

Lessons from the Debacle of '07-'08 for Financial Regulation and Its Overhaul

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If someone had shouted "financial regulation" in a crowded auditorium a year ago, nary a soul would have stirred. "Why bother? That's boring, arcane stuff," would have been the general sentiment.

No more. Shout those same words in that same auditorium today, and heated discussions would ensue and maybe even a few fistfights might break out. Well, perhaps I exaggerate a bit. But the financial debacle of 2007-2008 has clearly propelled financial regulation and its overhaul to a must-do topic for the incoming Obama Administration and the 111th Congress.

Unfortunately, financial regulation is still arcane. And it is unbelievably complicated. It encompasses a myriad of safety-and-soundness (prudential) regulatory provisions for banks, thrifts, credit unions, insurance companies, pension funds, and money market mutual funds; consumer protection provisions across the same spectrum; information revelation requirements for these institutions; financial statement revelation and corporate governance requirements for publicly traded companies; rules that apply to exchanges and to the financial instruments that are traded on those exchanges; and the list could go on...

I will not suggest reforming everything. My proposals include:

- A new prudential regulatory regime for large systemic-risk financial institutions;
- A true privatization of Fannie Mae and Freddie Mac;
- A different approach to dealing with credit rating agencies;

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- An extension of deposit insurance to 100% coverage;
- Modifications in mortgage lending arrangements;
- Avoiding a re-enactment of Glass-Steagall;
- Clearing-house arrangements for financial derivatives;
- Great caution in any restructuring of financial regulatory agencies; and
- A few regulatory reforms that are unconnected to the current debacle but that are badly needed anyway.

To paraphrase Rahm Emanuel, never allow a debacle to go to waste.

THE BACKDROP

Since the Debacle of '07-'08 is what got us here, let's start with what went wrong: A 10-year national housing bubble expanded dramatically, and then popped just as dramatically. That bubble was inflated by progressively looser lending standards, allowing increasingly inappropriate households to borrow increasingly excessive amounts of money on residential mortgages that couldn't be repaid. These mortgages were often bundled/packaged into securities that were blessed with high ratings by rating agencies and sold to insufficiently cautious investors; in some instances the securities became the collateral for yet further rounds of securities that again were blessed and sold.

Much of this happened because the participants -- from the borrower to the mortgage broker (who made the match between the borrower and the initial lender/originator) to the initial lender/originator to the securities packager to the rating agency that rated the securities to the investor who bought the securities -- were collectively "drinking the Kool-Aid" of "housing prices can only increase". If housing prices would always increase, then even otherwise inappropriate mortgages would not be a problem, because the borrower could always refinance the mortgage or repay by selling the house at a profit. Further, the parties in between the borrower and the investor could all earn handsome fees from the transactions and could comfort themselves with, "These

mortgages won't be a problem because housing prices will always increase -- but even if some mortgages do become a problem, they will be somebody else's problem," and then pocket the money and move on to the next transaction.

This is not the whole story. On the borrowing end, there were clearly some instances of fraud -- sometimes committed by the borrower with the connivance of mortgage broker and/or the lender; and sometimes committed by the mortgage broker in inducing unwitting households to sign and commit to obligations that were patently beyond their capabilities. But fraud (which ought to be prosecuted vigorously when discovered) was only a modest part of the story.

On the lending and investing end, mortgage finance was occurring in the context of an even wider under-recognition of risk. Normally cautious banks were making loans to highly leveraged private equity firms and not insisting on the tight controls that would have been commonplace a few years earlier. Similarly, cautious bond investors, who earlier had been requiring that high-risk "junk bonds" pay interest rates that were 5-6 percentage points above Treasury bonds of the same maturity were apparently satisfied with interest rates that were only 2½ percentage points above Treasuries.

In sum, the combination of a housing boom and a surprising disregard for risk by lenders and investors conspired to create an environment where slipshod practices by "middlemen" remained profitable for too long. When housing prices ceased to rise -- as had to happen sooner or later -- the house of cards collapsed. When subprime borrowers couldn't refinance, they defaulted, the mortgage securities fell in value, and the mortgage finance system imploded, dragging much of the rest of the financial sector down with it because of the relatively low capital levels and concomitant high leverage of most of the institutions in the financial sector, some of which owned significant slugs of these toxic mortgages and mortgage-related securities.

[Because the terms "capital" and "leverage" are essential parts of understanding the financial sector and what went wrong, as well as understanding important parts of what corrections are needed, I have written an appendix primer on capital and leverage. Uninitiated readers are urged to

read this primer sooner rather than later.]

By now the major pieces of this story are understood, although why so many participants continued to believe for so long that housing prices could only go up and why so many lenders and bond investors disregarded the standard precautionary actions of those who should be worrying whether they will be repaid are puzzles that are better tackled by psychologists than by economists.

From the spring of 2008 onward, the actions of the federal government have been focused on efforts to mitigate the destruction. With luck those efforts -- at substantial cost -- will eventually succeed. This essay is not about those efforts. Instead, I will focus on the longer-run reforms that should be put in place to strengthen the financial sector and reduce the likelihood that a debacle of this magnitude can occur again.

I will first lay out the rationales for regulation in an otherwise markets-oriented economy; then describe some broad categories of regulation; and then tackle some major (and a few not-so-major) changes in financial regulation that should be part of the new financial landscape -- as well as cautioning against some changes that are likely to be advocated by others.

Throughout I will assume that the participants within the financial markets can be expected to have learned the lessons of the Debacle of '07-'08 -- i.e., that these relatively sophisticated participants are not the "widows and orphans" who need to be protected from repeatedly making mistakes that are self-harming. Indeed, in the immediate aftermath of the Debacle, lenders and investors appeared to have learned so much and were so risk averse (as a reaction to their previous risk obtuseness) that financial markets were close to frozen.

Nevertheless, there are structural changes that are necessary even in this "sophisticated participants" context. And it is clear that more needs to be done for the less sophisticated retail customers -- some of whom may genuinely be widows and orphans, and some of whom may simply be overwhelmed by the complexity of financial transactions.

WHY FINANCIAL REGULATION?

The arguments that favor financial regulation may seem obvious to some; the arguments against regulation may seem obvious to others. Let's try to steer a middle course.

We start with the neoclassical microeconomics world of well-functioning markets, with lots of competing and knowledgeable sellers and lots of well-informed buyers. This is the world about which economists wax rhapsodic when they describe the efficiencies and social benefits that flow from competitive markets.

