to the extent that market participants believe a workable resolution plan exists and will be used. Equally importantly, they must believe firms that are not required to have resolution plans are credibly excluded from bailouts.

Second, gaining approval of the resolution plan will cause SIFIs to simplify their corporate structures and make preparations so that less of the bankruptcy estate is consumed by a frantic, last-minute attempt to formulate and execute a resolution plan. These amounts can be quite substantial. The administrators of the Lehman bankruptcy (Cairns, 2009) have estimated that at least \$75 billion was wasted because of the lack of any preparation for bankruptcy.

Third, developing the plan may cause SIFIs to reduce their risk exposures because of greater awareness by the board of directors, more thorough analysis by supervisors, and greater discipline by creditors and counterparties.

Fourth, a credible resolution plan will level the playing field between SIFIs and smaller, less complex institutions so that profits and market share flow to institutions that provide the best services most efficiently rather than to institutions that benefit from the subsidy of an implicit guarantee.

Of course, resolution plans have both private and social costs in addition to the above benefits. Compliance costs will certainly increase significantly for SIFIs (and for supervisors, making it all the more important to provide them with adequate resources). But some of the upgrades in IT systems required should enable firms to manage their businesses more effectively, as well as facilitate a resolution.<sup>30</sup> Resolution plans may also reduce the efficiency with which the SIFI can deploy its capital and liquidity, but often these efficiencies have proven illusory in a crisis, when they are most needed. To the extent that capital and liquidity will be ring-fenced by regulators of other lines of the conglomerate's business (who believe their main duty is to protect the customers of the SIFI in their regulatory domain), they will be unwilling (or perhaps legally unable) to upstream capital or liquidity to a faltering parent<sup>31</sup> Finally, a resolution plan may increase capital requirements and tax payments and lower profits to the extent that corporate simplification requires the elimination of entities used to engage in regulatory arbitrage and tax avoidance. But this is a private cost, not a social cost.

With regard to social costs, resolution plans could limit potential economies of scale and scope. But there is little evidence in the academic literature that economies of scale and scope outweigh the diseconomies of scale and scope that have become evident in the recent crisis.<sup>32</sup> In

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<sup>30</sup> In a private comment, Robert Eisenbeis has pointed out that just as the preparations for Y2K enabled a number of banks to deal more effectively with the shock of 9/11, this improvement in IT systems may have unexpected benefits.

<sup>31</sup> In this sense, the Basel Committee's long-time emphasis on consolidated regulation of minimum capital requirements may be deeply misleading. Similarly, the ratings agencies clearly misjudged the ability of AIG to upstream excess capital from their multiple insurance businesses to aid the holding company or a faltering affiliate.

<sup>32</sup> See, for example, Berger and Mester (1997). Although there are numerous empirical studies that attempt to quantify economies



any event, technology-intensive activities, which appear to offer genuine scale economies in some lines of business that involve heavy fixed costs, can be ring-fenced and operated as separate units from which firms of all sizes could benefit, much like the evolution of automated teller machines which are now a shared network, but began as proprietary systems. By reducing leverage, resolution plans may increase the costs of intermediation. But since excessive leverage is heavily implicated as a cause of the recent crisis, this may actually be a social benefit rather than a cost.

### **3. Providing an adequate capital buffer: the role of contingent capital instruments<sup>33</sup>**

The resolution plan is triggered by breaching a regulatory insolvency standard that must be set considerably higher than zero economic net worth if there is any hope of minimizing losses. In addition, a suitable requirement for contingent capital will create strong incentives for a faltering firm to make every effort to achieve a private solution before it reaches the regulatory insolvency point and must be resolved. As noted, Pillar 2 of Basel II comes very close to requiring a prompt corrective action standard, but, in fact, very few countries have adopted prompt corrective action triggers, much less a common definition of insolvency. This inconsistency must be resolved if there is to be any hope of meaningful coordination in resolution policies. Moreover, in the absence of binding *ex ante* agreements to share the burden in loss, it is essential that each country take all possible measures to prevent or, at least, minimize, loss that extends beyond those compensated to bear the risk of loss.

This section develops an approach for employing contingent capital requirements as a means of credibly bolstering a SIFI's equity capital, encouraging market discipline over the SIFI's

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of scale, all are subject to criticism because of the paucity of relevant data. This is, of course, particularly true for enormous banks. But it does seem clear that scale economies cannot be the main driving force behind the creation of trillion dollar banks. A more robust and perhaps more relevant empirical regularity is that the compensation of senior executives tends to increase proportionately with scale (Frydman and Saks, 2007).

<sup>33</sup> Much of the material in this section is based on Calomiris and Herring (2010).

behavior, and minimizing the probability that bank resolution would be necessary. First is an explanation of the logic of requiring that SIFIs issue contingent capital in the form of subordinated debt instruments that convert into equity when issuers suffer a sufficient loss of value. (See Appendix I for a summary of the historical rationale for incorporating some kind of subordinated debt in the capital structure.) Second, the difficult issues of setting an appropriate trigger for conversion, the terms and amount of conversion are considered. Third, a simple example is constructed with realistic parameter values showing how contingent capital requirements could have been set, in an integrated framework that includes a minimum common equity requirement, a contingent capital requirement, prompt corrective action, and a resolution plan as the SIFI approaches the regulatory insolvency point. In addition, the example shows how contingent capital would operate over the business cycle, and how the possibility of conversion would incentivize voluntary additional issues of equity capital or a voluntary restructuring and help the SIFI to avoid insolvency.

### **3.1 Market discipline and the advantages of contingent capital over subordinated debt**

Several experts have recommended requiring subordinated debt as part of minimum capital requirements or, more recently, using credit default swap (CDS) spreads as regulatory tools. But others have voiced concerns that although subordinated debt is available to buffer losses in a bankrupt concern, it does nothing to provide capital to a going concern. Moreover, using CDS or subordinated debt yields as regulatory tools could incentivize market agents to game the system by directly or indirectly buying debt or selling CDS insurance to affect the observed market spreads. Furthermore, some are concerned that competing firms might seek strategic advantage over a competitor by orchestrating a rise in its CDS spread or subordinated

debt yield. In particular, D'Souza et al. (2009) have argued against market-based triggers because they are subject to manipulation. That concern suggests that any market-based trigger used by regulators should be based on large movements in prices over a long period of time, and also on pricing in deep markets.

Research by Flannery (2005), Kashyap et al. (2008), D'Souza et al. (2009), Huertas (2009), Duffie (2010), and Hart and Zingales (2010) has highlighted the potential value, however, of providing some form of contingent equity capital infusion for banks via either conversion of existing debt, insurance contracts, or a rights offering. The Dodd-Frank Act mandates the Fed to study the scope for use of some minimum amount of contingent capital as part of regulatory capital requirements. The Basel Committee on Banking Supervision (2011) has set out standards that CoCos must meet to qualify as Tier 1 or Tier 2 capital. And the European Commission (2011) has proposed standards for debt bail-ins to avoid the use of taxpayer funds. Requiring a minimum amount of contingent capital certificates (CCCs) or contingent convertibles (CoCos) - subordinated debt instruments that convert automatically into equity in adverse states of the world, and prior to reaching the regulatory insolvency intervention point would have several advantages relative to traditional sub debt.

