The Once and Future Financial System

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June 3, 2009

At its most fundamental level, the current economic calamity was precipitated by trillions of dollars in bad loans made in the lending frenzy during the middle of this decade. Between 2005 and 2007, the U.S. financial system extended too much credit to too many households and to a fair number of businesses that simply could not make good on those loans if they suffered even the mildest of financial setbacks. And there were plenty of setbacks, resulting in a flood of bad loans and losses to the financial system that undermined the system's capital base and thus its ability to extend credit even to creditworthy borrowers. As the credit spigot closed, it choked off economic activity, causing millions to lose their jobs and profits to plunge, thus creating even more bad loans, more losses, and an even larger capital shortfall. This adverse self-reinforcing cycle is at the center of the worst economic and financial crisis since the Great Depression.

Policymakers have worked aggressively to short-circuit this cycle, stabilize the financial system, and get credit flowing again. The U.S. Treasury Department has all but nationalized the nation's residential mortgage market by putting Fannie Mae and Freddie Mac into conservatorship and empowering the FHA to dramatically expand its lending. The Federal Reserve has slashed the federal funds rate to zero and stepped into the lending breach, purchasing a wide range of securities and extending cheap credit to private investors. The Treasury and Fed have put the nation's largest banks through stress tests, to force them to rebuild capital sufficient to withstand future economic storms. And the Treasury and FDIC have plans for an auction of bank loans to private investors, letting banks remove these problem loans from their balance sheets.

All this will be very costly for taxpayers. The government has committed an astonishing $12 trillion to combat the crisis, of which $4 trillion has already been provided (see Table 1). This includes $700 billion in TARP funds, the capital needed to shore up Fannie and Freddie, and losses the FDIC and FHA will bear given their added responsibilities. Taxpayers may well be asked to ante up even more to completely right the financial system. Most of these funds will be recouped in future asset sales—taxpayers are getting something for their money—but the ultimate cost is expected to approach $1.3 trillion, equal to nearly 10% of GDP.[1]

Taxpayers must realize that without the publicly financed rescue of the banking system, their cost would be measurably higher as the financial system foundered, credit remained impaired, and the economy struggled to regain its footing. Moreover, the policy steps taken so far appear to be working. The panic that roiled financial markets last fall is fading. A great deal of angst remains, but credit spreads—the best measure of that angst—have narrowed significantly. Bond issuance has revived, even for below-investment-grade corporations. Stock prices are up substantially from their early-March lows, even for banks issuing new equity following the stress tests. Perhaps most encouraging is that interbank lending, which had effectively shut down late last year, is returning to normal. Thus, while credit remains significantly impaired, it is measurably better than just a few weeks ago and much cheaper. There is no better reason to be hopeful that the worst of the economic downturn is over.

This is not to say that credit flows will normalize soon, or that the recession will soon give way to a robust recovery. Indeed, the coming recovery will be muted as long as the government has to prop up the nation's financial institutions; these institutions cannot provide enough credit to power strong and consistent growth. The financial system has a long way to go before it will be able to do without taxpayer help. Hundreds of smaller institutions that are not too big to fail will, and big parts of the securities markets have to be completely reworked before they operate effectively again. Even when the government is able to step away from the financial system, private risk capital will be reluctant to return as long as the memory of recent events lasts, probably for a generation. Such risk capital fuels the innovation and technological change so vital to underlying productivity growth and the economy's long-term prospects.

The government's vast intrusion into the financial system also poses a range of threats and opportunities. There are legitimate worries that with the Fed pumping so much liquidity into the system, it will eventually ignite runaway inflation. Moreover, it is not clear the government will be able to gracefully exit its large new ownership stakes in banks and other firms. Fortunately, calls to nationalize major financial institutions, which would make such an

[1] The Savings and Loan crisis of the early 1990s ultimately cost taxpayers an estimated $250 billion in today's dollars, equal to less than 3% of GDP at that time. See "The Costs of the Savings and Loan Crisis: Truth and Consequences," FDIC, 2000. www.fdic.gov/bank/analytical/banking/2000dec/brv13n2_2.pdf

Table 1: Government Response to Financial Crisis

$ bil, as of May 15, 2009

	Pledged	Provided
Total	**12,080**	**4,036**
Federal Reserve		
Term auction credit	900	428
Other loans	Unlimited	132
Primary credit	Unlimited	42
Secondary credit	Unlimited	0
Seasonal credit	Unlimited	0
Primary Dealer Credit Facility	Unlimited	0
Asset-Backed Commercial Paper Money Market Mutual Fund	Unlimited	29
AIG	46	46
AIG (for SPVs)	9	0
AIG (for ALICO, AIA)	26	0
Rescue of Bear Stearns (Maiden Lane)**	27	26
AIG-RMBS purchase program (Maiden Lane II)**	23	16
AIG-CDO purchase program (Maiden Lane III)**	30	20
Term Securities Lending Facility	200	14
Commercial Paper Funding Facility**	1,800	163
TALF	1,000	16
Money Market Investor Funding Facility	540	0
Currency swap lines	Unlimited	247
Purchase of GSE debt and MBS	1,250	504
Guarantee of Citigroup assets	286	0
Guarantee of Bank of America assets	108	0
Purchase of long-term Treasuries	300	102
Treasury		
TARP	700	570
Fed supplementary financing account	479	479
Backstop of Fannie Mae and Freddie Mac	400	0
Federal Deposit Insurance Corporation		
Guarantee of U.S. banks' debt*	1,400	349
Guarantee of Citigroup assets		10
Guarantee of Bank of America assets		2.5
Transaction deposit accounts	500	0
Public-Private Investment Fund Guarantee	1,000	0
Federal Housing Administration		
Refinancing of mortgages	100	0
Congress		
Economic Stimulus Act of 2008	170	170
American Recovery and Reinvestment Act of 2009	787	787

Sources: Fed, Treasury, FDIC, FHA, Moody's Economy.com
*Includes foreign denominated debt
**Net portfolio holdings

exit significantly more complicated, have not been heeded. While comprehensive regulatory reform is needed, there is a risk that policymakers will be too heavy-handed in reshaping the system. The great panic may soon be history, but its repercussions will be felt for decades.