Market failure

What could go wrong that could create a case for government intervention? What are the potential market imperfections or market failures?

First, competition could be absent, replaced by monopoly. Prices will be higher, output lower, and efficiency reduced in the presence of monopoly. That's why cities and/or the 50 states have traditionally limited by regulation the prices that the local electricity company, the local natural gas company, the local water distribution network, and the local telephone company could charge. Alternatively, states or localities have sometimes tried to provide these services themselves to their citizens.

Though this kind of monopoly power is only occasionally present in modern financial markets, it was a traditional argument for taming the perceived power of the local bank in a small community. (Think of mean Mr. Potter, the owner of the local bank, in the film "It's a Wonderful Life".) Perhaps the most prominent place where market power can still be found in financial services is in credit card networks, where there are the two major networks (Visa and MasterCard) and two more modest networks (American Express and Discover). The rating agency market is similarly dominated by two large firms (Moody's and Standard & Poor's), a modest size firm (Fitch), and a few smaller competitors.

Second, there could be spillover or externality effects -- positive or negative -- from production or consumption activities. If an act of production or consumption affects third parties,

outside of a market context, then those efficiencies about which economists wax rhapsodic may dissipate. Too much of a negative externality (think of pollution or greenhouse gases) interferes with others' enjoyment of their consumption. Too little of a positive externality (think of education) similarly reduces the benefits for society more widely.

Until recently, no one would have associated the financial sector with "pollution". And it's still a stretch to liken a bank to a coal-fired electricity generator. But the failure of one bank could cause ill-informed (see below) depositors at other banks to become nervous and to "run" on their bank to withdraw their deposits, which could cause the failure -- or at least, the temporary closure -- of other banks, with yet further "contagion" or cascading effects. On the other hand, there does seem to be a positive social benefit to households' becoming homeowners (although, as we have recently learned to our collective sorrow, home ownership is not for everyone), which argues for encouraging home ownership -- and encouragement inevitably involves finance.

Third, the problems of asymmetric information -- one side of a transaction knowing things about itself or its actions that the other side doesn't know -- are pervasive in finance. The essential acts of finance -- lending or investing or insuring -- involve initial commitments and subsequent repayments. If the borrower knows more about its repayment proclivities than does the lender, the latter is at a disadvantage; if the insured party knows more about its riskiness than does the insurer, the latter is at a disadvantage.

Again, the presence of these asymmetries will lead to partial or complete breakdowns of markets that, in the presence of better information, could thrive.

Fourth, an extended version of the asymmetric information problem might be termed the "widows and orphans" problem: Some market participants may be incapable of looking after their own best interests and will not learn from their own mistakes. Many retail customers in financial transactions -- whether as depositors or borrowers -- may well qualify here.

These four rationales would probably qualify with many economists -- perhaps most -- as

"legitimate" qualifications to that rhapsodic waxing over the efficiencies of the competitive markets.

There is, of course, a fifth motive for regulation that would not be in this pantheon: income redistribution. As George Stigler and Richard Posner pointed out over three decades ago, regulation can be used to redistribute income from one category of market participants to another group of participants. Though usually a far less efficient form of income redistribution than a direct subsidy, it is also less blatant and therefore easier to "fuzz up" and justify under some other rubric. In the financial sector, limits on anything from fees and interest rates to specific bans on financial products may well have substantial income distribution consequences but be justified -- with greater or lesser legitimacy -- under one or more of the earlier four rationales.

Government failure

Lest one think that only markets fail, it's worth remembering that governments too can be imperfect.

First, asymmetric problems apply also to government efforts to regulate, with the consequence that government's inadequate information leads to inferior regulatory outcomes.

Second, when government does make regulatory mistakes, undoing those mistakes may well be difficult. Often there are few or no alternatives, and the costs persist -- or there are workarounds (take the activity abroad; or try an alternative unregulated activity that isn't as good), but at higher costs.

Third, the pursuit of income distribution gains through regulation can lead to the "capture" of the regulatory process, with consequent distortions in otherwise efficient allocations of resources. The large gainers from capture find it worthwhile to devote the effort to doing so; the more numerous small losers from capture find the costs of organizing to resist capture to be too great.

Fourth, even if regulatory capture doesn't occur, the pursuit of such gains -- what has come to be called "rent seeking" -- can cause large amounts of society's scarce resources to be squandered in wasteful (and often mutually nullifying) efforts to influence those regulatory outcomes.

In sum, because both markets and governments are prone to imperfections, any proposal for governmental intervention to correct a market imperfection should pass a benefit-cost test and a threshold of non-triviality.

TYPES OF FINANCIAL REGULATION

At first glance, government regulation may appear to be a hodge-podge of intervention, with no discernible pattern. There are, however, major categories of regulation that can help organize our thinking about regulation.

First, there is "economic" regulation: the direct control over prices, profits, entry, and/or exit. This form of regulation is often used to address monopoly problems (think the public utility regulation mentioned above), but it may be used to address other problems and is often employed in income redistribution efforts. In financial services, "usury" limits on interest rates are (arguably) an effort to deal with the market power of lenders. Merchants' periodic campaigns to try to limit the "interchange" fees levied by the credit card networks can also be interpreted through this market-power lens. Consumers' efforts to limit credit card fees, on the other hand, are not so much about the abuses of monopoly (after all, there are hundreds of credit card issuers, who are the entities that determine these fees) as the problems of asymmetric information.

Second, there is health-safety-environment regulation, which is usually aimed at altering production processes or product characteristics to bring about desired improvements in health, safety, or environmental outcomes. The underlying problems that are being addressed may be those of externalities or of asymmetric information.

In the financial sector, safety is the paramount concern. In turn, the focus on safety comes in two "flavors": safety as applied to financial institutions; and safety as applied to the customer.

Safety as applied to financial institutions usually is formalized as a safety-and-soundness (or "prudential") regulatory regime. There are three major categories to which such regimes apply: depositories, such as banks, savings institutions (thrifts), and credit unions; insurance companies;

and defined-benefit pension funds (i.e., the "traditional" company-funded pension arrangements). Money market mutual funds might, arguably, constitute a fourth category

The goal of these prudential regimes is to keep the regulated financial institution solvent, so that it can meet its obligations to its creditors: the depositors, insureds, and pension claimants. The reasons for singling out these categories of financial institution for this special treatment are twofold. First, their creditors are probably in a poor position to be able to protect themselves against the failures of these institutions, which could then mean substantial hardships in the event of failures. It is no accident that these types of institutions all have government-operated insurance funds (federal deposit insurance, state guarantee funds for insureds, and federal pension guarantees) as a backup in the event that prudential regulation fails to prevent insolvencies. Second, especially for banks and other depository institutions, depositors' fears of failures could lead to runs on institutions and a consequent contagion or cascade of failures.