First, making subordinated debt convert into equity prior to bank insolvency eliminates the potential, politically charged issue of deciding whether to impose losses on debt holders after intervention; since the subordinated debt has already converted to equity and will share in the losses suffered by equity holders, the issue is removed from consideration.

Second, because sub debt has converted to equity before insolvency, debt holders cannot withdraw their funds at their maturity dates, which itself might trigger an insolvency event, although they can sell their equity in the secondary market.

Third, because CoCos would credibly remain in the bank and suffer losses in insolvency states, *ex ante*, the prices of CoCos will accurately reflect their true risks.

Fourth, in the event conversion is triggered, CoCos will provide a better buffer against losses to depositors, counterparties and senior debtors, than subordinated debt, since they will cease to accrue interest once they convert and therefore alleviate liquidity pressures on the bank to some extent.

Fifth, and perhaps most importantly, as emphasized by D'Souza et al. (2009) and Huertas (2009), CoCos will incentivize bank management to voluntarily issue common equity or sell lines of business or assets to preempt triggering conversion to prevent the dilution of common stock that would occur if conversion were to take place. This is an important insight. Under D'Souza et al. (2009) simulations, if a modest CoCo requirement had been in place in 2006, no SIFIs would have become insolvent in 2008-2009. Also, no institution would have had its CoCos converted; all institutions that got close to triggering their CoCos' conversion would have voluntarily chosen to raise sufficient equity ahead of conversion to prevent conversion.

Of course, if the institution waits too long, it may find that equity markets are closed to it. That is why a SIFI is likely to launch new issues or sell lines of business or assets long before it approaches the CoCo conversion point. There may, of course, be occasions when they are simply unable to issue new equity or sell assets at any acceptable price and the conversion is triggered. That would be unfortunate for the existing shareholders, but it automatically recapitalizes the SIFI at the expense of shareholders and holders of contingent capital, rather than the taxpayers.

D'Souza et al. (2009) emphasize that this may be an important advantage of CoCos

from two perspectives: First, it implies that the contingent equity capital implied by a CoCo is larger than the amount of the actual securities subject to conversion, since banks will voluntarily raise additional equity capital to avoid conversion. Second, the strong incentives on management to avoid conversion mean that CoCos are likely to trade more like fixed income instruments than ordinary convertibles, which is more likely to appeal to institutional investors, who tend to prefer low-risk debt instruments. As D'Souza et al (2009) show, because of the strong incentives for CoCo issuers to avoid conversion, CoCos would almost never convert, and thus would have yields quite close to traditional subordinated debt, but that depends in large measure on the shareholders' incentives to avoid dilution. In Huertas' colorful phrase: "To the common shareholder, contingent capital holds out the prospect of death by dilution and it can be anticipated that shareholders would task management to undertake the necessary measures to avoid dilution" (2009, p. 5).

This last observation is especially important from the standpoint of minimizing the social costs associated with the resolution of SIFIs. Because resolution is costly, difficult to coordinate across borders, and potentially disruptive to the financial system, a capital requirement that is, in essence, a prepackaged recapitalization, that substantially reduces the frequency and depth of insolvency would be highly desirable. The incentives for voluntary, equity capital-raising or asset sales that are inherent in CoCos are, therefore, especially beneficial.

There are five key challenges to designing a useful CoCo requirement:

- (1) Devising an appropriate trigger for conversion of CoCos into equity.
- (2) Determining the amount of CoCos relative to other balance sheet items.
- (3) Setting the terms under which CoCos will be converted into equity.
- (4) Devising rules for CoCos, and more broadly for all types of regulatory capital, that

would minimize the pro-cyclicality of capital requirements (that is, the tendency of risk-based capital requirements to accentuate risk-taking in booms and exacerbate credit crunches during economic downturns).

(5) Integrating CoCo triggers with intervention triggers associated with PCA.

As Charles Goodhart (2010) has warned, if these parameters are not set carefully, CoCos may precipitate a death spiral when they are converted.

### **3.2 Setting a trigger**

How should the trigger for conversion of CoCos be set? How should it vary over the business cycle, if at all? And how should the triggering mechanism for PCA be coordinated with the triggering of CoCo conversion? As D'Souza et al (2009) point out, a desirable CoCo 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 (e.g., D'Souza et al, 2009; Hart and Zingales, 2010) assume that book values of the institution's equity relative to its assets, based on accounting reports and/or examinations by supervisors, would be used as a conversion trigger for contingent capital. The central problem with using book value as a trigger is that book value is an accounting concept, and thus subject to manipulation and, inevitably a lagging indicator of deterioration in a bank's balance sheet. The Japanese banking system was insolvent for a decade while still

satisfying its minimum book value capital requirements under the Basel standards. Indeed, the central purpose of employing non-equity capital in the first place, as noted above, is to bring market opinions into the process of regulating banks. The problem of using book values as triggers is not just one of managerial dishonesty.<sup>34</sup> Regulators and supervisors have shown time and again that they are hesitant to opine negatively about SIFIs in public. Such forbearance leads to protracted delays in recognizing problems. That capital loss recognition problem is at the heart of the failure of PCA to fulfill the high hopes that the FDICIA would avoid costly bank failures.

What market-based measures could be employed as the trigger? The two obvious candidates are CDS spreads and stock price movements. CDS markets seem less desirable for the purpose of deriving triggers for several reasons. First, the markets are not deep enough, and thus may be prone to manipulation. Second, the pricing of risk is not constant over time; an observed spread at one point of the business cycle, under one set of market conditions, can be indicative of a higher level of risk than that same spread observed at another time under a different set of business conditions.

Equity values, if used properly, would provide the best source of information on which to base triggers. Indeed, some of the best-known cases of the failures of large firms that surprised some rating agencies or regulators were signaled long in advance of their failure by *severe and persistent declines in the aggregate market value of their equity*. KMV's rating of Enron's debt was the only one that correctly predicted a severe probability of default. The reason for its success was that the KMV model was based on the Black-Scholes approach to measuring default risk as a function of Leverage (measured using market values) and asset risk (also derived from observed stock price volatility). Similarly, market value information about Lehman provided an early

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<sup>34</sup> And the complicity of accounting firms in window-dressing transactions as shown in the Lehman Brothers case.

warning of its problems. Valukas (2010) shows that Lehman's market-to-book ratio fell from about 0.9 in June 2008 to 0.4 in July 2008, long before its September 2008 failure. The combined value of the equity and the outstanding debt at Lehman was slipping over time during the Spring and Summer of 2008, and that combined value was actually less than the face value of its liabilities on several occasions in July and August of 2008. A Lehman CoCo triggered by a substantial and protracted market decline in the equity value of Lehman would have produced conversion of debt into equity long before insolvency.

