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Why and How Resolution Policy Must be Improved

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No matter how effective U.S. financial regulatory agencies may be, they will not be able (nor should they try) to prevent all failures of systemically important institutions. The kinds of rigid controls that would be necessary to accomplish such an objective would surely stifle innovation and risk taking to such an extent that they would undermine the static and dynamic efficiency of the financial system. Given that some systemically important institutions will inevitably fail, how should they be resolved? This chapter discusses ways to strengthen resolution mechanisms, which can help reduce the likelihood of crises and the need for dramatic actions like those taken by the Federal Reserve and other agencies during the past 18 months.

TWO UNPALATABLE RESOLUTION APPROACHES: LEHMAN BROTHERS AND AIG

Inadvertently, within two days in September 2008, the United States provided two spectacular lessons in how *not* to resolve systemically important institutions. The first occurred on September 15, 2008, when, after trying to broker a merger of Lehman Brothers (LB) with other, stronger institutions, the U.S. authorities declined to bail it out and sent the holding company, Lehman Brothers Holdings International (LBHI), to the bankruptcy courts for protection under Chapter 11 of the U.S. Bankruptcy Code, the largest bankruptcy in U.S. history. Although LB was by far the smallest and one of the least complex institutions on the list of Large Complex Financial Institutions (LCFIs) maintained by the Bank of England and the International Monetary Fund, it was nonetheless of sufficient systemic importance that its collapse led to substantial disturbances on global capital markets. Credit risk spreads rose to record highs, equity prices fell by 4% worldwide when the bankruptcy was announced and government bond yields declined sharply as foreign exchange carry trades were unwound.

Lehman's total reported assets were roughly $700 billion. Its corporate structure included 433 subsidiaries in 20 countries.[1] This international corporate complexity greatly impeded the orderly resolution of the firm and created significant spillovers to other institutions and markets.

One of the major concerns was that LB was the sixth largest counterparty in over-the-counter derivatives markets. But back offices of other firms succeeded in processing billions of dollars

1. Based on Lehman Brothers' 2007 annual report.

of contracts and the International Swap Dealers Association organized an auction to determine settlement prices. Because derivatives contracts in which LB was a counterparty were usually marked to market daily and collateral was adjusted each evening to reflect changes in market prices, losses were relatively light. Losses were much greater, however, with regard to credit default swap contracts written on LB. Those selling protection on LB are in a similar position to bondholders and received a similar price: sellers lost $8.625 per $100 of coverage. A second major concern was LB's key role in the Repo market, which totals roughly $11 trillion and is the short-term, collateralized lending market that banks, broker/dealers, and hedge funds use to finance securities positions. The Fed attempted to address the risk that the market would seize up by allowing broader use of the Primary Dealer Credit Facility through expanding the list of eligible securities. In addition a group of global banks announced plans to use their own capital to establish a $70 billion private sector credit facility for those securities not eligible for the Fed facility. The Fed also announced an increase in its Treasury Securities Lending Facility to $200 billion.

What turned out to be more disruptive were the traditional exposures to LB's outstanding debt. Among the largest unsecured creditors were the U.S. federal government's Pension Benefit Guaranty Corp. and the German government's deposit-insurance arm (McCracken 2008) and money market mutual funds. The latter proved to be one of the most important channels of contagion. One of the oldest money market funds, the Reserve Primary Fund, was forced to write off $785 million of short and medium-term notes and became the first money market mutual fund to "break the buck" in 14 years. This triggered $184 billion in money market mutual fund redemp-

tions and forced fund managers to sell assets into illiquid markets. This spilled over into commercial paper markets including not only asset-backed commercial paper, but also non-asset backed commercial paper that had held up reasonably well and was a key means of financing corporations and banks.

The interbank market seized up entirely with the almost complete collapse of confidence in counterparties in money markets. Spreads between LIBOR and the comparable U.S. Treasury rate rose to nearly 450 basis points, more than double the already high spreads that prevailed before the LB bankruptcy. To stem the outflows from money market mutual funds, the Treasury provided guarantees to all shareholders as of September 19, 2008. This led to cries of competitive inequity from the banking industry and a boosting of the deposit insurance ceiling from $100,000 to $250,000.