Safety as applied to retail customers encompasses the prudential regulatory regimes just discussed but also encompasses requirements that financial institutions provide specified types of information (e.g., about interest rates and extra fees on loans), often in a standardized format so as to enhance comparisons; limits on prices and fees (e.g., "usury" limits on interest rates on loans; limits on credit card fees); and outright bans on sufficiently "dangerous" products and services, such as "payday" loans or other "predatory" loan products with obviously onerous terms.

The third broad category of regulation is information regulation, whereby firms are required to provide standardized information on their products (think of the "nutrition facts" labels on canned and packaged foods), so as to help deal with asymmetric information problems. As was discussed above, financial firms are required to provide standardized interest rates and fee information for credit cards and other kinds of loans; and all publicly traded companies are required to provide certified (by an auditing firm) financial statements to shareholders in a standardized format ("generally acceptable accounting principles", or GAAP).

This broad categorization is not airtight nor are individual instances of regulation always capable of being pigeonholed exclusively into one category of regulation or another. Nevertheless, this categorization does provide some coherence to what otherwise might look like an undifferentiated mass ("financial regulation") of intervention.

REFORMING REGULATION

With the structural foundations established, let's go down the list.

Large financial institutions that pose systemic risks

Perhaps the largest surprise for policy makers in the Debacle of '07-'08 was the likely systemic damage that the demise of the large investment banks (like Bear Stearns and its brethren) and a few other large financial firms could cause. Unlike commercial banks, to which a prudential regulatory framework applied, these large financial firms were largely exempt from prudential regulation. Though the SEC did establish nominal capital requirements for broker-dealers (which are at the center of most investment banks), those requirements were noticeably loosened in 2004 and apparently didn't restrain these large firms in significant ways.

These firms were so large (Merrill Lynch's assets exceeded \$1 trillion) and intertwined with the rest of the financial sector that their failure could have widespread cascading consequences; and the fears of their failure could lead to "runs" on them by their short-term creditors and counterparties that had all of the characteristics of a "classic" bank run by a commercial bank's depositors. Compounding these problems were the thin capital levels -- high leverage -- maintained by these firms, so that even modest (in percentage terms) losses could threaten their solvency and lead to the runs that, at a minimum, would create liquidity problems for them.

In some respects much of this specific problem has been resolved, but at some cost to the federal government: Bear Stearns was absorbed (with help from the Federal Reserve) by JPMorgan Chase, a commercial bank; Merrill Lynch voluntarily merged with Bank of America, another commercial bank; Goldman Sachs and Morgan Stanley voluntarily converted themselves into bank

holding companies and will consequently be subject to the prudential regulatory regime that is imposed on BHCs by the Fed; and Lehman Bros. entered bankruptcy and is being liquidated. One additional financial conglomerate, AIG, has received over \$130 billion in federal loans and investments in efforts to stabilize it.

Nevertheless, there are large financial firms that remain outside prudential regulatory regimes -- GE Capital, GMAC, Ford Motor Credit, Vanguard, Fidelity, other large mutual fund complexes, some large hedge funds, and a rehabilitated AIG come readily to mind -- and others may arise in the future (the privatized Fannie Mae and Freddie Mac, discussed below, would be candidates). "Never again" is a reasonable slogan going forward.

The necessary regulatory actions are to impose a new prudential regulatory regime, basically similar to the one that is in place for commercial banks and savings institutions, on these large financial firms that are outside any existing prudential regimes. At the heart of such a prudential regime must be the following:

- 1) Minimum risk-based capital requirements (or, equivalently, maximum allowable leverage), as determined by sensible accounting conventions -- with market-value accounting at the center. Capital is the buffer that protects a financial institution's creditors -- or protects the government that explicitly (e.g., through deposit insurance) or implicitly promises to keep creditors whole in the event that the institution becomes insolvent. As the capital buffer becomes thinner, governmental restrictions on the institution's actions must become tighter, so as to prevent greater risk-taking.

Since capital is measured by the simple subtraction of fixed obligations from the value of the institution's assets, up-to-date valuations of the institution's assets -- i.e., market-value accounting -- is essential.

- 2) Limitations on activities. If regulators cannot understand an activity of a financial institution well enough to set sensible capital requirements and to be able to assess the institution's

competence in managing the activity, that activity should not be permitted.

This stance may seem harsh. But it makes perfectly good sense for institutions where the goal is to avoid insolvency (and to avoid the government's again having to inject funds and guarantees so as to keep creditors whole).

3) Special scrutiny of financial dealings between the financial institution and its owners. It is too easy for money to be drained out of a financial institution, to benefit its owners at the expense of its creditors. Regulators must scrutinize dividends paid to owners, loans made to the owners or to their subsidiaries or to their friends, and purchases made from the owners, etc.

4) Managerial competence requirements. Again, if avoiding insolvency is the goal, the regulator must be able to assess the competence of the senior managers of a financial institution and must have the power to remove those that are deemed incompetent.

5) An adequate staff of examiners and supervisors. These are the men and women who make the periodic examinations of the financial institutions and who decide on appropriate enforcement actions. They must be well trained and well paid.

6) Clear receivership powers by the regulator. If a financial institution becomes insolvent, the regulator must have clear powers to take over the institution, wash away the owners, remove senior management, and then liquidate the institution in an orderly way. The receivership process should be one that provides a good deal more speed and certainty to creditors than the vagaries of a bankruptcy court.

At what size should a financial institution (that is not effectively part of another prudential regime) be required to be part of this new prudential regime? There are tradeoffs: Because regulation will inevitably stifle innovation and creativity ("Hooray!" critics might shout in the wake of the current debacle; but that would be a long-run mistake), the extension of such prudential regulation to every small hedge fund or investment partnership seems unwarranted. On the other hand, one would want to worry about the collective consequences of herd behavior by smaller

financial institutions. A bright line at \$25 billion in assets (or assets under management for institutions such as mutual fund complexes) -- so that smaller firms can innovate but size will bring scrutiny and responsibilities -- feels about right.

Who should be the regulator? A wholly new agency is a possibility. The Fed is another possibility, since the prudential regulatory regime envisioned here is similar to the Fed's regulation of bank holding companies. The one agency that should not be a candidate is the Securities and Exchange Commission, since the SEC's culture is that of information revelation and not prudential regulation.