More importantly, as D'Souza et al. (2009) emphasize, the existence of a credibly triggered CoCo would have incentivized all large financial firms to voluntarily raise equity capital in large amounts before hitting the CoCo trigger. D'Souza et al. (2009) argue that even under the assumption of a 15% decline in share prices in reaction to an announcement of an equity offering, the dilution effects on stockholders would be much less from an equity offering than from a triggered conversion, provided that it is sufficiently large and on sufficiently favorable terms to the holder of the CoCo. In other words, managers who are maximizing the value of shareholders' claims in the firm will always have a strong incentive to prevent CoCos from triggering by preemptively issuing equity into the market or selling assets or lines of business, *so long as the dilution effect of the CoCo conversion is sufficiently large.*

The declining equity values are only reliable as rough measures of a SIFI's health if they are persistent and severe, and even then, they offer only a rough indication of the firm's financial health. Fortunately, that indication is good enough to serve as an effective trigger for CoCos. (See Appendix II for two examples of how a 90-day moving average can smooth fluctuations in share prices, thus reducing the noise in the stock price signal and making it more difficult for speculators to force a CoCo conversion.)



Would a trigger based on the market value of capital relative to quasi-market value of the firm<sup>35</sup>, be desirable based on the criteria of predictability, timeliness, comprehensiveness and accuracy? Clearly, it is a comprehensive measure of firm value (in fact, the market capitalization of a bank is the comprehensive measure of value, which includes, in principle, the value of tangible and intangible assets as well as off-balance sheet positions). Because market values of the shares of SIFIs are continuously observable in deeply traded equity markets - markets that continued to trade actively even during the depth of the financial crisis -- a trigger based on equity valuation will be timely and predictable.

Will it also be accurate? Yes, so long as the demands placed on the measure are not excessive. Equity prices are not perfectly reliable, and they are particularly unreliable in detecting small valuation changes over short periods of time. They may also be subject to manipulation. But for the purpose of constructing a credible, predictable, comprehensive, and reasonably accurate measure of large swings in the market value of a SIFI, the market value of the firm is the only real possibility. So long as the user does not seek to achieve false precision, equity is reliable.

For example, suppose a trigger were defined as follows: The CoCo will convert from debt to equity if the ratio of the market cap of the bank to the quasi-market value of the bank falls to 4%. Assuming that the bank started with a prudent ratio of market cap to the quasi-market value of assets, a decline to this trigger would provide a reasonably accurate measure of a sustained decline in the value of the firm. Since the share prices are 90 day rolling averages, no SIFI could reasonably argue that the decline in the value of its equity was the product of market

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<sup>35</sup> One of the main problems in determining the market value of a bank is estimating the value of the bank's assets most of which are not actively traded. The quasi-market value attempts to estimate the market value of a bank's assets by making use of the balance sheet identity and adding the market value of the bank's shares to the face value of the bank's liabilities (under the assumption that it will not default). This measure is chosen because of its ease of computation on a continuous basis.

manipulation or irrational shareholder behavior.

### **3.3 The right amount of CoCos**

Because the efficacy of CoCos as preventative devices depends crucially on their dilutive effects on equity holders, it is important that CoCos be issued in sufficient quantity. For purposes of seeing how such a requirement might have worked during the crisis in which banks were required to hold a minimum of 2% common equity relative to risk-weighted assets (measured in book value terms), it seems plausible to propose that the minimum required amount of CoCos should have been set at 2% the 'quasi market value' of the firm.<sup>36</sup> Note that in those nations in which conversion would become a real possibility, 4% trigger a conversion of CoCos equal to 2% of the quasi-market value of the banks would imply a huge dilution of equity holders. All of the required CoCos should be converted when the ratio hits the trigger and the conversion price should be a sufficient number of shares so that the market value of shares received is at least equal to the principal amount of the CoCo.<sup>37</sup> That would provide a strong incentive for management to voluntarily issue equity or sell assets to preempt conversion

### **3.4 Varying CoCos over the cycle?**

Many policy-makers and academics have argued in favor of cyclical variation in capital

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<sup>36</sup> The crisis showed that the definition of the numerator, the risk-weighted denominator and the minimum acceptable ratio were completely inadequate. Nonetheless, for this retrospective examination of the crisis it is interesting to see whether the quasi-market value ratio would have been informative in separating SIFIs that would require intervention from SIFIs that did not. Basel III will require a much higher level of equity and the issuance of CoCos should be larger as well.

<sup>37</sup> Two issues of Contingent Capital - one by Rabo Bank (a cooperative) and the other by Lloyds - have proven to be significantly more expensive than subordinated debt. But it is important to note that these issues present a very different incentive to the managers than what is contemplated in this proposal. In the case of Rabo Bank, there are no shareholders to be diluted, and in the case of Lloyds, the amount of contingent capital and the trigger do not provide sufficient motivation for managers to issue equity preemptively to avoid setting off the conversion trigger. The issuance of these bonds during the crisis probably increased their cost.

standards. That topic is beyond the scope of this paper, but suffice it to say that by fixing the minimum proportion of CoCos relative to the quasi-market value of the firm, our approach would cause firms to raise capital during booms, when they can do so most cheaply and when it will constrain growth, and allow firms to reduce outstanding CoCos somewhat if they experience cyclical declines in their debt or the market value of their equity.

### **3.5 Integrating CoCos with PCA**

Because the trigger for CoCo conversion would occur while the SIFI is still demonstrably solvent, and because preemptive equity issues prior to hitting the trigger would result in further increases in equity, it is arguable that the CoCo requirement would make insolvency extremely unlikely. Nevertheless, unusually severe shocks do occasionally happen and, thus, it is still important to have on hand an effective PCA intervention regime and an effective system of resolution to go with it.

For the same reasons that a ratio of market value to the quasi-asset value of the firm would serve as the best trigger for CoCo conversion, it would also serve as the best trigger for PCA. If the CoCo conversion trigger occurred at 4%, then the PCA trigger should start if the firm breaches the 4% ratio again after the recapitalization achieved by the CoCo conversion.

### **3.6 An example of how CoCos would work**

Figure 2 illustrates how our proposed CoCo triggering would work. As the market cap to quasi-market value of the firm falls, approaching the trigger, a firm like A (line A) might issue equity (or sell assets) to avoid hitting the trigger. If for some reason a firm like B is unable or unwilling to issue equity or sell assets, the trigger is breached and the CoCo converts (line B). This will result in massive dilution of existing shareholders and the new shareholders who

formerly held CoCos may be unhappy as well. Shareholder dissatisfaction of this scale is likely to lead to an ouster of the existing management and the installation of a new management team. And so CoCo conversion might enhance the virtually moribund market for corporate control of regulated financial institutions. It will certainly add further motivation to management to take corrective action before reaching the trigger. This doubling of capital and reduction in liquidity pressures (and perhaps a new management team) may buy the firm enough time to successfully restructure and become a non-problem SIFI. Finally, a firm C may be unable to use the additional capital and time to accomplish a restructuring or recapitalization, and so its value would continue to decline until PCA is triggered (line C).