Loss accounting. Millions of bad loans were made during the middle of this decade. At the time of their origination, there was a high probability that borrowers would be unable to make timely payments even under relatively untroubled financial scenarios.

This aptly describes the more than 12.5 million subprime, alt-A and jumbo residential mortgage loans originated between 2005 and 2007, the height of the housing bubble. By the end of 2007, these risky loans accounted for nearly a fourth of all first-mortgage loans outstanding. Adding to the threat that homeowners with these loans might never make good on them, almost half were so-called "stated income" loans—for which borrowers did not have to provide a W-2 form or tax return to prove income. Over half of such borrowers also took on second mortgages, thus putting little or nothing down on their home. Bad lending practices extended beyond residential mortgages, to auto and credit card loans, commercial mortgages, corporate bonds, and leveraged loans used to finance increasingly aggressive private equity deals.

The ultimate cost of all this bad lending is projected to be an astounding $2.6 trillion (see Table 2). This translates into a cumulative lifetime loss rate of well over 10% on the approximately $24 trillion in U.S. credit market instruments currently outstanding. The projection is based on a range of other forecasts, including expected peak-to-trough declines near 40% in real estate prices, and a peak unemployment rate of 10%. Of these expected losses, $1.2 trillion will be suffered by depository institutions; nearly $1 trillion by pension funds, insurance companies, hedge funds and mutual funds; and $350 billion by government- sponsored enterprises such as Fannie Mae, Freddie Mac and the FHA (see Chart 1).

To date, financial institutions have recognized some $1.3 trillion of the $2.6 trillion in expected losses (see Table 3). This suggests the system faces another $1.3 trillion in write-downs. Of these, roughly half, or $650 billion, will be taken by U.S.-based institutions. The rest will be borne by overseas institutions, mostly in Europe.

Who is to blame? There is plenty of blame to go around for the bad lending. Most obviously, it could not have occurred without someone providing the credit, and flush global investors obliged. Booming emerging economies such as China and Russia collected a surfeit of dollars from their lopsided trade with the U.S. These countries invested initially in risk-free U.S. Treasuries, but in a quest for greater returns, they eventually moved into riskier mortgage and other securities. With hundreds of billions and little time to invest it, emerging market investors did little or no research of their own.

The U.S. financial system funneled dollars from global investors into loans to U.S. households and businesses, via the process of securitization. It turned out that this process was fundamentally broken. No one involved—from the

Table 2: Cumulative Lifetime Losses on Unsecuritized Loans and Securities in U.S. Financial System as of Year-End 2008
$ bil

	Face Value	Expected Losses	Loss Rate	Expected Losses: Banks	Insurance	Pension Funds	GSEs and Government	Hedge Funds and Mutual Funds
Residential Mortgages	10,856	1,339	12.3	550	205	145	321	118
Consumer Credit	2,025	262	12.9	167	38	16	-	41
Commercial Real Estate	3,425	471	13.8	250	74	59	30	58
Corporate	7,835	491	6.3	284	79	61	-	67
Total	24,141	2,563	10.6	1,251	396	281	351	284

Cash Flow Losses on Unsecuritized Loans
$ bil

	Face Value	Expected Losses		Expected Losses: Banks	Insurance	Pension Funds	GSEs and Government	Hedge Funds and Mutual Funds
Subprime	320	123	38.4	63	11	6	29	14
Alt-A	605	142	23.5	53	8	4	69	8
Prime	3,850	139	3.6	54	11	7	59	8
Commercial Real Estate	2,475	245	9.9	149	36	28	5	27
Consumer Loans	1,400	189	13.5	129	23	12	-	25
Corporate Loans	3,700	155	4.2	113	11	9	-	22
Leveraged Loans	175	45	25.7	25	6	6	-	8
Total Loans	12,525	1,038	8.3	586	106	72	162	112

Mark-to-Market Losses on Securities Holdings
$ bil

	Face Value	Expected Losses		Expected Losses: Banks	Insurance	Pension Funds	GSEs and Government	Hedge Funds and Mutual Funds
Subprime Residential	701	250	35.7	123	41	32	16	38
Alt-A Residential	870	205	23.6	68	28	15	84	10
Jumbo Residential	310	20	6.5	6	6	3	3	2
ABS CDOs	400	361	90.3	178	82	47	22	32
Prime MBS	3,800	99	2.6	5	18	31	39	6
CMBS	950	226	23.8	101	38	31	25	31
Consumer ABS	625	73	11.7	38	15	4	-	16
High-Grade Corporate Debt	3,010	133	4.4	69	28	27	-	9
High-Yield Corporate Debt	605	81	13.4	37	22	11	-	11
CLOs	345	77	22.3	40	12	8	-	17
Total Securities	11,616	1,525	13.1	665	290	209	189	172

Source: Moody's Economy.com

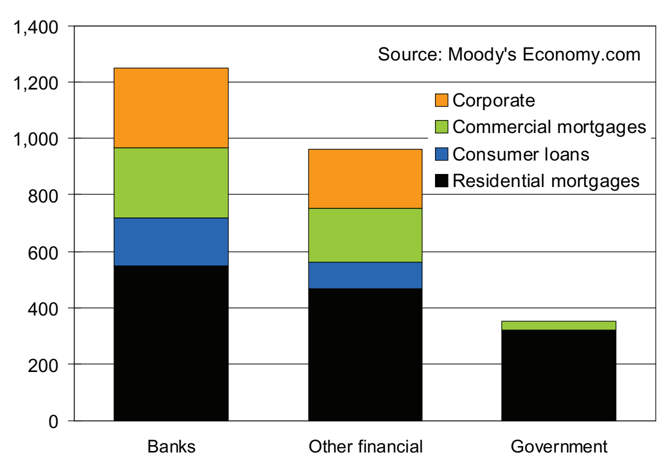
Table 3: Top 25 Financial Institution Write-Downs Taken on U.S. Loans and Securities
$ bil, as of May 1, 2009