Finally, should the regulator explicitly guarantee the liabilities of these large financial institutions? Probably not. The federal government has already stepped in to protect the creditors of Bear Stearns, AIG, and Fannie Mae and Freddie Mac. Even without an explicit guarantee, the financial markets may believe that in a future financial crisis the federal government would again intervene to avoid systemic disruptions. If the prudential regime advocated here is successful, that future crisis ought not to arrive. If it does arrive anyway, the federal government can then decide what actions to take. To the extent that creditors "today" are worried that the federal government would not keep them whole "tomorrow", they will engage in more monitoring that would supplement the prudential regulator's efforts. That is all to the good.

Fannie Mae and Freddie Mac

Until their government takeover in September 2008, Fannie Mae and Freddie Mac were two large, hybrid (private-public) companies that dominated the secondary residential mortgage markets. They engaged in two lines of business: securitizing mortgages that generally conformed to high lending standards, with the mortgage-backed securities (MBS) carrying their guarantees if the mortgage borrower failed to repay; and investing in mortgages, funded overwhelmingly (around 96%) with debt.

Though they were publicly traded companies with shares listed on the New York Stock

Exchange, the two companies were also creatures of Congress that had special governmental ties and advantages, as well as limitations (they were restricted to secondary mortgage markets, there was a ceiling on the size of mortgage that they could buy or securitize, and they were subject to prudential regulation) and obligations (they were expected to make a special effort to support lending to lower-income households -- an obligation that became more burdensome in 2003). Within the past few years the term "government-sponsored enterprise" came into common use to describe the two companies (as well as the Federal Home Loan Bank System, a wholesale bank for banks and thrifts that similarly enjoys special privileges and limitations).

As a consequence the financial markets believed (correctly, as it turned out) that if Fannie or Freddie were ever in financial difficulties, the federal government would keep their creditors whole.

This belief in the federal government's "implicit guarantee" meant that Fannie and Freddie were able to borrow in the bond markets (in normal times) at about 0.35-0.40 percentage points less (i.e., at lower interest rates) than their financial condition would otherwise have justified. In turn, they caused interest rates for the mortgages that they could securitize or hold to be about 0.20-0.25 percentage points lower than otherwise would have been the case.

Both Fannie and Freddie had grown rapidly in the 1990s and in the early years of this decade. Accounting scandals at Freddie in 2003 and at Fannie in 2004 caused their growth to slacken, especially for the mortgages that they held in their portfolios. Nevertheless, at year-end 2007 their combined holdings of mortgages and outstanding mortgage-backed securities totaled about \$5 trillion, or over 40% of the total residential mortgage market.

It is easy to understand the political popularity of their hybrid structure, since it looked like they were providing a free lunch: lower interest rates on mortgages, special efforts to expand lending to lower-income households, and no explicit cost to the federal government. The way that these outcomes were reconciled with adequate returns to shareholders was through low capital requirements (only 2.5% for holding a mortgage in portfolio; only 0.45% to support the guarantees

on their MBS) and thus high leverage.

Although Fannie and Freddie were not at the center of the subprime debacle, their portfolios and MBS did become more risky in the middle of this decade, as they expanded into "Alt-A" (between prime and subprime) mortgages. Further, as housing prices fell steeply in some areas like Las Vegas, parts of California, and south Florida, even some "prime" mortgages (i.e., those where the borrower made a 20% down payment, had an adequate income, and had a good credit score) yielded borrower defaults and losses. Other apparently good mortgages, where private mortgage insurance was covering shortfalls in borrowers' down payments, came into doubt because of rising questions about the solvency of the mortgage insurers and thus their ability to make good on their obligations. And Fannie and Freddie were also burned on investments (intended to help satisfy those distributional requirements) in supposedly safe tranches of mortgage-based securities that had lower-quality mortgages as their underlying collateral.

At the end of the day, however, it was inadequate capital for the overall risks in their portfolios and their MBS that did them in. The free lunch turned out to be an illusion. At the time of their government takeover, the Treasury set aside \$200 billion in aggregate to cover the two companies' accumulated losses. With luck, that will be adequate.

In the current shaky environment, Fannie and Freddie should remain as wards of the government. But the hybrid model is clearly too fraught with problems. After the financial markets have stabilized, the two companies should be fully and truly privatized, with no remaining special ties to the federal government -- but also no special burdens or restrictions on their activities, except for those that would be part of their inclusion in the special prudential regulatory regime discussed above. The privatization of the Federal Home Loan Bank System should similarly occur, for similar reasons.

Encouraging home ownership is a worthwhile social goal. But instead of trying to do it implicitly and on the cheap (but ultimately paying heavily), the federal government should be

explicit, through on-budget programs. However, the usual broad-brush encouragements for housing (of which Fannie and Freddie were a part) mostly subsidize higher-income households -- who would buy anyway -- to acquire larger and better-appointed houses on larger lots and to acquire second homes; where's the social value in that? Instead, housing policy should focus on encouraging low- and moderate-income families (after appropriate screening and counseling for suitability) to become first-time homeowners.

Rating agencies

Rating agencies offer judgments -- "opinions" is the word that they prefer -- about the creditworthiness of bonds that have been issued by various kinds of entities: corporations, governments, and (most recently) the packagers of mortgages and other forms of debt. Those judgments come in the form of "ratings", which are usually a letter grade. The best-known scale is that used by Standard & Poor's and some other rating agencies: AAA; AA; A; BBB; BB; and so on (with pluses and minuses, as well). These ratings can be used by bond investors to help them determine the riskiness of the bonds that they might buy and the risk premiums that they should require.

The three major rating agencies in the U.S. -- Moody's, S&P, and Fitch -- clearly played a significant enabling role in the Debacle. Absent their excessively optimistic ratings on the increasingly poor quality mortgage-related securities in 2005 and 2006, the housing boom would have ended sooner, and the collapse would have been less severe. Further, it is clear that their basic business model, in which they charge the securities issuers fees for the rating, didn't help matters.

It is tempting to want to regulate the rating agencies, so as somehow to force them to do a better job in the future. (The SEC has recently proposed just such regulations.) Forcing them to deal better with the conflicts of interest that are inherent in the issuer-pays model -- perhaps even banning the issuer-pays model as inherently too dangerous -- has its attractions.