Figure 3 shows the movement of the market cap to quasi-market value of assets from April 2006 to April 2010 for five SIFIs that did not require government support. Note that none of these institutions fell below the 4% ratio. If the CoCo requirement had been in place only Goldman Sachs and Met Life might have triggered a conversion. It is likely, however, that the prospect of dilution would have caused the managers of both firms to issue more equity or sell assets to avoid hitting the trigger.

Contrast Figure 3 with Figure 4, which shows the movement of the market cap to quasi-market value of assets ratio for 10 banks that required substantial government support or were forced to merge or went into bankruptcy. Note that all of these firms breached the 4% ratio and in most cases did so many months before they were subject to intervention, forced merger or closure. It is particularly noteworthy that Bear Stearns, Lehman Brothers and AIG – all of which appeared to catch the supervisory authorities by surprise and were subject to different interventions, hastily improvised over a sleepless weekend – had, in fact, fallen below the 4% trigger several months earlier. It is possible that a CoCo requirement might have caused these

firms to behave more prudently. At a minimum it would have bought them additional time to prepare for an orderly resolution and would have been a clear warning to regulators to perfect their rapid resolution plans.

Figure 5 shows the evolution of the ratio of the market cap to quasi-market value of assets for European banks that required massive interventions. In this case too, each bank crossed the 4% trigger months before they needed to be bailed out. A CoCo requirement might have given them an incentive to behave more prudently and restructured or issued equity before their situations became hopeless. And it surely would have given regulators more lead time to prepare an appropriate resolution policy.

In summary, a 4% trigger based on the ratio of the market cap to the quasi-market value of assets might have been an effective device for preventing the collapse of all of these troubled SIFIs during the 2008-2009 crisis. Moreover, each of these institutions would have faced strong incentives preemptively to issue equity or sell assets to avoid triggering their CoCos months earlier. And the supervisors could not have claimed to be taken by surprise at the sudden collapse of these firms.

It is, of course, possible that despite a CoCo trigger, a well-designed set of PCA interventions, a regulatory insolvency point substantially above zero net worth and a well-constructed resolution plan, the SIFI's own resources would not be sufficient to pay off all creditors and counterparties. This is, of course, a scenario that the college of supervisors should have simulated so that no supervisor should be surprised by the actions taken by the others. In some cases the home country may choose to inject funds to minimize the spillovers, but there must be a strong, verifiable justification for doing so since a properly executed resolution plan

will constrain most damaging spillovers.<sup>38</sup> In some cases where two supervisors have strongly overlapping interests, there may be an agreement to share losses. But undoubtedly, in many cases, when it becomes clear there are significant losses to be allocated, some supervisors will choose to ring-fence the assets they can control.

Several questions remain open with regard to the best resolution process. The experience of 2007-2009 has shown that, as presently constituted, neither the FDIC acting as resolution authority nor the federal bankruptcy court have been able to resolve SIFIs without substantial spillovers (in the case of the bankruptcy court) or substantial costs to other banks (in the case of the FDIC) and taxpayers (when the Fed and Treasury become involved, as they inevitably have been in the case of SIFIs). Reform must create a means to transfer the control of assets and operations of a failed institution in an orderly way, while ensuring that shareholders and creditors of the failing firm suffer appropriate losses. This will ensure that the resolution avoids significant disruptions to third parties, protects taxpayers from bailout costs, and restores market discipline to firms that might otherwise have been regarded as too big, too opaque or too complex to fail. Clearly no existing resolution agency or bankruptcy court is up to the task. But there's an active debate between those who prefer an improved resolution agency and those who favor an accelerated bankruptcy process. What follows is a summary of the pros and cons of each alternative.

#### **4.1 The expedited bankruptcy option**

Speed is crucial if disruptions are to be minimized. Yet in most countries, bankruptcy procedures -apply a stay to all claims on the firm. This procedure is intended to protect the status

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<sup>38</sup> The desire to protect certain creditors or counterparties should not be regarded as an appropriate expenditure of taxpayer funds since it is likely to increase moral hazard and make future crises more frequent and deeper.

quo and to enable the bankruptcy administrator to identify and realize maximum value for the firm's assets (which may involve selling part or the entire firm as a going concern) and allocate the proceeds to creditors equitably. All of this takes a substantial amount of time and legal expense. In the United States, which has relatively speedy bankruptcy procedures, the average time for a non-bank firm to emerge from Chapter 11 Reorganization proceedings is 17.2 months and for Chapter 7 proceedings, which apply to liquidations, from two to four years.<sup>39</sup> But time is of the essence in dealing with a failing financial firm for four reasons.

First, SIFIs are often funded in wholesale markets in which participants may lend funds on a very short-term basis because they may need to make use of the funds the following day. Freezing these balances would be sure to have knock-on effects in the form of funding problems for other SIFIs.

Second, a financial firm has portfolios of interconnected legal contracts, many of which are traded 24 hours a day and repriced from one trade to the next. A default will trigger consequences that will not only cause losses and penalties for the failing institution, but also it will cause changes in its net exposures to its counterparties. If the failing firm is unable to continue trading to hedge its exposures after bankruptcy, the value of its assets may decline. Aggressive, dynamic management of the portfolio may be necessary to preserve asset values. Indeed, a stay may cause losses not only to creditors of the failing firm, but also to counterparties who are unable to liquidate, transfer or re hedge their positions. This increases the probability that the failing firm will cause additional failures.

Third, confidence is a crucial input in the production of financial services. If clients and

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<sup>39</sup> This was true over the period 1982-95 (Group of Thirty, 1998, p. 139) in the United States. The liquidator of the four UK subsidiaries of Lehman Brothers has predicted that the process will take at least 10 years.

counterparties cannot be reassured that the firm will be able to perform on contracts as promised, the firm's business will simply disappear. Quick action is needed if there is to be any opportunity to harvest going-concern value from the firm. A financial firm cannot continue operation as a gone concern.

Fourth, the skills of the people who run the business are another crucial input into the production of financial services. If employees are faced with uncertain prospects over an extended period, they will leave for other jobs, taking firm- specific expertise with them. This too will undermine efforts to realize going-concern value from the sale or reorganization of parts of the firm.

Thus, the delays inherent in standard bankruptcy procedures may undercut efforts to preserve asset values for distribution to creditors of the failed firm. In addition, they may increase the damage to counterparties and creditors of the failed firm, increasing the likelihood of systemic consequences. Moreover, the bankruptcy courts have no obligation to consider the systemic risk implications of their actions. Their focus is to restructure the parts of the firm that can be maintained as a going concern and to make an equitable distribution of the assets of the bankruptcy estate to the creditors according to the priorities established in various contracts.