In addition, failed trades proved particularly disruptive. Prior to LB's bankruptcy, portfolio managers placed thousands of trades with LB's broker dealer (LBI), many of which were subsequently transferred for settlement to LBI affiliates throughout the world. After the bankruptcy, these failed to settle and this has led to civil proceedings on three continents. The U.K. administrator said that about 43,000 trading deals were still "live" in the London subsidiaries alone and would need to be negotiated separately with each counterparty (Hughes 2008b).

But the fundamental problem was that LB was managed as an integrated entity with minimal regard for the legal entities that would need to be taken through the bankruptcy process. LBHI issued the vast majority of unsecured debt and invested the funds in most of its regulated and unregulated subsidiaries. This is a common approach to managing a global corporation,

designed to facilitate control over global operations, while reducing funding, capital, and tax costs. LBHI, in effect, served as banker for its affiliates, running a zero balance cash management system. LBHI lent to its operating subsidiaries at the beginning of each day and then swept the cash back to LBHI at the end of each day. The bankruptcy petition was filed before most of the subsidiaries had been funded on September 15 and so most of the cash was tied up in court proceedings in the United States.

Lehman also centralized its information technology so that data for different products and different subsidiaries were comingled. This was an efficient way of running the business as a going concern, but presents an enormous challenge in global bankruptcy proceedings. LB stored data in 26,666 servers, 20,000 of which contained accumulated e-mails, files, voice mail messages, instant messages, and recorded calls. The largest data centers were in New York, London, Tokyo, Hong Kong, and Mumbai. Moreover, LB used approximately 2,700 proprietary, third-party, and off-the-shelf programs, each of which interacted with or created transactions data. The bankruptcy administrators must preserve, extract, store, and analyze data relevant to the entities they are dealing with. This problem was made more difficult by the success of the administrators of LBHI in quickly selling two important entities that were rapidly declining in value because of loss of human capital: its investment banking operations and its asset management business.

Most of the U.S. investment banking operations—the assets, not the legal entities—were sold to Barclays. This necessitated bringing a Securities Investor Protection Corporation (SIPC) proceeding, which put all LBI accounts under the control of

the SIPC Trustee and permitted the broker-dealer to be liquidated. Nomura bought most of the investment banking business in Asia and continental Europe, and LB's asset management business was sold in a management buyout. But this meant that the data was owned by Barclays, Nomura, and the now-independent asset management division and so bankruptcy administrators in other countries are dependent on the new owners for access to data to determine the assets and liabilities of each legal entity. The administrator of the four London subsidiaries complained that nine weeks after the bankruptcy, he had yet to receive a confirmation of the assets owned by these subsidiaries.

The U.S. administrators expressed the optimistic view that they would be able to complete the resolution within 18 to 24 months, but the presiding judge reminded the administrator that the biggest impediments to a timely completion of the administration are the timetables of the other insolvency fiduciaries around the world. The administrators in London warned that it may take years for creditors to get some of their money back, noting that they were continuing to work on Enron, which failed seven years ago, which was about one-tenth the size and complexity of Lehman (Hughes 2008a).

The traumatic spillovers from the Lehman bankruptcy led the Group of 7 (G7) Finance Ministers to pledge "to do everything in their power to prevent any more Lehman Brothers-style failures of systemically important financial institutions" (Guha 2008). Observers said that it came close to a G7-wide temporary implicit guarantee for many or all of the liabilities of systemically important financial firms and a complete retreat from market discipline for some of the most systemically important institutions in the world.

Perhaps because of the unexpected magnitude of the spillover effects from the bankruptcy of Lehman Brothers just two days earlier, the U.S. authorities behaved very differently when they were informed that the American International Group (AIG) would have to file for bankruptcy because it would be unable to meet collateral calls in response to the downgrading of its senior debt rating by Moody's. The losses were concentrated in its unregulated financial products unit in London, which had built a huge book of thousands of credit default swaps guaranteeing the creditworthiness of the various tranches of subprime securitizations. AIG had a $1 trillion balance sheet with operations in 130 countries (Geithner 2009).