But a larger perspective is necessary. For decades financial regulators -- bank regulators,

insurance regulators, etc. -- have been requiring that their regulated entities heed the ratings of a select few rating agencies. For example, since the 1930s banks have not been allowed to invest in bonds that are below "investment grade" (which, for example, is BBB- or better on the S&P scale) -- as determined by the select few rating agencies. Although the goal of having safe bonds in the portfolios of banks (as part of prudential regulation) is a worthy one, the bank regulators have essentially delegated their safety judgments to the rating agencies.

When the SEC in 1975 decided to delegate its safety judgments with respect to broker-dealers, it wanted to ensure that the delegations weren't made to bogus agencies. It therefore created the category "nationally recognized statistical rating organization" (NRSRO) and immediately "grandfathered" into the category the three large rating agencies. Other financial regulators soon adopted the NRSRO category for their delegations.

Over the next 25 years, the SEC allowed only four more rating firms to achieve the NRSRO designation; but mergers among the entrants and with Fitch reduced the number of NRSROs back to three by year-end 2000. The SEC never developed criteria for the designation and handled the entire designation process in a remarkably opaque fashion. And, once designated, a NRSRO was never again scrutinized by the SEC for competence or accuracy.

As a practical matter, the SEC had created a substantial barrier to entry into the rating business (since only the NRSROs' ratings mattered for the bond investment decisions of regulated financial institutions). It shouldn't be a surprise that the protected rating industry incumbents -- whose importance for bond markets was greatly magnified by all of those safety delegations by financial regulators -- might grow sluggish and careless.

Although the SEC has designated six additional NRSROs since 2000, and legislation passed in 2006 required that the SEC cease being a barrier to entry and gave it limited regulatory powers over the NRSROs, the pattern that had been established in the earlier decades has had lasting consequences.

This brief history of regulation gone awry (remember the possibilities of government failure?) points to a different and potentially superior course of action, rather than trying to regulate them into better behavior and more accurate ratings. Suppose that financial regulators were to withdraw their safety delegations to the NRSROs and instead were to place the responsibility for choosing -- and defending their bond investment choices -- directly on their regulated institutions. Banks, for example, could defend their choice of bonds by doing original research or by relying on an outside source of information, which could (but need not) be a rating firm -- and, in either case, defending their choices to their regulator. Banks would then have the incentive to choose the information-gathering method that they found most reliable (and defensible to their regulator) rather than being forced to heed the ratings of only a select few.

If other financial regulators were to follow suit and replace their delegations with the direct responsibility model, the SEC could eliminate the NRSRO category. More importantly, new ideas about creditworthiness, rating methodologies, and even business models could flourish, in a way that hasn't been true since the 1930s.

Oh, about that word "opinions": The rating agencies like it so much because, when sued by unhappy investors or issuers, the agencies have claimed that they are "publishers" and are thus protected by the First Amendment. This is yet another instance of too much protection for the incumbents. Although perfection is an unrealistic goal for the accuracy of their ratings, some liability for their wider errors might well help provide the right incentives for improving their accuracy.

Deposit insurance

Federal deposit insurance first came into existence in 1933. The maximum insured sum in that year was \$2,500. The Congress subsequently raised the maximum insured amount at various intervals, the next-to-last time being 1980, when \$100,000 was designated. In the wake of depositor nervousness about banks in the late summer of 2008, the Congress in early October temporarily

raised the maximum insured amount to \$250,000 on interest-bearing deposits and authorized unlimited coverage for business checking accounts (with the termination date for both changes set for December 31, 2009).

Deposit insurance has never been designed to cover 100% of all deposits in banks and thrifts. A coherent rationale for this incomplete coverage has never been articulated by policy makers; but the argument seems to be centered on a belief that large depositors will somehow monitor their bank's activities and that this monitoring, and the consequent potential for deposit outflows will restrain banks from risky activities.

Although this idea that creditors can and should monitor the entity to which they have lent their funds is a sensible one when applied to the bond markets and to commercial lending generally, the idea is misplaced when it comes to deposits in banks and thrifts. For the most part, household depositors are not sophisticated participants in the financial system and are unlikely to become experts on a bank's financial condition. And a modest-sized enterprise (with no special expertise in bank monitoring) can have transaction accounts -- covering payroll expenses and payments to suppliers -- that can periodically exceed \$100,000 or even \$250,000.

To ask such depositors to be monitoring banks is simply to be asking for nervousness and periodic bank runs -- which is not a recipe for financial stability.

Although the recent increase in deposit insurance coverage is a vast improvement, the argument underlying the increase should be extended to its logical conclusion: 100% insurance coverage of all deposits in banks, thrifts, and credit unions. Bank monitoring should be the responsibility of the prudential regulators. The Federal Deposit Insurance Corporation and the National Credit Union Administration should charge appropriate fees for this coverage.

Mortgages

Though there are probably dozens of modifications to mortgages and mortgage documents that can be made, there are four that would be especially valuable going forward. First, the home

buyer needs to have a simple one-page document, available prior to the closing, that states clearly and simply the aggregate and monthly costs that the home buyer will experience, including all relevant fees.

As anyone who has bought a house can attest, the closing process is a horror. There are stacks of documents to sign, there's no hope of being able to read them, and there's no clear statement of costs. Small wonder that unsophisticated buyers could be confused and perhaps defrauded. A simple, one-page statement is vital.

Where the future costs are contingent -- as, say, for an adjustable-rate mortgage -- the statement of costs may be a bit more difficult. But ways of bringing greater clarity to a statement of costs can surely be found.

Second, and consistent with the first, it should be possible for a single party in the closing process to be a "consolidator" who can offer the buyer "one-stop shopping" and a single price for all of the closing services (appraisal, title insurance, document filing, etc.). Current rules (under the Real Estate Settlements Practices Act of 1974) discourage that from happening. Instead, the buyer -- who usually buys homes infrequently and therefore doesn't have an opportunity to become familiar with the providers of the various services -- is nevertheless expected to shop around for these services.

Allowing a single party (with fiduciary obligations, of course) to offer the buyer an all-in consolidated price -- whether it's the mortgage broker, the lender/originator, the lawyer, or even a separate specialist who does this -- should improve the process and ultimately reduce costs.

Third, and applicable to all forms of retail lending, there should be a "suitability" and "know your customer" fiduciary obligation on the part of the lender and any other intermediary (such as a mortgage broker). These obligations seem to work fairly well (though perfection is elusive and shouldn't be expected) in stock brokerage. For a stock broker to suggest an investment in petroleum futures for a retiree's portfolio is clearly a violation of such obligations. Predatory lending or placing

a borrower in an inappropriate mortgage could and should similarly be considered violations.