Critics of the process also complain that the management that led the firm into bankruptcy generally remains in control and that various participants may engage in venue shopping and attempt to delay the bankruptcy proceedings with the result that much of the bankruptcy estate is consumed in legal and administrative costs.

#### **4.2 The enhanced resolution agency option**

The United States has long recognized that separate procedures should apply to banks.



The FDIC has been given the objectives of ensuring that depositors have prompt access to insured deposits (and to the extent possible, to other funds as well) and to ensure that the systemic threat of a failure is contained.<sup>40</sup> The FDIC has a broad range of powers to repudiate contracts and transfer positions to other banks as well as options for dealing with a bank failure<sup>41</sup> including liquidation, arranging a purchase and assumption transaction with another institution, establishing a conservatorship, providing open bank assistance or creating a 'bridge bank'.

This last option is the technique most likely to be applied to a SIFI (Bovenzi, 2002). A bridge bank is a temporary national bank organized by the FDIC to take over and maintain banking services for the customers of a failed bank.<sup>42</sup> It is designed to bridge the gap between the failure of the bank and the ultimate resolution, which is intended to happen as speedily as a suitable buyer can be found.

Despite these powers, the FDIC has been virtually powerless to deal with the failing US banks that could be called SIFIs, because this would have required cooperation with bankruptcy courts and with other regulators that have oversight of parts of the group that comprise the SIFIs. This degree of cooperation is simply without precedent. Indeed, state insurance supervisors and the Securities Investor Protection Corporation have expressed their unwillingness to cede their powers to the FDIC. Instead they insist on guarding the clients and customers they are required to protect. Moreover, there is no established mode of cooperation between the FDIC and bankruptcy courts.

Those in the United States who would like to expand the powers of the FDIC to become a

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<sup>40</sup> See Kaufman and Seelig (2002) for an excellent analysis of the importance of maintaining the liquidity of bank deposits to minimize the spillover damage from bank failures.

<sup>41</sup> The FDIC is required by law to choose the method of resolution of the insured depository institution that is least costly to it (although there is a complicated procedure for creating a systemic risk exception). Resolution by the FDIC is further constrained by the Domestic Depositor Preference Act of 1993, which requires that all uninsured domestic depositors be repaid before any depositor at a foreign branch.

<sup>42</sup> The Japanese Deposit Insurance Corporation is also authorized to set up a bridge bank to deal with a bank failure with no immediate prospect of another institution acquiring the failed bank.

resolution agency capable of dealing with SIFIs want to create an agency that will be able to shape many aspects of the resolution process, including the timing of closures and the choice of reorganization, liquidation or a pre- packaged resolution. They would also like this new agency to have power to wipe out shareholders (except for residual value) and to allocate losses or protection from losses across and within creditor classes with the flexibility to maintain an orderly resolution. This is largely the view reflected in the Dodd-Frank Act.

In addition, they want the agency to have the ability to maintain critical, systemically important services and to select management while the SIFI is in the resolution, reorganization or bridge institution phase. Moreover, they would like the agency to have the ability to claw back funds that had been inappropriately transferred before the failure (which could of course include funds transferred internationally) and to avoid any second guessing by the courts. They would also like the agency to have a pool of funds - collected from the SIFIs, not taxpayers - to cover losses not allocated to depositors or other creditors deemed necessary to prevent systemic risk. Finally, they recognize the necessity of coordinating with other foreign jurisdictions that may be affected by their intervention. This would be very different from the current FDIC in terms of the scope of its domestic and foreign powers.<sup>43</sup>

By contrast, those who favor an expedited bankruptcy process tend to believe that this use of the legal system will minimize moral hazard, by ensuring that payment priorities are respected. They believe that it will be difficult to bail out uninsured creditors if the process is transparent and impartial, although they are generally willing to give standing to the government to make the case for considering systemic spillovers and for guaranteeing DIP financing or subsidizing a resolution, if necessary. Moreover, they tend to believe that certainty with regard to the outcome

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<sup>43</sup> Kroene (2010) and Cohen and Goldstein (2009) also make strong arguments for expanding the powers of the FDIC to deal with SIFIs.

of a default -- recourse to the bankruptcy courts-- will tend to encourage prepackaged resolutions and strategic sales of assets as well as exert market discipline on SIFIs. Generally they believe that Chapter 11 can help maintain competition and protect existing relationships.<sup>44</sup>

As a practical matter, given the demonstrated difficulties in achieving a coordinated resolution of an internationally active financial firm, there is considerable merit in seeing which approach can be more easily harmonized internationally. Are general bankruptcy concepts and priorities more alike in the core countries? Or would it be easier to devise resolution agencies with comparable powers? Unfortunately, we currently lack the data to answer the question with any certainty, but it seems an important subject for international bodies like the FSB to investigate. Compatible resolution processes will certainly not assure that all coordination problems will be handled properly, but it is a step in the right direction.

### **4.3 The acid test: would these measures have reduced the damage from the two largest failures - AIG and Lehman Brothers?**

Although counterfactuals are speculative by definition, there are at least seven reasons to believe that such a system would have been effective. First, both AIG and Lehman Brothers would have been identified as SIFIs and, because of their vulnerability to a shock, would have been identified for close monitoring. Second, the information produced in preparing the resolution plan would not only have alerted regulators to their precarious position, but also would have caused the corporations to simplify the legal structures of their operations. Third the necessity for the board to approve the resolution plan might have reduced the propensity to take

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<sup>44</sup> See Ayotte and Skeel (2010), Jackson (2010), Jackson and Skeel (2010) and Bliss and Kaufman (2010) for suggestions about how to make the bankruptcy process more effective for dealing with SIFIs and reason to prefer a speedy bankruptcy process to expanded resolution agency powers.

risk. Fourth, the issuance of CoCos and the knowledge that a viable resolution plan existed for each institution would have enhanced market discipline and limited risk taking.

Fifth, both firms crossed the CoCo trigger 6-8 months before their demise. Since Lehman was heavily owned by its managers and employees the prospect of dilution would have surely concentrated their minds on raising new equity, while they still had access to equity markets or on selling lines of business or assets. Even if they had hit the conversion trigger, however, the automatic recapitalization would have given them more time to find a private solution to their problems, which might have involved a merger, a restructuring, an additional recapitalization or a change in management. At a minimum, it would have warned the supervisors and resolution authorities of impending trouble so that there would have been no necessity to engage in desperate measures over a sleepless weekend. Breaching the PCA trigger would have conserved liquidity by restricting dividends, share buybacks and bonuses.

Sixth, the primary supervisor and the college of supervisors would have understood the challenges they faced in a resolution. They would have understood the processes that would need to be followed and they would have known which authorities would be likely to ring-fence the assets in their domain and which would have been willing to pool assets in a general settlement. Finally, if the worst happened, authorities would have had a clear plan to follow to minimize spillovers and maximize the bankruptcy estate for creditors. Of all of these benefits, perhaps the most important would have been to simplify the corporate structure, ensure that systemically important functions would continue to operate and execute a predictable, orderly resolution.