Within 72 hours the amount of money AIG needed grew from $20 billion to $85 billion (Dash and Sorkin 2008), which revealed an unsettling lack of clarity about AIG's knowledge of its own risk positions. The Federal Reserve provided $85 billion, but losses continued to mount and in November 2008, the Treasury announced a new rescue package that brought the total cost to $150 billion. On March 1, 2009, the federal government agreed to provide an additional $30 billion to AIG and to loosen the terms of prior loans. The government already owned nearly 80% of AIG's holding company as a result of earlier intervention which included a $60 billion loan, a $40 billion purchase of preferred shares, and $50 billion to guarantee the company's toxic assets.

AIG became a target of outrage when it was revealed that in mid-March it had paid $165 million in bonuses, including bonuses to members of the financial products trading unit that had brought the giant insurer to the brink of bankruptcy. Although the U.S. government had a dominant ownership share in the company, it felt powerless to renegotiate contracts.

Although there is some hope that the sale of some of AIG's non-strategic businesses can repay some of the government loans, massive amounts of going concern value have undoubtedly been destroyed and there can be no guarantee that it will not need still more infusions of government funds to stave off bankruptcy. But to date the government has protected all creditors and counterparties at enormous costs to taxpayers.

The inadequacy of resolution tools for dealing with systemically important non-bank financial institutions leaves society hostage to the success with which these institutions control and manage their risks. When they stumble, society is currently left with little choice but to subsidize them, thus encouraging moral hazard and increasing the likelihood of even larger crises in the future.

THE U.S. SPECIAL RESOLUTION APPROACH FOR BANKS

The irony is that the United States has taken some pride in having developed a superior resolution process for systemically important banks. (Until 2008, the assumption was that banks were the primary—if not only—source of systemic risk.) In 1987, the Federal Deposit Insurance Corporation (FDIC) was given authority to establish a new "bridge bank" to continue some or all of the operations of the failed bank until a final disposition could be made. Under the 1991 FIDICIA reforms, the FDIC was obliged to impose risk-reducing measures on insufficiently capitalized institutions and to take control of institutions when their capital level dropped below two percent. This was accompanied by a least cost requirement, but subject to a systemic risk exception. If the federal financial regulatory au-

thorities agree that the application of the least cost approach would generate systemic risk, the FDIC can choose to establish a bridge bank that continued the bank's systemically important functions while imposing losses on shareholders and some debt holders and repudiating some contracts even if it were not the least cost method of resolution. This approach is intended to minimize spillover costs on the financial system and to provide creditors with an incentive to monitor and discipline banks before the point of failure. The intent is to provide the bank with strong incentives to find a private-sector solution before it reaches insolvency. This legislation has been copied by several other countries.

Unfortunately, it has not been particularly useful in the current crisis for at least three reasons. First, many of the systemically important institutions have taken great pains to avoid being classified and regulated as banks—as for example, Lehman Brothers and AIG. Second, many of the largest banks that have experienced solvency problems have booked 20% to 40% of their assets in their Bank Holding Companies, which are not subject to the FDIC's authority and must be taken through bankruptcy court. This raises many of the issues that were experienced during the bankruptcy of Lehman Brothers. And, third, many of these institutions have acquired hundreds of foreign subsidiaries that would be necessarily be dealt with under local resolution procedures which are often very different than those employed in the United States.

Resolution Objectives in General

Although countries differ with regard to bankruptcy procedures, there appears to be widespread agreement on the goals that such

procedures should accomplish. Oliver Hart has identified three goals that all good bankruptcy procedures should meet (Hart 2002, pp. 3–5).[2] 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, a good procedure should promote *ex ante* efficient outcomes by penalizing managers and shareholders adequately in bankruptcy states so that the bonding role of debt is preserved. Third, a good procedure should maintain the absolute priority of claims 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 states than in normal states. These objectives apply equally to financial as well as non-financial firms. But in the case of systemically important institutions, a fourth objective should be appended: a good bankruptcy procedure also limits the costs of systemic risk. Thus a good bankruptcy procedure for a systemically important financial institution is one that maximizes the *ex post* value of the firm's operations subject to the constraints that management and shareholders are adequately penalized, *ex ante* repayment priorities are retained and systemic costs are appropriately limited.