Wachovia	101.9
Citi	101.8
Bank of America	56.6
Merrill Lynch	55.9
UBS	53.1
Washington Mutual	45.3
HSBC	42.2
JP Morgan	41.1
RBS	29.5
Wells Fargo	27.9
HBOS Plc	27.2
National City	25.2
Morgan Stanley	22.7
Barclays	18.6
Deutsche Bank	18.3
Credit Suisse	17.2
Lehman Brother	16.2
Bayerische Landesbank	16.0
ING	15.4
IKB Deutsche	13.8
BNP Paribas	13.7
PNC	12.4
KBC Groep NV	11.3
Bank of China	11.2
Societe Generale	11.1

Source: Bloomberg

mortgage firms that originated the loans to the investment banks that packaged them into securities, to the rating agencies that graded those securities, to the global investors themselves—made sure the loans were good. Everyone in this complex process thought others were doing so, but no one was. Securitization was guided by a mélange of laws, regulations and accounting rules, supposedly designed to prevent bad lending, but the tide of investor dollars completely overwhelmed the process. There was too much money to be made by all involved.

Chart 1: Big Losses Across All Financial Institutions
Projected losses on U.S. credit market instruments, $ bil



Regulators could have intervened but did not. The middle of the decade marked the apex of a quarter-century of financial deregulation that began in earnest during the Regan administration. Back in the early 1980s, deregulation was desirable; many lower- and middle-income households and small and even midsized businesses could not obtain credit or could get it only at a high price. But by the middle of the decade, deregulatory fervor had gone much too far. Even at the Federal Reserve—the nation's key banking regulator—there was a view that self-interested global investors would do their own policing; regulators would only muck up an efficient lending process. This view was misplaced, as lending became increasingly egregious.

Out-of-control hubris fueled runaway lending. House "flippers" were empowered by lenders' belief that house prices would never fall. Lenders, investment banks and rating agencies thought their data and models were sophisticated enough to prevent major mistakes. Investors thought the wild business-cycle swings of the past were just that, history. Central bankers believed that even if things did not go as planned, they could deftly step in and limit any economic fallout. This overconfidence bred greater and greater risk-taking, leading to the trillions in losses currently choking the financial system.

Financial panic. That all the bad lending precipitated a financial crisis by the summer of 2007 was not surprising; but that the crisis devolved into a financial panic was shocking. A string of serious policy errors, beginning with the Treasury Department's decision to put Fannie Mae and Freddie Mac into conservatorship in early September 2008, precipitated the panic. The move wiped out shareholders and signaled to global investors that all financial institutions, no matter how large, were at risk of failure.

At the time they were seized, Fannie and Freddie may well have been technically insolvent, valuing their assets and liabilities at market prices. But they still had sufficient regulatory capital—the amount necessary to satisfy government accounting rules. In past financial crises, policymakers gave large institutions in similar situations some latitude, to avoid unnerving investors: Citigroup was likely insolvent during the early-1990s savings & loan crisis but was not seized by regulators. When Treasury Secretary Paulson did not show the same forbearance to Fannie and Freddie, investors were spooked.

The markets' fears boiled over when policymakers allowed broker-dealer Lehman Brothers to fail one week later. Lehman's problem was not a lack of cash. It could use the credit facilities the Fed had established after the Bear Stearns collapse a few months earlier to stay afloat. But no other financial institution wanted to trade with a firm that could soon be out of business. Hedge funds that had used Lehman to execute their trades no longer did so, and other, bigger financial institutions forced Lehman to put up more collateral in case something went wrong. A year earlier, Lehman Brothers had been at the center of the financial system; now, over what seemed like just a few days, the system had shut Lehman out. The company was careening toward bankruptcy.

The Treasury and the Federal Reserve worked feverishly to find a buyer for Lehman, as they had done for Bear Stearns, but no one stepped forward, leaving Lehman's fate to the Treasury and the Fed. The Fed said Lehman lacked sufficient collateral to obtain a loan from the central bank. The Treasury said it could not bail out everyone and argued that the financial system had had plenty of time to prepare for Lehman's failure.

Yet not everyone was prepared, and failing to forestall a Lehman bankruptcy was a mistake. The Reserve Primary Fund, one of the nation's oldest and largest money market funds, had invested heavily in Lehman debt. The resulting loss caused Reserve to break the buck—the value of the fund's assets fell below what it owed its investors. This was a shock to many mom-and-pop investors, who thought a money market fund was as safe as a mattress; they began withdrawing from the Reserve fund and from others. Money market funds are typically large investors in commercial paper, the short-term IOUs of major businesses; now many funds had no choice but to freeze purchases or to sell commercial paper to meet their redemptions. Large firms began scrambling for ways to finance basic operations. Equity investors realized that no business was immune to the credit crunch, and stock prices plunged.

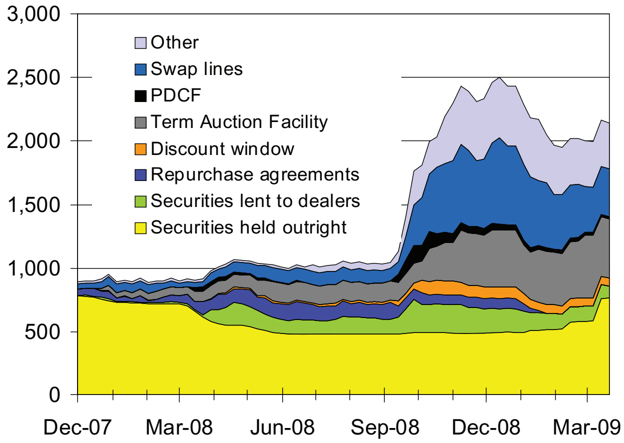
As the entire financial system neared the precipice, a rattled Treasury Secretary Paulson and Fed Chairman Bernanke asked Congress to help them save the system. They asked lawmakers to put $700 billion into a Troubled Asset Relief Fund to buy the banking system's toxic assets. Neither the need for the $700 billion TARP nor how the money was to be used and overseen was well explained. Confusion grew over about how the asset purchases would be conducted and why this would quell the financial panic. With taxpayers incensed at being asked to bail out bankers, and the election fast approaching, Congress failed to muster enough votes to pass the TARP legislation on the first try. After financial markets boiled over in response, Congress passed the TARP a few days later, but the collective psyche had been badly damaged. There was no longer time to begin asset purchases, and the TARP money was used instead to make direct capital infusions into teetering financial institutions. Taxpayers now owned big stakes in the nation's largest banks.