#### **4.5 Summary**

For all countries, there is much scope to develop more effective measures for reducing the

probability and magnitude of the failure of a global institution, and for resolving their operations. All countries need to construct a robust national supervisory and resolution system that minimizes the probability that the failure of a SIFI generates spillovers that threaten financial stability. The system must make sure that losses from failure fall only on shareholders and creditors who have been paid to take the risk. The ideal system begins with a competent supervisory authority that has access to a wide range of information, some of it derived from resolution plans. This will enable it to perform triage and focus its attention on the institutions that are most likely to disrupt the financial system. Supervision needs to be reinforced, however, by strong market discipline from three sources.

First, each SIFI should have contingent capital, triggered by market indicators that will automatically recapitalize a firm that encounters difficulty. The requirement for such contingent capital should be calibrated so that if the conversion happens, shareholders will be severely diluted. This will ensure that owners and managers will make every effort to find a private solution to the SIFI's problems before mandatory conversion is triggered. If nonetheless a conversion is triggered, there will be time to undertake a restructuring.

Second, if the SIFI's condition continues to worsen it will be subject to PCA measures (comparable to those that any bank would apply to a borrower that is nearing default). This should make the incentives even stronger for SIFI's owners and managers to find a private solution to the problems.

Third, if the SIFI nonetheless hits regulatory insolvency (which must be substantially above zero economic net worth, book value insolvency or illiquidity),<sup>45</sup> then it is subject to resolution. The plan for resolution would be negotiated beforehand with the SIFI's management,

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<sup>45</sup> Indeed, an essential ingredient for closer cooperation among countries will be a common definition of regulatory insolvency.

its board and international college of supervisors. Its design would ensure that the SIFI can be dismantled without interrupting the provision of any systemically important services or creating any other significant spillovers. The resolution plan would be reviewed each year and subject to stress simulations by the college of supervisors. It would make clear to the market that no firm is indispensable and that whatever essential functions it performs can continue to be provided. This will help to combat the increase in moral hazard resulting from the bailouts conducted by advanced countries over the past three years.

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## **Appendix I**

### **The rationale for junior debt as a component of minimum capital requirements**

Why would it make sense to require that some form of capital take the form of a debt instrument? Why not require that all capital take the form of equity? Some research has argued that a purely common equity requirement would be suboptimal because high leverage improves bank performance (Kashyap et al., 2008). But the more common argument is that debt can be superior to equity for some purposes. There is a long tradition in the theory of capital regulation suggesting that some form of credibly unprotected subordinated debt would be useful to include as part of a bank's capital requirement because of its role as a disciplinary device.

The primary motivation behind the subordinated debt idea (Horvitz, 1983; Calomiris, 1999; Shadow Financial Regulatory Committee, 2000) is that requiring a bank to issue a minimum amount of unprotected debt publicizes market perceptions of default risk which could inform bank supervisors about the condition of a bank, and make supervisors more likely to act rather than forbear from disciplining banks (since the signal is public). Junior debt yields are particularly useful as indicators to policy-makers since the FDIC is essentially in a junior debt position with respect to the bank (senior to equity, but junior to deposits); thus, observing sub debt yields provides a helpful indicator of market perceptions of the risk borne by the FDIC. If supervisors are able to detect risk in a timely fashion, bank failures will be less likely because: (1) banks will have to react to supervisors' concerns by limiting their risks and raising their equity capital once they suffer losses that increase their default risk on debt; (2) banks that are unable to prevent continuing deterioration in their condition will be subject to credible prompt corrective

action (PCA) to prevent them from becoming deeply insolvent.

Indeed, the advocates of sub debt requirements, therefore, traditionally have seen requiring sub debt as a complement to PCA. The problem with PCA-which envisions rule- based interventions by regulators (triggered by indicators of weakening bank condition) to require that banks increase capital and reduce risk prior to becoming insolvent- has been that intervention is not sufficiently prompt to permit any effective corrective action to be taken. Many US banks, in theory subject to the PCA guidelines introduced under the Federal Deposit Insurance Corporation Improvement Act (FDICIA) in 1991, have become deeply insolvent prior to triggering any intervention based on book value-related measures of bank health. A sub debt requirement would strengthen the effectiveness of PCA, in theory, by providing information about weakening bank conditions that would allow PCA to occur earlier, before a bank became insolvent.

The literature on sub debt requirements has evolved over the past decade. In response to the mandate within the Gramm-Leach-Bliley Act of 1999 that the Fed and the Treasury study the efficacy of a sub debt requirement, a Federal Reserve Board study reviewing and extending the empirical literature broadly Capital requirements.<sup>46</sup> The development of the CDS market, and recent research showing that CDS yields contain important information about bank risk not otherwise available to supervisors (Segoviano and Goodhart, 2009) has added further to interest in finding ways to harness the information content of sub debt for regulatory purposes. Other observers, however, have noted that actual sub debt yields and CDS spreads were quite low during the financial boom of 2005-2007, indicating that they would not have provided a timely signal of increased bank risk in 2006 and early 2007. On the other hand, advocates of sub debt

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<sup>46</sup> The Fed concluded that more research was needed.

requirements have noted that outstanding bank sub debt in 2006 and 2007 was not credibly unprotected, and in fact, was bailed-out during the crisis. In that sense, the failure of sub debt to signal problems could simply reflect correct expectations by market participants that the debts they were holding were not effectively at risk.