George Kaufman has proposed a four-part procedure for resolving large, insolvent banks that is largely consistent with these objectives and stresses prompt action because delay may prevent even good bankruptcy procedures from accomplishing the four goals (Kaufman 2004). Insolvency procedures tend to be initiated later than they should be, often after a bank is

2. 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."

deeply insolvent. Not only does this directly increase the loss to be allocated across creditors, but also this may contribute to an acceleration of losses if the insolvent institution gambles for resurrection. In addition, once initiated, resolution tends to move very slowly. This may further exacerbate losses if assets cannot be adequately safeguarded and actively managed with profit incentives. Moreover, it increases the probability of systemic spillover to the extent that counterparties are unable to clarify and hedge their positions, borrowers are unable to make use of their collateral or draw on outstanding commitments, and depositors lose access to their funds.

Similarly, the international scope of an institution's operations may also impede the effectiveness of good insolvency procedures. The fragmentation of oversight that is inherent in a global network is likely to delay recognition of insolvency, quite apart from the expanded scope that it affords managers to conceal insolvency if they wish to do so. Once insolvency is recognized, moreover, it is much more difficult to institute insolvency proceedings. First is the question of which jurisdiction initiates the proceedings. The jurisdiction in which the bank is chartered? The jurisdiction in which most of the bank's assets are located? The jurisdiction from which the bank is managed? (In many cases, these answers need not be the same.) A related question, since the answer may vary from jurisdiction to jurisdiction, is what entity initiates the insolvency proceedings. The creditors? A bankruptcy court? A regulator? Or the insolvent entity itself?

Moreover, it is quite possible for insolvency proceedings to be initiated more or less simultaneously in several different jurisdictions that have conflicting rules on how the resolution should be conducted including such details as the perfection

of collateral, the right of set off (if any), and the recognition of close-out netting. At a minimum, there will be substantial coordination challenges with regard to information sharing, the allocations of business units to legal entities and regulatory domains, procedural differences in the acceptance of claims against the bankruptcy estate, differences in the treatment of custody assets, and differences in repayment priorities such as depositor preference schemes or subrogation rights of the deposit insurer (if any). Even under ideal conditions, the resolution of an international insolvency will incur much heavier transaction costs than the resolution of a purely domestic institution with comparable losses.

WHAT NEEDS TO BE DONE?

To improve the resolution process, the relevant financial regulators (including, possibly, a Systemic Stability Regulator of the type discussed by Andrew Crockett in this volume) will need examination powers and data to identify and perform diagnosis and triage on all systemically important institutions.[3]

3. For reasons of space I will ignore the difficult questions of how systemically important institutions can be identified and whether the identification should be made publicly available. I will also ignore the issue of where the resolution authority should be housed, except to note that it will inevitably have to depend on information gathered by the relevant regulators. If there is a way to hold the same regulators accountable for resolution activity, it could be efficient to do so. Unfortunately, regulators have often displayed a preference to delay resolution until losses have mounted to catastrophic proportions. Because resolution may require funds it will need either a funding base (or perhaps) an *ex post* levy on other systemic institutions or an association with the Treasury or the central bank.

They should separate problem financial institutions from non-problem institutions. Non-problem institutions can be scrutinized less intensively and frequently, but they should not be forgotten since AAA-rated institutions can collapse with alarming speed and in the aggregate create systemic problems. Problem financial institutions require greater scrutiny to be separated into those that are simply weak from those that are probably insolvent. The former should be required to file remediation plans, while the latter will need to be resolved.

One of the most seductive but dangerous approaches at this stage is forbearance. Resolution procedures tend to be initiated long after an institution is insolvent. Bad news is concealed as long as possible. Managers are reluctant to share bad news with their supervisors because they fear loss of discretion for dealing with the problem or that leakage of the information could precipitate a liquidity crisis or that they may simply lose their jobs. It is inherently difficult for an outsider to know the true condition of a systemically important institution. (For example, Morgan Stanley, a firm which specializes in valuing other firms, tried to sell itself to Wachovia two weeks before Wachovia was forced to merge.) Thus, usually problems are discovered with a lag. Supervisors often delay resolving an insolvent institution in the hope that it will bounce back.