Although TARP funds were not being used for asset purchases, it was widely expected that they eventually would be. Investors were thus shocked when Secretary Paulson announced in November 2008 that the TARP would not be used for this purpose after all. Depressed asset prices fell even more; if the government was not going to buy these assets, no one would. The collateral damage from this decision was the near-collapse of Citigroup, which held hundreds of billions in bad loans and securities. Ironically, the only way to avert this calamity was for the Federal Reserve to guarantee Citi's troubled assets, the same assets the Treasury had decided not to buy.

A string of policy errors had turned a severe yet manageable financial crisis into an inherently unpredictable and nearly uncontrollable financial panic.

Buying, lending and guaranteeing. Policy mistakes precipitated last fall's financial panic, but generally adept policymaking ever since seems to have quelled it. Particularly noteworthy is the Federal Reserve's unprecedented use of its considerable resources to stabilize the financial system. Policymakers have slashed the federal funds rate to effectively zero and have indicated that the funds rate will stay there for an extended period.

Chart 2: The Fed Prints Money
Federal Reserve's balance sheet, $ bil



The Fed is also engaging in increasingly aggressive forms of quantitative and credit easing, in which it essentially prints money to buy financial securities. The central bank is currently buying commercial paper, debt and mortgage securities guaranteed by Fannie Mae and Freddie Mac, and Treasury securities. The Fed had approximately $1 trillion on its balance sheet, mostly in Treasury securities, before the financial crisis began. It currently has close to $2 trillion in a wide range of securities and has committed to increasing this to some $3 trillion by late this year (see Chart 2).

Efforts to revive the commercial paper market have been particularly effective; the private market is now functioning well, and the Fed's commercial paper holdings have been winding down since peaking late last year. The decline in long-term Treasury yields and fixed mortgage rates is also evidence of the power of quantitative easing. With the Fed buying, 10-year Treasury yields are near 3.5%, and fixed mortgage rates have dropped close to 5% due to the lower Treasury yields and a narrowing in mortgage spreads.[2]

The Fed has also expanded dramatically its lending to the financial system. Prior to the crisis, such lending was done only rarely, and only through the Fed's discount window. A stigma attached to banks that used the discount window, so most were reluctant to do so even if they needed the cash. To address this problem, the Fed established the Term Auction Facility in late 2007. The TAF allows banks to raise short-term cash through an auction process, avoiding any stigma. To provide additional liquidity, the Fed also established the Primary Dealer Credit Facility and the Term Securities Lending Facility in early 2008.

The newest Fed lending facility is the Term Asset-Backed Securities Loan Facility, which in March 2009 began providing attractive loans to private investors to purchase securities backed by a wide range of assets, including residential and commercial mortgages, credit cards, student loans, vehicle loans, and small business loans. The facility has gotten off to a slower start, with the Fed making only about $20 billion in TALF loans so far, primarily for purchases of credit card and auto loan securitizations. The Fed has said it is willing to make up to $1 trillion in such loans. The TALF's impact on the securities market is greater than these numbers would suggest, as interest rate spreads have narrowed meaningfully in anticipation of greater lending from the facility in the future. Ultimately, the TALF should be much more successful as the Fed continues to adjust it to make it attractive to more investors.

The Federal Reserve and FDIC have also worked to shore up confidence in the financial system, by expanding various types of asset and deposit guarantees. Troubled assets at Bear Stearns, AIG, Bank of America, and Citigroup are now guaranteed by the Fed. Without this backstop, these institutions would have failed, likely creating a catastrophic systemic problem. The FDIC is also guaranteeing debt issued by banks. The Term Loan Guarantee Program is backstopping some $335 billion in bank debt. To forestall bank runs, the FDIC also increased deposit insurance from $100,000 to its current $250,000.

Stressful stress-testing. Stress-testing the largest bank holding companies has also been highly therapeutic. The tests were conducted on 19 banks, each holding more than $100 billion in assets. Collectively they account for two-thirds of total U.S. bank assets. The process provided a consistent framework for determining which institutions need capital and how much. Institutions with capital holes have been required to fill them, which should eventually put them on a solid financial footing and thus reduce a major impediment to lending.

The stress tests determined expected loss rates for this year and next for different bank assets, including loans and securities. The tests were conducted using a most-likely baseline economic outlook and also under a much more adverse outlook. The baseline was a bit more optimistic than the Moody's Economy.com baseline, particularly for expected unemployment, but the adverse outlook is reasonably dour, consistent with a Moody's Economy.com scenario that has a 20% probability of occurrence (see Table 4). That is, there is only a one-in-five chance that the economy performs meaningfully worse than this scenario. This is not quite what the Treasury and Fed advertised—they argued that their adverse scenario has only a 10% probability of happening—but it is a very negative scenario nonetheless.

Even more encouraging, the expected loss rates under both economic scenarios appear more negative than the underlying economic assumptions would imply. Assuming the baseline outlook, the total two-year loss rate across all assets is just over 5%, and assuming the adverse outlook, it is a very high 9%. The highest two-year loss rate ever was 9%, seen in the depth of the Great Depression (see Chart 3). Even during the savings and loan crisis of the early 1990s, the loss rate reached only 3%. Banks undergoing the stress tests will thus have capital sufficient to withstand an economic storm as bad as the Depression.

Of course, this is all in theory. If the economy were to experience a real depression, things might not go as scripted in the stress tests. Future earnings power is a key to how much

[2] Long-term Treasury bond yields and mortgage rates have moved up substantially since early May. This reflects investors' views that the economy's prospects are improving, which is consistent with the rise in equity prices over the same period. It also reflects worries about a surge Treasury bond issuance to finance the government's response to the current crisis, which is evident in the increase in CDS spreads on U.S. Treasury bonds. Pressure is rising on the Fed to increase its Treasury purchases beyond the $300 billion committed so far.