## Appendix II

Figure II.1

### The Impact of a 90-day Rolling Average on Smoothing Volatility in Market Prices

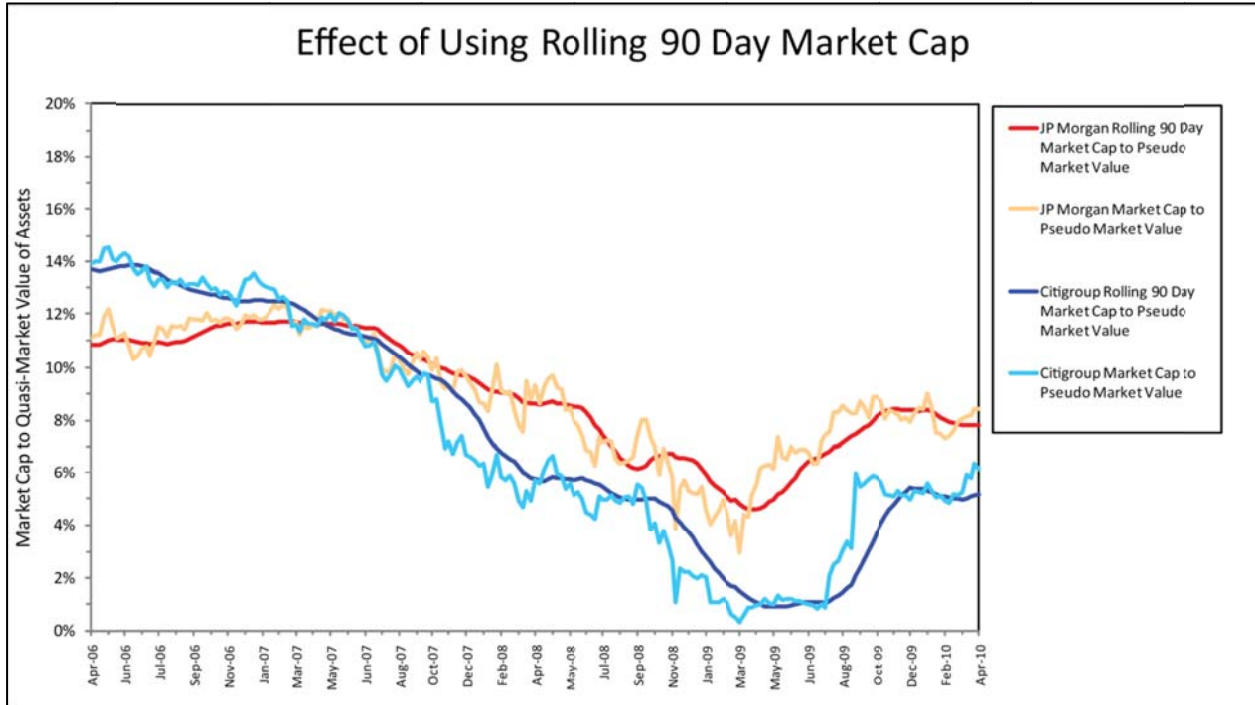


Figure 1

Schematic Overview: Integrated Regulation, Supervision & Resolution of a SIFI

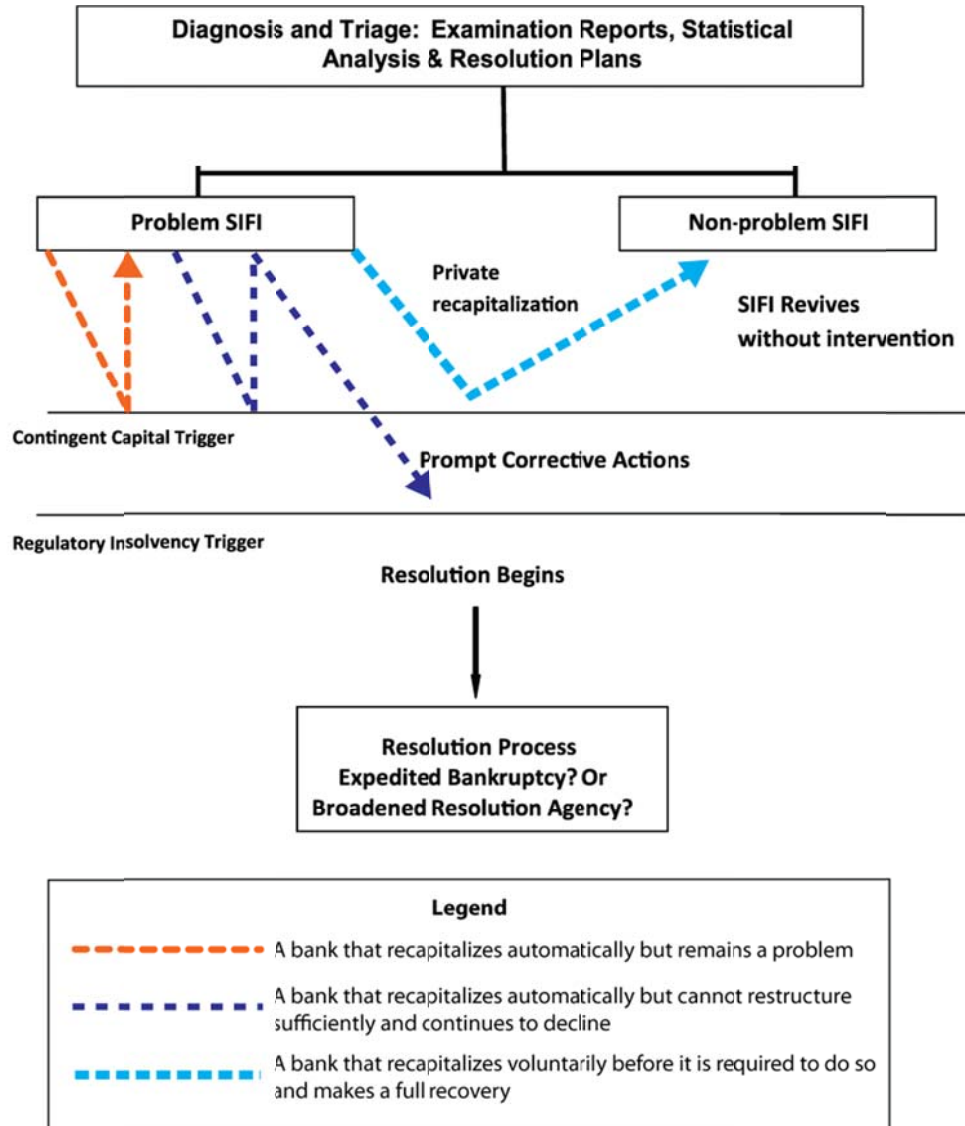




Figure 2

### How a CoCo Trigger Might Work

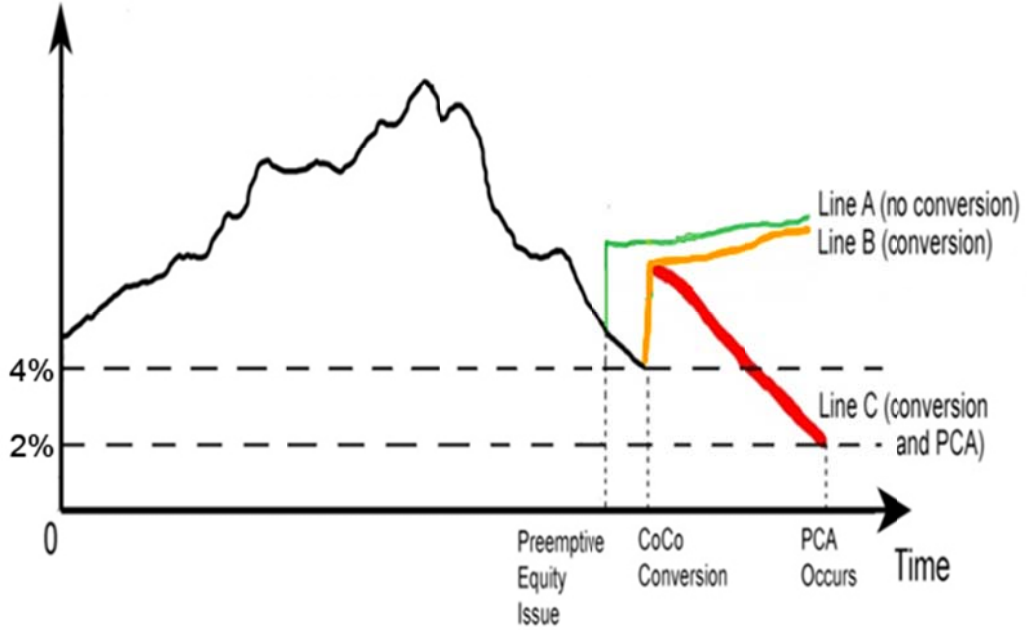