Fourth, because securitization is likely to persist as a mechanism for financing mortgages, the role of the mortgage servicer (who collects the monthly payments and forwards them to the securities holders) will continue to be important. As the Debacle has revealed, when mortgages need to be renegotiated, this renegotiation is much harder when the mortgage has been securitized, since there is often not a single owner/investor in the mortgage, and the servicer feels that it does not have adequate authority for conducting the renegotiation with the borrower. Future mortgages, as well as securitization documents, should clarify the authority and responsibilities of the servicer in such renegotiations.

Re-enact Glass-Steagall?

The Glass-Steagall Act of 1933 required the separation of commercial banking from investment banking. Beginning in the 1960s, regulatory and judicial interpretations gradually eroded some of the separation and allowed commercial banks to re-enter some aspects of investment banking. This erosion was completed in the Gramm-Leach-Bliley Act of 1999, which effectively repealed Glass-Steagall.

In the efforts to assign responsibility for the Debacle of '07-'08, there have been claims that the repeal of Glass-Steagall was somehow responsible or contributed in a major way to the Debacle. The sequence of events -- Glass-Steagall is repealed in 1999, the frenzied mortgage lending and securitizations occur a few years afterward -- offers some surface plausibility to the claim.

Any close analysis of the Debacle, however, would indicate otherwise. The frenzy of mortgage originations and securitizations that lay at the core of the Debacle -- some of it by commercial banks and thrifts, much of it by mortgage banks and investment banks -- could have and would have proceeded in much the same fashion even if Glass-Steagall had not been repealed in 1999. Further, it is ironic that commercial banking has played the role of "savior" of floundering investment banks, with JPMorgan Chase absorbing Bear Stearns, Bank of America absorbing

Merrill Lynch, and Goldman Sachs and Morgan Stanley converting themselves to bank holding companies so as to reassure their creditors.

In sum, the repeal of Glass-Steagall has been part of the solution, not part of the problem. It would be a mistake to re-enact it.

Financial derivatives

The past three or four decades have seen a revolutionary outpouring of financial innovation, including the creation of new forms of financial derivatives. Much of this creation, and the trading of the instruments that are created, has occurred outside the bounds of regulation. Some of the mortgage-related securities that eventually became toxic were innovations, as were the credit default swaps (which are simply insurance contracts on bonds) that caused such problems for AIG (which, ironically is an insurance conglomerate). Again, proximity to the disaster has led to calls for reform, including tighter regulation.

It is worth keeping in mind that, for the most part, innovations -- even financial innovations -- are socially beneficial. They allow some financial market participants to hedge and shed risk -- trading the risks to others who (again, this shouldn't be an arena for widows and orphans) voluntarily take them on. But, of course, the innovations can be used by others to speculate and exacerbate risks; and their use by the ill-informed inevitably has a bad ending.

This assessment points toward the need for more information about the instruments and about who is involved. Requiring that derivatives be cleared through a clearing house, so that there is a central source of information as well as an extra party to provide certainty of execution of the contracts, seems like a reasonable way to proceed. Requiring that such instruments be subject to more formal regulation or that they be traded on exchanges (with accompanying regulation) is an over-reaction.

Regulatory landscape and architecture

Accompanying any package of financial regulatory reform will surely be a proposal for

simplification of the current regulatory structure. This will not be a coincidence.

Any attempt to describe the American landscape of financial regulation is an exercise in frustration, because the system is so complicated. There are five federal regulators of depository institutions, as well as one or more regulator in each of the 50 states. The states also regulate lenders/originators that are not depositories. There's a separate regulator for Fannie Mae and Freddie Mac and the Federal Home Loan Bank System. There are two federal agencies that deal with securities and related financial instruments, as well as 50 state regulators (and 50 state attorneys general). The regulation of insurance companies is exclusively the domain of the 50 states. Pension funds are regulated by two federal agencies, and again all 50 states have a say. And consumer fraud in financial products can be the responsibility of yet another federal agency, as well as the 50 states.

There are overlapping responsibilities and jurisdictional disputes galore. Indeed, any attempt to diagram these multiple agencies and their responsibilities ends up looking far more complicated than a 1930s radio wiring diagram.

This crazy-quilt pattern -- and its extra costs -- provides the ammunition for periodic proposals to simplify the architecture of financial regulation, even in the absence of a financial crisis. The Treasury's recent "Blueprint for a Modernized Financial Regulatory Structure," for example, though released in March 2008, was initiated a few years earlier as yet another proposal to simplify the structure, even before the Debacle was a specter on the horizon.

In the consideration of any simplification proposals, however, two important points should be kept in mind. First, there is no credible argument that links this complexity to the Debacle. Yes, with 20-20 hindsight, we should have had the reforms advocated in this essay in place at least a decade ago. But they could have been implemented within the current architecture. And it is far from obvious that a simplified framework would have addressed these problems any more readily.

Second, there is an important advantage to the complicated structure that is never mentioned by simplification proponents: The duplication of agencies provides alternate outlets for someone

with a good idea -- whether it's a better way to regulate or a better financial instrument. Just as a monopoly in the private sector can be an impediment to new ideas, so can a monopoly in government regulation.

A few anecdotes can illustrate the benefits of diversity and alternatives in regulation. In the 1970s, the introduction of exchange-traded financial derivatives happened in Chicago, on exchanges that had previously handled agricultural and minerals futures, and under the regulatory jurisdiction of the Commodity Futures Trading Commission (CFTC). This was not a coincidence. The instruments were seen as competition to the stocks and bonds that were traded in New York and that were under the jurisdiction of the SEC, which was usually sympathetic to the concerns of the New York-based brokerage community. Had there been only one regulator -- which surely would have been the SEC -- the development and flourishing of these instruments would have been restricted and delayed.

A second anecdote also focuses on the 1970s: Another of the legacies of the 1930s was the legal requirement that the Federal Reserve (through its "Regulation Q") place ceilings on the interest rates that banks (and, starting in 1966, thrifts) could pay on deposits. The Congressional intent was to restrict banks' competition for deposits, which had (mistakenly) been thought to have encouraged unprofitable lending by banks and contributed to the wave of bank failures in the early 1930s. The consequence of Reg Q for a generally competitive banking (and thrift) industry was exactly what is taught in Economics 101 to freshman: a shortage of supply (of deposits) by households and businesses, an excess of demand, and less efficient ways of inducing households to bring and keep their deposits in the bank (such as offering them toasters, which began in response to Reg Q).