Unfortunately, supervisors tend to be judged on failures that occur on their watch, rather than the costs of resource misallocations from letting an insolvent financial institution operate too long. Moreover, they understand that interference with the control rights of shareholders is likely to be challenged. Thus there is a tendency to forbear. But forbearance often leads to larger losses. If the problem is not self-correcting, losses continue, which increases the losses that ultimately must

be allocated across creditors or absorbed by the taxpayers. Losses may accelerate if an insolvent financial institution gambles for resurrection, which exacerbates the misallocation of resources and increases the risk of systemic spillovers.

The trigger for instituting resolution procedures varies markedly across countries but there are clear advantages for pre-insolvency triggers for escalating regulatory intervention. They provide a powerful incentive for a financial institution to solve its own problems by either restructuring or recapitalizing or merging with a stronger institution. If it fails to take remedial action, there is a strong presumption that it has negligible franchise value to be preserved. Moreover, if resolution procedures can be initiated before actual insolvency, there will be no losses to be allocated across creditors and thus less risk of systemic spillovers and no need for public subsidies. Pre-insolvency triggers, if well-defined, also remove discretion to forbear from regulatory authorities and help insulate them from political interference.

Probably the favorite resolution technique for most supervisors is to assist in the merger of an insolvent financial institution with a healthy financial institution. This can undermine market discipline, because it almost always results in protection of all creditors, but more seriously, it leads to the creation of still larger systemically important institutions.

The bridge financial institution, not unlike the proposal Secretary Geithner has made to Congress, is probably the most efficient way to deal with an insolvent systemically important institution. But the proposal needs to be specified in much greater detail and should have less scope for supervisory discretion.

The objective should be to make the world safe for the in-

solvency of any systemically important institution. Part of the answer may be in strengthening the financial infrastructure and making the interconnections among systemically important institutions much more transparent and easier to monitor. But another part of the answer depends on a critical reevaluation of the complexity of tax and financial regulations. On average the 16 LCFIs have nearly 2.5 times as many majority-owned subsidiaries as the 16 largest non-financial firms. Much of this difference is surely a result of attempts to avoid costly taxes and regulations.

As a practical matter, each systemically important institution should be required to file a winding-down plan, approved by its board and its regulators, just as it is currently required to file business continuation plans. These plans should be evaluated critically by the regulators, or in the case of systemically important financial institutions that are internationally active (as most are) by the core college of regulators from each of the countries in which it has important activities. If the winding-down plan does not seem plausible without creating intolerable spillovers, the systemically important institution should be required to take remedial action which may include reducing the number and geographic location of subsidiaries, spinning off lines of business, or downsizing and imposing higher capital or liquidity requirements. Such measures may sacrifice some degree of efficiency,[4] but they will force systemically important firms to internalize some of the costs they now impose

4. Although the vast bulk of empirical research suggests that the productivity cost would be negligible. Economies of scale and scope tend to disappear at $100 billion, a size much smaller than any of the current systemically important institutions. Indeed, the productivity differences among banks at any given scale dwarf economies of scale.

on the rest of the financial system and taxpayers by virtue of their size, international complexity, or interconnectedness.

If this sort of system had been in place for the last few years, would we have had a less disastrous outcome with regard to Lehman Brothers and AIG? It's impossible to know, but one can speculate about this counterfactual. At least three reasons justify some degree of optimism. First, the preparation of a winding-down plan subject to board and regulatory approval might have caused these institutions to grow less rapidly, adopt less internationally complex corporate structures, and engage in less systemically risky activity. Second, the regulator might have been more alerted to the increasing fragility of the financial system and better prepared to forestall or manage the crisis than the currently configured regulatory authorities. Third, if the worst happened, there would be clear plans in place for winding-down an institution in the least disruptive way.

We have learned over the past two years that the cost of letting systemically important institutions jeopardize financial stability when they take excessive risks or make ruinous mistakes is too high for society to accept. As George Shultz pointedly observed at the Hoover Institution's policy workshop on the future of the Fed, "An institution that is too big to fail is simply too big."

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