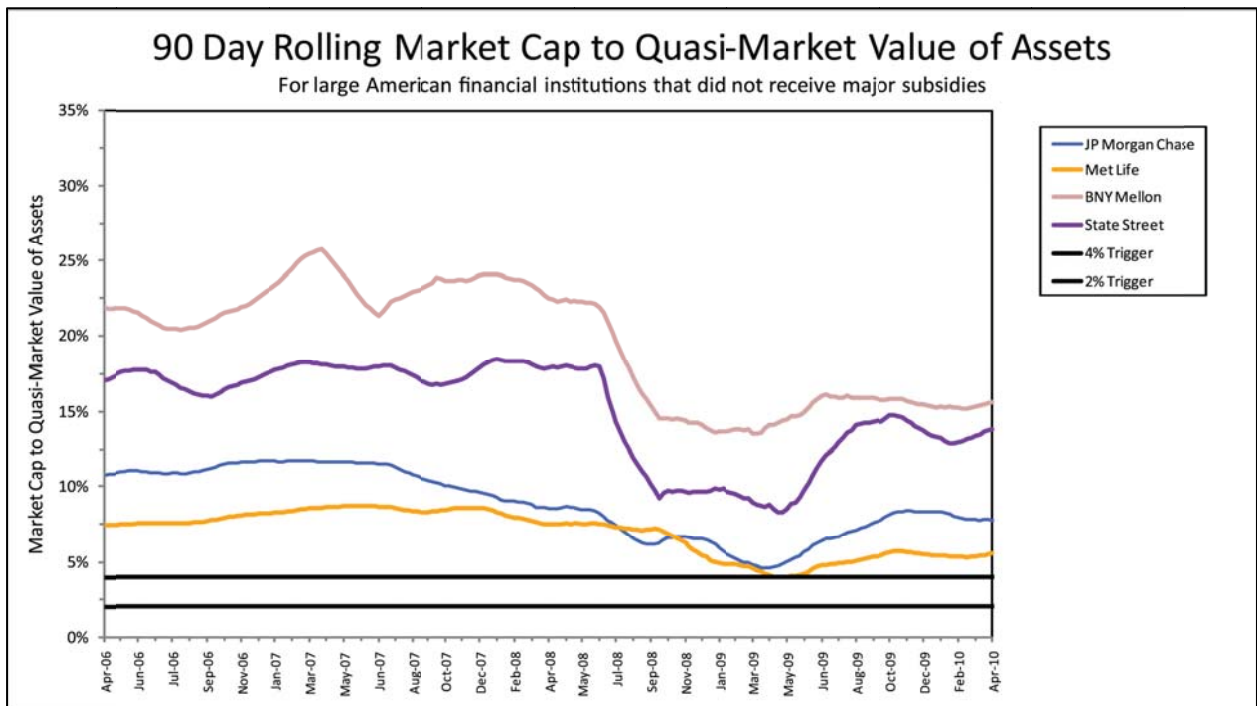


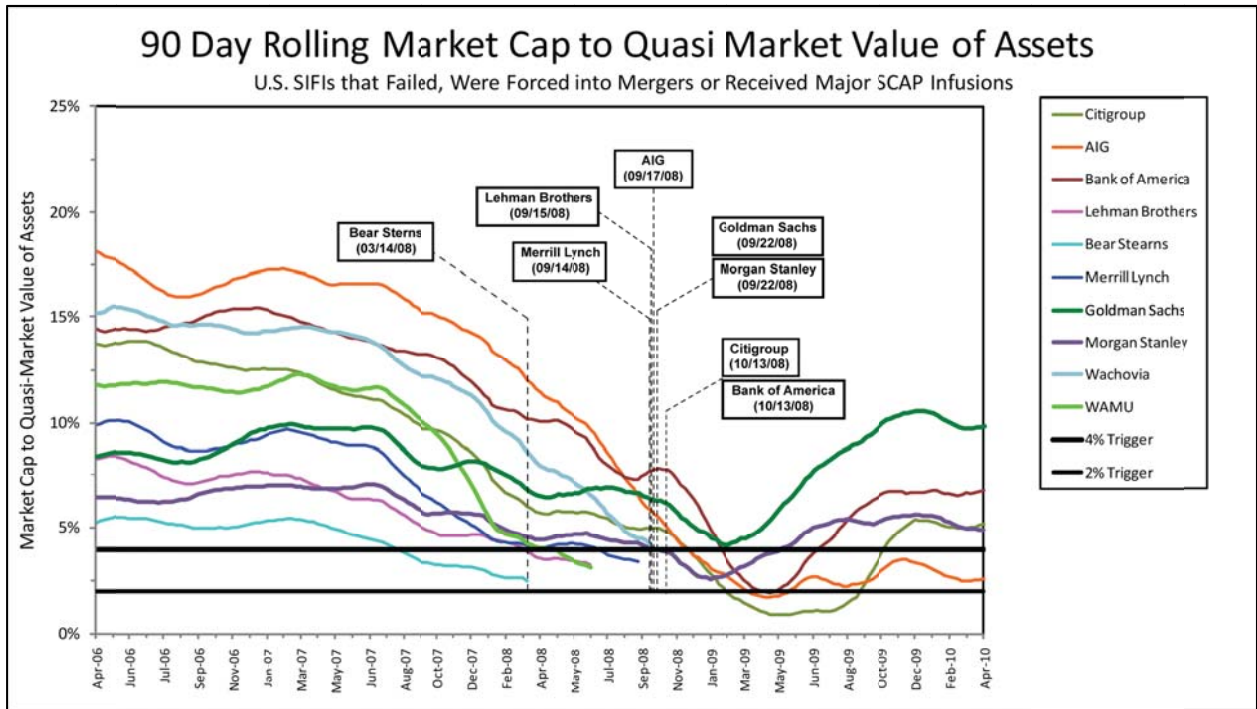
Figure 3

### How a 2% CoCo Requirement Might Have Worked for U.S. SIFIs that Did Not Require Intervention



**Figure 4**

**How a 2% CoCo Requirement Might Have Worked for US SIFIs that Did Require Intervention**



**Figure 5**

**How a 2% CoCo Requirement Might Have Worked for Foreign SIFIs that Did Require Intervention**