The breaking of this gridlock started with a different regulator: the National Credit Union Administrator, which in the early 1970s placed no restrictions on the interest rates that credit unions could pay to their depositors. This competition then placed pressure on thrifts, which received some exemptions, and then on banks, which also received some exemptions. Finally, in 1980, most of

Reg Q was repealed (although a vestige remains in the prohibition on banks and thrifts from paying interest on business checking accounts). The competition inspired by the NCUA surely hastened the demise of this inefficient regulatory restriction.

A third anecdote involves regulatory expertise in the 1990s concerning methods of measuring and regulating interest rate risks embedded in the mortgages held by depository institutions. In this respect, the Office of Thrift Supervision (which regulated thrifts) had far better knowledge of the problems and regulatory procedures for dealing with them than did the commercial bank regulators at the time. It took a while for the latter to catch up.

This defense of a complicated structure is probably quixotic. And it is surely true that the initial designers of a regulatory structure would never create the duplication and overlaps of jurisdiction that this defense supports. Also, duplication sometimes risks a "race to the bottom" among regulators that try to keep financial institutions within their jurisdiction. Still, the proponents of simplification ought to think hard about the loss of diversity that would accompany it.

In Robert Bolt's "A Man for All Seasons," Sir Thomas More asks his son-in-law (William Roper), "What would you do? Cut a great road through the law to get after the devil?" When Roper replies affirmatively, More responds, "Oh? And when the last law was down and the devil turned 'round on you, where would you hide, Roper, the laws all being flat?" Think of a monopoly regulator versus the alternatives that the current regulatory structure offer.

SOME ADDITIONAL MEASURES

There are a few other measures that have little to do with the Debacle but ought to be part of a reformed financial landscape anyway. In the spirit that a debacle should never be wasted:

Let Wal-Mart (and others) enter banking

For the past decade, Wal-Mart and other non-financial firms -- many of them retailers, like Target and Home Depot -- have tried to enter the banking business. The federal agencies have largely stonewalled them, with mistaken beliefs that the holding company for a bank should be

engaged only in financial services. Not surprisingly, this belief has been encouraged by incumbent banks, who don't relish the prospect of extra competition from a Wal-Mart branded bank. With respect to Wal-Mart, in particular, an unlikely alliance between the incumbent banks and community activists -- who normally dislike banks but who dislike Wal-Mart even more because of its wage and benefits policies and because it sometimes out-competed locally owned retail establishments -- has succeeded in preventing the FDIC from authorizing a Wal-Mart-owned bank and in keeping the Congress hostile to the idea.

Preventing entry into banking by an otherwise successful company -- so long as it meets the conditions for prudential regulation outlined above -- is always a serious mistake. It is even more of a mistake because Wal-Mart's business model is one of catering to -- and doing well by -- low- and moderate-income households. These are exactly the same households who these same community activists claim (when they aren't campaigning against Wal-Mart) are being ill-served by the incumbent banks.

One argument that incumbent banks and their allies offer against "the mixing of commerce and finance" -- that the bank will somehow favor its parent at the expense of depositors and ultimately at the expense of the FDIC -- is a canard. The temptation for the owners of a bank to try to drain it for their benefit is well recognized (see #3 under "prudential regulation" above) by bank regulators, who have well-developed procedures to guard against it; and the problem is no different for a Wal-Mart-owned bank than for any other bank, regardless of who owns the bank.

Opening bank ownership to non-financial firms of any kind (so long as they meet the other requirements of prudential regulation) is a change in bank regulation that is long overdue. It ought to be first on the list of "extraneous" changes to be slipped into the financial reform legislation.

Strengthen the Pension Benefit Guaranty Corporation

The PBGC provides insurance for pension claimants for "defined benefit" pensions: the type of pension whereby a company promises its retirees a specified amount at retirement, usually based

on the employees' earnings during their last few years of employment. After some companies went bankrupt in the 1960s and early 1970s and couldn't honor their promises to their employees, legislation in 1974 created a federal guarantee fund, administered by the PBGC.

The PBGC faces the same sorts of problems as are faced by bank regulators (and more specifically, a deposit insurer): It wants the pension fund to be solvent, with assets exceeding the obligations to current and future retirees. And, in principle, companies' defined benefit pension plans are supposed to have a separately maintained pool of assets that exceed the expected retirement claims. But pension fund accounting gives the companies too much leeway in the interest rate and actuarial assumptions that relate the current condition of a pension fund to its future assets and claims. Worse, when a company makes new promises to its employees, it is not required to fund those promises immediately but is given extended periods of time -- usually stretching as long as 7 years, and sometimes longer -- to transfer sufficient assets to cover its promises.

None of this is a problem if the company stays in business. But if the company goes bankrupt, the underfunded liabilities of the pension fund are then the responsibility of the PBGC (subject to a maximum monthly amount that the PBGC covers).

The PBGC funds itself primarily from insurance premiums that are levied on the companies with covered plans. The premiums are only weakly related to the risk to the PBGC. More important, the PBGC has insufficient tools to require companies to fund their plans adequately. Both prongs need to be strengthened.

A federal insurance charter

Recall that insurance regulation is currently the sole responsibility of the 50 states. In the spirit of the regulatory diversity that was discussed above, a federal charter for insurance companies should be legislated. This would necessarily entail a prudential regulatory regime and a guaranty fund to protect insureds in the event that regulation was insufficient to prevent an insurance company from becoming insolvent.

CONCLUSION

Financial regulation is indeed arcane, complicated, and messy. But getting it right -- finding the right blend of reliance on markets but also providing adequate safety and information where they are needed -- is important.

Never let a debacle go to waste.

APPENDIX

A Primer on "Capital" and "Leverage"

"Capital" and "leverage" figure prominently in discussions of the Debacle of '07-'08 and in discussions of remedies. This primer is intended to clarify these terms, as they apply to financial institutions.

We need to start, however, somewhere else: with the stylized balance sheet of a typical manufacturing corporation, as portrayed in Figure 1. That firm has assets of \$100, consisting of plant, equipment, inventories, accounts receivable, cash on hand, etc. Its direct obligations to creditors are \$60, consisting of loans owed to banks, any bonds owed to bond investors, accounts payable, etc. By simple subtraction, its net worth or owners' equity -- the value of its assets minus the value of its direct obligations -- is \$40.