Table 4: Economic Scenarios Used in the Bank Stress Tests

	2009	2010
Real GDP Growth		
CAP Baseline Scenario	-2.0	2.1
Moody's Economy.com Baseline	-3.0	1.4
CAP Adverse Scenario	-3.3	0.5
Moody's Economy.com 10% Scenario	-4.4	0.5
Unemployment Rate		
CAP Baseline Scenario	8.4	8.8
Moody's Economy.com Baseline	8.9	9.7
CAP Adverse Scenario	8.9	10.0
Moody's Economy.com 10% Scenario	9.6	11.0
House Prices (Case-Shiller® 10-city index)		
CAP Baseline Scenario	-14.0	-4.0
Moody's Economy.com Baseline	-19.4	-3.2
CAP Adverse Scenario	-22.0	-7.0
Moody's Economy.com 10% Scenario	-21.8	-9.3

Sources: Federal Reserve Board, Moody's Economy.com

Notes:
The stress tests are conducted under the Capital Assistance Program.
10% Scenario is designed so that there is a 10% probability that the actual economic outlook will be more severe.

capital each institution needs. The tests assume that institutions will remain sufficiently profitable so that after they raise more equity capital, sell off assets, and borrow from the government, their capital base will rise to safe levels. This could be too optimistic if the economy seriously erodes.[3] It is more likely that the economy will resemble the baseline, and these institutions will find themselves overcapitalized. Once they and their regulators feel certain this is the case, they can aggressively extend credit and acquire weaker or smaller financial institutions.

Stress-testing has had a noticeably positive effect on financial markets. Stock prices have rallied, even for the big banks issuing equity to meet the tests' requirements. There is no better endorsement of the process than the willingness of investors to pay more for shares in these banks after the tests than before. Yet more telling is the narrowing gap between three-month Libor and three-month T-bill yields—a good proxy for banks' willingness to lend to each other (see Chart 4). Big banks thus seem to believe that counterparty risk has been significantly diminished, if not eliminated.

[3] It is encouraging that the Federal Reserve appears to be limiting what share of the banks' additional capital requirements can be satisfied by expected future earnings.

Sizing up PPIP. The financial panic is receding, but the crisis is far from over, and policymakers have more work to do. The next important policy effort is the Public-Private Investment Partnership, which Treasury officials say will get under way later this summer. At its most basic, PPIP allows the FDIC to provide cheap, low-risk financing to private investors who purchase bad loans and securities from banks. By encouraging these asset sales, the government will help reduce the uncertainty surrounding banks' viability that stemmed from the presence of these assets on their balance sheets. The program should also help restart markets for loans and securities, a necessity for a well-functioning financial system.

There are two separate programs in PPIP: a legacy securities program and the legacy loan program. Only a handful of very large investors will receive FDIC loans to purchase securities from banks. While investors will be required to put some of their own money into the purchase, most will be financed by the FDIC, magnifying potential returns on those investments. The FDIC loans will be nonrecourse; thus, investors will only risk whatever they themselves put up. The legacy security program is not much different from the Fed's TALF program, but it targets existing securities and, unlike the TALF, includes securities that have a less than Aaa rating.

The legacy loan program is more novel, in that it lets banks auction existing loans to private investors, who will receive cheap FDIC financing. There is a reasonable worry that these auctions will not succeed, as banks have been reluctant to sell these assets at prices investors are willing to pay.[4] The FDIC should be able to overcome this problem, however; it has some control over both the prices investors will bid and the prices banks will ask.

The bid price depends on the leverage the FDIC is willing to provide; the greater the leverage, the more investors will bid. The program is currently designed to provide significant leverage, but the FDIC might need to offer more to get bid prices up. Banks' asking prices are significantly influenced by the recent stress tests. Banks tested must raise capital sufficient to withstand very substantial loan losses; thus, they

[4] The FDIC has recently indicated that banks may have a limited interest in participating in PPIP given recent improvements. It would be unfortunate if this sentiment derails PPIP before it starts.

Chart 3: Bank Stress Tests Are Stressful
Commercial bank two-year loan loss rate

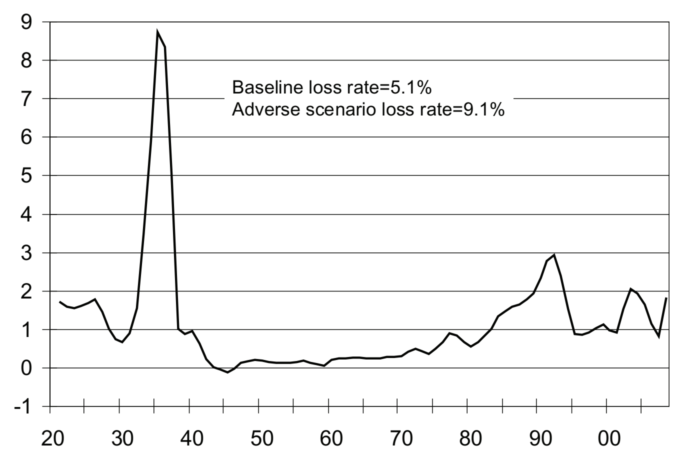
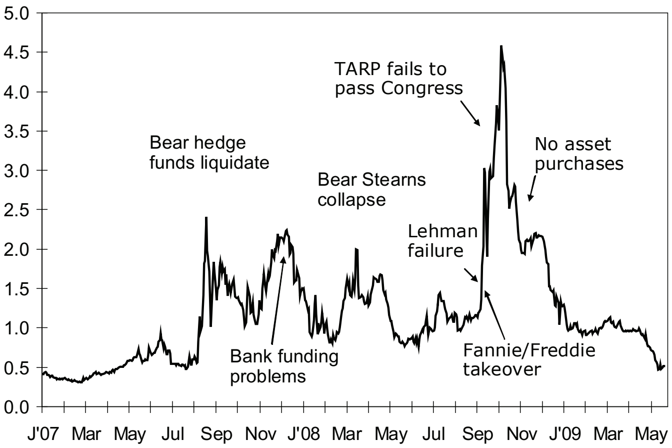


Chart 4: Financial System Is Stabilizing
Difference between 3-month Libor and Treasury bill yields



have effectively been forced to write down those loans and thus lower the prices they would be willing to accept in an auction. With the FDIC influencing, if not managing, both bid and ask prices, auctions for banks' bad loans should get off the ground this summer.

While it is creative and has a reasonable chance of success, the PPIP will ultimately cost taxpayers much more than if the government had purchased the bad assets directly. The government is giving up much of the future return on these assets to private investors, even though it is taking much of the upfront risk. Concern that the government itself might overpay for the assets seems overdone; the government would use roughly the same models as investors to value assets. However, direct government asset purchases would require more upfront taxpayer money than is currently available in the TARP. The administration would thus have to go back to Congress for more, something it clearly feels it cannot do.

More TARP or other taxpayer money may ultimately be needed to resolve the financial crisis. About $530 billion of the TARP has already been committed, leaving $130 billion of the original $700 billion still available, and demands on the rest seem set to rise as the cost of the auto and housing bailouts mount (see Table 5). Hundreds of smaller depository institutions are also sure to fail in the next several years as their loans sour, particularly commercial mortgage and construction loans; these banks will not be able to raise new equity from private investors, and they are not too big to fail. Based on the previous estimate that U.S.-based financial institutions have some $650 billion in losses yet to recognize, and assuming about half those losses will be taken by the stress-tested banks, at least $300 billion remains. Some will be borne by creditors of the failed institutions, but some will likely also be borne by taxpayers.

Exit strategy. The unprecedented policy response to the financial panic was necessary and appropriate, but it will not be easy for the government to extricate itself gracefully from its massive intrusion into the financial system. The Federal Reserve has interests in assets amounting to trillions of dollars, and taxpayers either own or hold sizable stakes in many of the nation's largest financial institutions. There is reasonable concern that this could lead to runaway inflation and that government's heavy hand could distort the day-to-day activities of financial institutions. The financial system will not provide credit efficiently, in the manner necessary for sturdy long-term economic growth, until the government significantly withdraws.

Worry that the Fed's actions will ignite runaway inflation is not misplaced. Inflation is after all a monetary phenomenon, and the Fed is printing trillions of new dollars. But while inflation may well become uncomfortably high early next decade, it is unlikely to be as bad as feared and is certainly not a reason for the Fed to restrain its response to the current crisis. Money ignites inflation only if it first leads to more and cheaper credit, which then fuels economic activity enough to tighten labor markets and push utilization rates near capacity. Policymakers will have time before this happens; in the wake of this crisis, it could be years before credit flows freely again and the economy finds its way back to full employment.

It is also worth noting that most of the Fed's new liquidity is in the form of short-term credit, maturing in less than 90 days. Once policymakers feel comfortable that the financial system and economy have stabilized, these programs can fade away. The Fed is providing

Table 5: TARP Funds
$ bil, as of May 15, 2009

	Pledged	Provided
CPP (Financial institutions)	218	198
Homeowner Affordability and Stability Plan	50	15
AIG	70	70
Citi (TIP)	20	20
Bank of America (TIP)	20	20
Citi debt guarantee	5	5
Bank of America debt guarantee	8	0
Federal Reserve (TALF)	55	20
GMAC	5	5
GM	15	15
GM (for GMAC)	1	1
Chrysler	7	7
Chrysler Financial (loan1/16)	2	2
Public-Private Investment Fund	75	0
SBA loan purchase	15	0
Auto suppliers	5	5
Total	570	383

Sources: U.S. Treasury, Moody's Economy.com liquidity with longer maturities—an example would be five-year TALF loans to facilitate investor purchases of commercial mortgage securities—but it is also working on new mechanisms such as issuing its own debt to drain longer-term liquidity when this is needed.

Firmly ingrained at the Federal Reserve is the belief that low and stable inflation is the central bank's first priority; sturdy long-term economic growth is not possible without it. The Fed would almost surely raise interest rates aggressively, sacrificing near-term growth, to ensure inflation does not rise too far above its target for too long.

Getting the government out of the financial services business could take much of the next decade. In fact, the government's stake in the system may expand further in the next several years as it puts hundreds of smaller institutions into receivership. Of the 8,400 depository institutions currently operating, including commercial banks, savings and loans, and community banks, nearly 1,000 are at significant risk of failing. Many will choke on bad commercial loans that will overwhelm their capital base.

It is encouraging that a number of the banks that took TARP money want to repay it. They have quickly realized that having the government as an owner entails considerable cost. Compensation practices have come under intense scrutiny, and the focus could easily turn to other business practices such as underwriting standards or resolving problem loans. It is not hard to envisage political pressures on government-aided financial institutions to ease lending or repayment terms. Once policymakers issue guidelines to banks seeking to repay TARP money, many institutions will quickly do so.

It will take much longer for the government to divest its ownership of behemoth institutions Fannie Mae, Freddie Mac and AIG. Fannie and Freddie play a central role in the housing market; privatizing them would mean higher mortgage costs and less credit. Selling AIG will be difficult given the complexity of its operations. Thus, it will likely occur in stages, as pieces of these institutions are carved out and taken public or sold to private investors. It will be a daunting process, but it could go better than expected if, when financial conditions improve, the pieces of these companies are sold at a high enough price to make a difference in addressing the federal government's severe fiscal problems.

As the Great Depression dramatically transformed the financial system, so, too, will the Great Panic. From the ashes of the Depression rose the FDIC, Fannie Mae, and the Federal Home Loan Bank system; investment and commercial banking operations were separated; and the SEC was established. From the ashes of the Panic, the nation's regulatory structure will be reworked and the financial system transformed. The goal will be reducing the likelihood of future financial crises and the economic fallout should they occur.

Regulatory reform. Regulatory reform will mean the effective rationalization of the current byzantine structure. An alphabet soup of federal and state regulators have watched over the financial system since the Depression, with each regulatory body having its own narrowly defined jurisdiction. The OCC is responsible for bank holding companies, the OTS for savings & loans, the FHFA for Fannie Mae and Freddie Mac, and so on. During the housing bubble, the lenders that made the worst loans were able to skirt regulation by establishing corporate structures that fell outside any regulator's oversight. For example, some of the most egregious loans were made by REITs that were all but ignored by the SEC, their nominal regulator.