This firm has a leverage ratio -- its ratio of assets to net worth -- of $2\frac{1}{2}$ to 1. The sense of the leverage ratio can be seen as follows: If the firm's assets increase by \$10 (to \$110) -- say, because it makes and retains operating profits of \$10, or its assets simply appreciate by \$10 -- without an increase in its direct obligations, then its net worth also increases by \$10 (to \$50). Thus a 10% increase in the value of its assets results in a 25% increase in its net worth -- a notion of "leverage" that is comparable to the high school physics example of a plank and a fulcrum.

Leverage also works in reverse: A 10% decrease in the value of the firm's assets results in a 25% decrease in the value of its net worth.

One other point to keep in mind: In a legal system of "limited liability" for the shareholder-owners of a corporation, those shareholders cannot be required to support the company beyond their initial contributions. Thus, if the company's assets were to fall below \$60 (which would wipe out its net worth) and thus be inadequate to cover the claims of the company's creditors, those creditors normally have no claim against the owners. The creditors will simply have to divide the

(inadequate) assets among themselves to satisfy their claims, usually in a bankruptcy proceeding.

Accordingly, from the creditors' perspective the level of net worth is the extent of the buffer that protects them against a fall in the value of the assets that would expose them to a loss. The thicker the buffer (other things being equal), the more assured the creditors should feel. Typically, the terms of a bank's lending agreement or the covenants in bonds will allow the creditors to place restrictions on the actions of a company as that company's net worth buffer gets thinner.

Since net worth is also owners' equity, the extent of net worth is also a measure of the disincentive for the owners to take large risks, since a larger net worth means that they have more to lose and are farther away from the limit on their losses that limited liability provides.

We can now describe a commercial bank or thrift institution. Figure 2 provides the stylized balance sheet of a well capitalized bank or thrift. Its \$100 of assets are primarily the loans that it makes and the bonds that it owns. Its direct obligations of \$92 are primarily its deposits. And, again, by simple subtraction, it has \$8 of net worth or owners' equity. For financial institutions, this net worth is also called "capital".

Note that this bank has a substantially thinner net worth (capital) buffer than does the manufacturing firm. Equivalently, it is much more leveraged: $12\frac{1}{2}$ to 1. A 10% increase in the value of the bank's assets yields a 125% increase in the bank's capital. Note also that "capital" is not "money", or "cash", or "liquidity". It is net worth. Although a bank can increase its "capital" by getting a "cash injection" from investors, the increase in capital occurs because the additional cash adds to the assets of the bank and therefore to its net worth. If the bank lends or invests the cash, its capital is still augmented by the investors' infusion. By contrast, a loan of an equivalent amount of cash to the bank would not increase its capital (and would instead increase its leverage).

Again, leverage also works in reverse. A 10% decrease in the value of the bank's assets wipes out its capital and exposes its depositors to losses (again, because of the limited liability of the bank's owners). This insolvent bank is portrayed in Figure 3. Of course, a larger decline in the value

of the bank's assets would mean an even deeper insolvency.

If some depositors are unsure about the value of the bank's assets but are worried that the assets may be inadequate to satisfy all depositors' claims, those depositors may want to "run" to the bank to withdraw their funds before other depositors get the same idea. Other depositors, seeing or hearing about the first group's actions, may similarly rush to withdraw their funds.

This general depositor "run" on the bank can be exacerbated by the realization that even a solvent bank is illiquid, in the sense that it has loaned out almost all of the depositors' funds and keeps only a small amount of cash on hand to deal with "normal" withdrawals. (Think of Jimmy Stewart's efforts, in "It's a Wonderful Life", to stop his depositors' run by explaining to them that their money is not in the till but has been loaned to their neighbors.)

And, if depositors in the bank across the street see the run on the first bank and they fear that the same problems may apply to their bank as well, the depositors in this second bank may start a run on their bank. Thus can a "contagion" or "cascade" of bank runs develop.

The roles of a central bank, a prudential regulator, and deposit insurance in maintaining a stable banking system can now be seen. The central bank can lend (provide liquidity) to an otherwise illiquid but solvent bank, to help it deal with any temporary nervousness that might develop among its depositors. Prudential regulation is intended to prevent the bank from becoming insolvent and thereby prevent depositors from being exposed to losses. And deposit insurance provides a back-up reassurance to depositors, in the event that prudential regulation has failed to prevent the bank's insolvency.

Finally, Figure 4 portrays a highly leveraged investment bank. Its \$100 in assets are its investments in bonds, loans, shares of stock, real estate, and just about any other asset -- real or financial. Its \$97 in direct obligations are in the form of loans, bonds, commercial paper, and other obligations. By simple subtraction, it has only \$3 in capital.

The investment bank's leverage ratio is 33-1/3 to 1. Only a modest decrease in the value of

its assets can expose its creditors to losses. It's easy to understand how creditors would become nervous and begin a run on such an institution. (It's harder to understand why anyone would lend to such an institution in the first place -- but that's part of the mystery of the general neglect of risk by investors and lenders that is at the heart of the Debacle of '07-'08.) Until March 2008 investment banks did not have access to the Federal Reserve for liquidity, the SEC was a weak prudential regulator, and there was no creditor insurance.

For all financial institutions, capital levels are so thin that accurate measurements of the value of the institution's assets -- and thus of its capital (because capital is determined by simple subtraction) -- are crucial. An accounting system that relies primarily on market values for the determination of asset values (with some allowance for the vagaries of thin markets), rather than on historical costs or on projected cash flows, is essential.

Figure 1: The Balance Sheet of a Typical Manufacturing Corporation

Assets	Liabilities
\$100 (plant, equip., inv., cash, etc.)	\$60 (bank loans, bonds issued, accts. payable, etc.)
	\$40 (net worth, owners' equity)

Figure 2: The Balance Sheet of a Well Capitalized Bank or Thrift

Assets	Liabilities
\$100 (loans, bonds, investments)	\$92 (deposits)
	\$8 (net worth, owners' equity, capital)

Figure 3: The Balance Sheet of an Insolvent Bank or Thrift

Assets	Liabilities
\$90 (loans, bonds, investments)	\$92 (deposits)
	\$-2 (net worth, owners' equity, capital)

Figure 4: The Balance Sheet of a Highly Leveraged Investment Bank

Assets	Liabilities
\$100 (loans, bonds, stocks, real estate, investments)	\$97 (bonds, loans, c.p.)
	\$3 (net worth, owners' equity, capital)