With so many regulators, it is difficult to coordinate efforts to discipline the system. Basic guidance on alt-A mortgage lending was not forthcoming until late 2006, and subprime guidance waited until mid-2007, well into the current crisis, as regulators could not agree on the exact wording.

The current fractured structure should be revamped into four principal agencies. The basic concept of regulation should shift: Instead of monitoring specific categories of financial institutions, agencies would monitor functions, specializing in particular risks and activities.

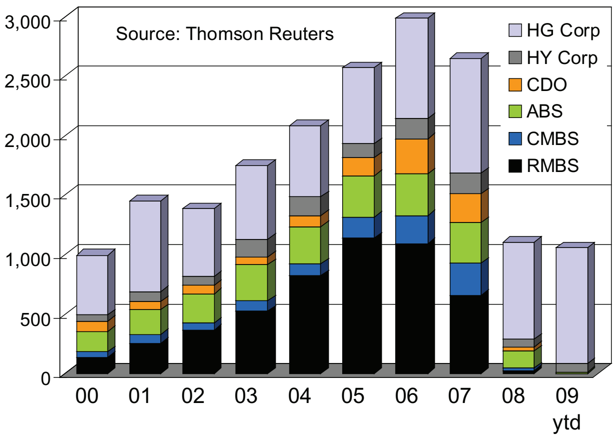
Financial system. The Federal Reserve would look out for the stability of the entire financial system; its mandate would include any risk that threatened the system, whether it involved commercial banks or hedge funds. The Fed is uniquely suited for this task, given its central position in the global financial network, its significant financial and intellectual resources, and its history of political independence.

As a systemic risk regulator, the Fed would address an age-old problem: namely, that banking regulation tends to be procyclical. When credit quality is good and lenders are aggressive, regulators have difficulty imposing discipline; when quality is poor and lenders are tightening, the disciplinary screws are tightened. This tends to exacerbate shifts in lending standards and credit availability. It partly stems from regulators' inability to respond quickly, but it also reflects the influence of politics. Lenders find it much easier to keep regulators at bay when credit conditions appear robust, although this is generally when increased regulatory oversight would be most beneficial.

The Fed's new role would also come with an implicit mandate and meaningful tools to lean against asset bubbles. A long-held view at the Fed is that battling bubbles is not its job: Bubbles are difficult to identify; raising interest rates is a particularly blunt way of attacking them, and if a bubble does burst, then lower interest rates are an effective response to the economic fallout. But as the nation's systemic regulator, it would be difficult for the Fed to ignore potential bubbles. As is clear now, doing so poses a mortal threat to the financial system. And as the systemic regulator, the Fed would presumably be able to significantly influence the amount of leverage, an essential ingredient in any asset bubble.

Responding to potential bubbles will not be easy, but little of what the Fed does is. Bubbles are always born out of something fundamental—the internet's debut for stocks, low interest rates for housing, or Chinese demand for oil—making it difficult to conclude in real time that they are bubbles. Yet the central bank is often asked to make judgments of equal, if not greater, difficulty. Will record oil prices undermine inflation expectations and result in higher underlying core inflation? Is a zero funds rate target and the purchase of Treasury bonds an appropriate response to the financial crisis? Was putting the Fed's balance sheet on the line to resolve the Bear Stearns collapse and save Citigroup and AIG beyond the Fed's mandate? Deciding whether a bubble exists in housing is no more difficult than

Chart 5: Securitization Remains Troubled
Bond issuance, $ bil, annualized



these. A Federal Reserve that determines the nation's monetary policy and is also its chief financial regulator could reduce the odds of future financial crises through the deft use of all its tools, but it must also demonstrate the courage of its convictions.

Financial institutions. In this new regulatory framework, a second regulatory agency would oversee financial institutions receiving government guarantees, explicit or implicit. This would include any institution eligible for deposit insurance or guarantees of its debts or assets, as well as institutions considered too big to fail. All depository institutions fit this description, as do Fannie and Freddie, many hedge funds, mutual funds, and insurance companies. The regulatory agency would be responsible for disciplining such institutions and, if need be, putting them into conservatorship or receivership. The FDIC seems the clearest choice for this task, given it has successfully handled the largest and most complex financial failures since the Great Depression during the current crisis.

Financial markets. Financial markets also need oversight to ensure they are fair and transparent. Stock, foreign exchange, commodity, credit and derivative markets must be free of insider trading or other manipulation such as naked short-selling; their rules must be easily understood, and transactions must be readily monitored to ensure parties can manage the risks they are assuming. Transparency means timely, meaningful, reliable and complete information is available regarding financial products, institutions and markets. In transparent markets, financial players borrow, lend, buy and sell aggressively. In opaque markets, players are uncertain and tend to panic in times of trouble, just as they did during this crisis. Some combination of the SEC and Commodity Futures Trading Commission would seem best suited for the task of overseeing financial markets.

Consumer protection. The fourth regulatory agency would aim to protect consumers by monitoring the way financial institutions market their products. The agency would also be responsible for ensuring that lenders do not discriminate unfairly and that their collection policies are fair and appropriate. Certain government agencies watch over food, drugs, and the safety of consumer products; financial services need a similar watchdog. The Fed performs some of these functions already and has become much more active in providing guidance to mortgage and consumer lenders in the current crisis. Yet, given the Fed's broad responsibilities, it may be best to give these tasks to a new agency analogous to, say, the FDA.

Future financial system. The financial crisis is dramatically transforming the financial system. There will be a significant rationalization of the traditional banking system as it becomes increasingly dominated either by very large institutions or small ones. Securitization—the process of taking loans and turning them into securities purchased by global investors—which fueled the shadow banking system, will be resurrected, but will be redesigned so that all parties involved have sizable stakes in ensuring the process works properly.[5] Over-the-counter trading will be largely replaced by more centralized trading so regulators can oversee the derivatives markets that contributed to the current crisis.

The crisis has shown that an uncomfortably large number of financial institutions are too big to fail. That is, their failure risks undermining the system, giving policymakers little choice but to intervene. The desire to break up these institutions is understandable, but ultimately futile. There is no going back to the era of Glass-Steagall; breaking up the banking system's mammoth institutions would be too wrenching and would put U.S. institutions at a distinct competitive disadvantage vis-à-vis their large global competitors.[6] Large Canadian and Australian banks that weathered the current crisis well, for example, are making rapid inroads into U.S. banking markets. Banking institutions from China and other emerging economies are not far behind.

Large financial institutions are also needed to finance and backstop the shadow banking system and financial markets. Large banks provide much of the short-term cash that makes securitization run. It is more efficient and practical for regulators to watch over these large institutions and, by extension, the rest of the system. This is roughly how things were supposed to work before the current crisis, but the regulatory oversight was poor. With the Fed as the systemic risk regulator, and an FDIC empowered to resolve problems, a more effective structure is possible. These large institutions should also pay deposit and other insurance costs commensurate with the risks they take and pose to the system.

While large institutions will dominate the financial landscape, there will also be plenty of room for smaller players, as they cater to the idiosyncratic needs of America's main-street businesses. There are few economies of scale to small-business loans, which require close knowledge of the business and its owner. Small-business owners also prefer working with smaller banks, which are more likely to work with them when times get tough.

The future financial system will also have an important role for securitization. It is true that the process that thrived during the last two decades—in which

[5] The shadow banking system includes all nondepository institutions ranging from hedge and sovereign wealth funds to pension and mutual funds.

[6] The Glass-Steagall act of 1933, among other things—including establishing the FDIC—prohibited banking holding companies from owning other financial companies. The thinking was that institutions that combined commercial and investment banking activities were too speculative and created a less stable financial system. The Gramm-Leach-Bliley act passed at the end of 1999 repealed this prohibition, resulting in the formation of the very large financial institutions, many of whom have failed or have required significant government help to avoid failure in the current crisis.

lenders made and quickly sold loans to investment bankers, who packaged them into rated securities to be resold to global investors—has collapsed. No one involved had enough at stake if a loan went bad, thus many bad loans were made. Some $3 trillion in non-government related securities were issued at the peak in 2006, compared with only about $1 trillion (annualized) so far this year (see Chart 5). Not a single residential or commercial mortgage security has been issued, and very few credit card, auto, or other asset-backed securities have appeared since late 2008.

Securitization will be resurrected, but it will be much simpler, and everyone involved will have a stake in making sure the underlying loan is good. Despite its clear vulnerabilities, the economics of securitization remain compelling. The fundamental logic underlying the process is sound: It unbundles the risks in lending and matches them with the risk tolerance of investors. More investors can thus participate, allowing more credit to flow to households and firms throughout the global economy. Securitization should be fixed, and it can be.

The Fed's TALF program, in which investors are provided cheap, low-risk loans to purchase the Aaa parts of securitizations, is a first crack at it. Lenders participating in the program—auto finance and credit card companies, for example—hold the riskier parts of the securitization. If they make too many bad loans, they will suffer. That is a good reason to make good loans. Another idea gaining traction is the covered bond. It is a securitization, but loans backing the security remain on the lender's balance sheet. If loans go bad, the lender is responsible for replacing them. If many loans backing the security go delinquent and investors in the security stop receiving their money, they have the ability to go after the lender's other assets. Lenders thus have a strong incentive to make sure loans are properly underwritten. Yet both regulatory and taxpayer help might be needed for the covered bond idea to really get going.

It would be a mistake to scrap securitization altogether and go back to the simple originate-to-hold model of the past. Credit would be much less ample and more costly, even for creditworthy borrowers. There is, moreover, no guarantee this will prevent future missteps. The savings and loan crisis of the early 1990s was caused by the most plain-vanilla of lending institutions.

Centralized exchange trading of derivatives will grow to replace over-the-counter trading in the future financial system. OTC trading now occurs for many securities, including many derivatives at the center of the crisis. Perhaps most problematic is the market for credit default swaps, insurance contracts on fixed-income securities such as corporate and mortgage-backed bonds. AIG was particularly active in the CDS market, where it lost tens of billions of dollars that taxpayers have since been paying out. CDS in theory should help mitigate risk in the financial system, as they allow investors to hedge risks. In practice, they engendered uncertainty and fear. Because CDS are not traded on an exchange, there was little information regarding who bore what risks. This contributed to the freezing up of the financial system.

While a place exists for OTC trading, particularly in commodity markets, regulators are pushing to move trading to organized exchanges. This will increase transparency and accountability, both essential to averting future financial crises and mitigating the fallout if they occur.

Conclusions. The financial crisis is two years old and counting. It began as more than a garden-variety crisis, when the system choked on trillions in bad mortgage loans, but it did not devolve into a panic until a string of serious policy missteps in the fall of 2008. Putting Fannie Mae and Freddie Mac into conservatorship and allowing Lehman Brothers to go bankrupt were too much for the system to bear. Some good policy decisions since, including the recent stress tests of the nation's largest bank holding companies, seem to have quelled the panic by the spring of 2009. Assuming other efforts to shore up the system and end the recession succeed, the crisis should be over by this time next year.

The fallout will continue much longer, however. This has been a psychologically scarring period, and anyone involved will not forget it. Credit will slowly resume flowing more normally but will not flow as freely or as cheaply until a new generation with no memory of this period takes the reins of the financial system. Credit is the mother's milk of an economy; it drives the innovation and technological change so vital to long-term productivity growth. More cautious capital means slower long-term growth.

But the financial crisis is also generating the political will necessary to make long-overdue changes to the regulatory framework and to the financial system itself. The current regulatory structure was built during the Great Depression and feels like it. Financial institutions now provide a blizzard of products and services across the globe, and yesterday's rules are no longer up to the task. The financial system's plumbing is also getting a good look-over, and new and better piping will be installed. The fundamental processes of securitization and trading will be revamped, ensuring they are more transparent and that institutions are more accountable. After the Great Panic, the financial system will not be as flashy or as fast-moving as it was, but it will be more stable and sure.