The Great Credit Squeeze: How It Happened, How to Prevent Another

DISCUSSION PAPER

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Executive Summary

The current financial crisis in the United States poses two separate challenges for economic policy: one, to resolve the immediate problems; the other, to reduce the likelihood that these problems recur. In this report, we examine the origins of the current crisis and recommend specific policy responses to address both the immediate and long-term challenges.

The U.S. financial system remains in a perilous state. We share the view of some observers that the worst of the credit crisis is probably behind us. But that is by no means certain, and, even if it turns out to be right, the return to normal financial conditions will be a slow and uneven process. Estimates suggest that billions of dollars of mortgage-related losses have yet to be declared by U.S. financial institutions, and risk spreads remain elevated. Moreover, an absence of dramatic events does not imply that financial intermediation is back to normal. The weakened state of banks' balance sheets will make them less willing to lend to households and businesses for some time to come. Many banks have raised additional capital to bolster their balance sheets, but much more needs to be raised.

The turmoil in the financial system is important primarily because of its impact on the overall economy. The latest data on spending, employment, and production suggest that the economy may well be in recession. In addition, the ongoing drop in housing construction, further expected declines in house prices, tighter lending standards and terms, and this year's further rise in oil prices are all exerting further downward pressure on economic activity. To be sure, not all of the economic news is bad. Data for the first quarter of the year were more favorable than many had feared, and the decline in the value of the dollar is buoying net exports. Moreover, powerful economic stimulus has been set in motion through the actions of the Federal Reserve and the tax-cut legislation passed by Congress in February. Therefore, we agree with the consensus among economic forecasters that a mild recession is the most likely outcome. But a more serious economic downturn is entirely possible.

The experience of the U.S. financial system and economy during the past year vividly demonstrate the need for reform of our financial regulation and supervision. Financial markets will always experience swings between confidence and fear; between optimism and pessimism. However, effective regulation and supervision can reduce the frequency, the magnitude, and the broader consequences of these swings. Our diagnosis of what caused this crisis leads directly to our prescriptions for policy changes. We view our proposals as a measured response—more than a fine-tuning of the regulatory and supervisory system, but less than a complete overhaul.

The Origins of the Crisis

Residential housing prices have rarely fallen, and from the mid-1990s until 2006, prices rose strongly. Americans decided that owning a home, or even more than one

home, was a very good investment. Many became convinced that rising home prices were almost inevitable.

Strong demand for homes was driven by falling interest rates, the increased availability of mortgages and rising household incomes. As prices rose, this added to demand for some years as it generated the expectation of continuing capital gains. Strong housing demand pushed up prices, especially in locations where there was a limited supply of land (California, the East Coast) and where there was strong economic growth and a population influx (Las Vegas). Residential construction boomed.

From 2001 to 2003, mortgage originations hugely expanded, with much of the growth from prime conformable loans. After that, the total volume of originations dropped and the share of originations in subprime and Alt-A mortgages increased. There appears to have been an erosion of mortgage-lending standards as mortgages were extended to households that did not have good credit records. Many borrowers were not required to document their income and assets. Also, many conventional borrowers increased the loan-to-value ratio in their mortgage to take cash out and ended up as subprime. Some borrowers were buying properties in hopes of a quick re-sale for profit (flipping condos in Miami, for example).

The "originate to distribute" model suffers from incentive problems because the mortgage originators often sold the mortgage quickly to another bank. The originators lacked an incentive to ensure the loan would be serviced. The banks buying the mortgages failed to check what they were buying.

The securitization of mortgages expanded greatly, channeling funds into the market, including foreign capital. Structured securities, called CDOs, were developed of increasing complexity, many of which received high credit ratings from the ratings agencies despite the shaky mortgages underlying them. Institutions buying the securities relied on the ratings and did not realize how much risk they were taking on. At all levels, the belief in rising home prices resulted in an underestimate of risk. Some financial institutions added to their risks by very high leverage and by borrowing very short term to purchase mortgage-backed assets. Some of the risky securities carried default insurance, but only a fraction of them. Moreover, the mono-line companies providing the insurance lacked the capital necessary to deal with a broad decline in the housing market.

Some observers blame the Federal Reserve for keeping interest rates "too low" or blame foreign investors for flooding the U.S. market with liquidity seeking high returns. These factors did play a role in sustaining the U.S. housing boom, but do not, in our judgment, carry blame for what happened.

Financial institutions are regulated and supervised by a bewildering array of federal and state authorities. None of them acted forcefully to stop or mitigate the erosion of lending standards or to warn of serious problems brewing in the mortgage market. This was despite the fact that there were warnings being given to them as early as 2005. Then Federal Reserve Governor Edward Gramlich specifically warned of an

impending crisis. Despite the limited authority of any specific regulators, more should have been done to prevent the crisis.

Like all asset bubbles, price increases eventually began to slow. Homeowners who had expected to refinance after a couple of years to pay off credit cards and/or get a more favorable interest rate were unable to do so. Delinquencies began to rise as early as 2004. As delinquencies rose, this burned through the cushion built into the structured securities and some defaulted. Problems in the financial markets emerged in early 2007 when HSBC announced subprime losses. Some hedge funds declared bankruptcy and the crisis spread. Initially, market participants viewed the problems as specific to the institutions that failed, but by late July/early August risk premiums were rising and there was a chill on borrowing worldwide between financial institutions. Central banks acted promptly to provide liquidity to ease the crisis and the Fed started lowering rates.

The boom in residential housing turned into a severe slump as new single family starts fell in half over the next few months. The drop in construction, together with soaring oil prices and the tightening of lending standards, has pushed the U.S. economy into a recession or at least a period of very weak growth. Although we believe the U.S. economy will weather this storm and resume at least slow growth, a deeper recession is possible.

Assessments made in the spring of 2008 indicate that risk management practices in financial institutions had failed. In part this is because the models that were used to assess risk had not factored in the possibility of a broad downturn in the housing market. Further, several institutions reported that they had not followed their own internal rules for risk management. Departments within these companies that were making huge profits developing and trading the new securities were allowed to take large risks without adequate internal monitoring.

Lessons From the Origins of the Crisis

Some factors that contributed to the crisis are ones that are not amenable to change, except at unacceptable cost. For example, a much more aggressive tightening of monetary policy earlier in the cycle might have constrained the housing boom, but at the price of substantially slower growth. There are better ways to avoid crisis. Similarly, the housing boom would surely not have continued as it did if funds had not been available on a large scale from foreign lenders. But closing off the U.S. borders to foreign capital is not acceptable. The price would be too high and, given the integration of U.S. companies with the rest of the world, it would be infeasible.

The erosion of mortgage-lending standards stands out as something that could and should have been stopped. The challenge going forward is either to create an appropriate incentive structure within the "originate to distribute" model, or to provide a better and more integrated force of regulators to compensate for the misaligned incentives.

A second factor that is ready for change is the process of developing derivatives of mortgage-backed securities that are not transparent to the point of absurdity. We know from economic theory that markets with information asymmetries are trouble, and the compounding layers of securitization greatly exacerbated this problem. We do not know what was in the minds of those creating these assets. At the least they did not realize how severe the problems were that they were creating; at worst they designed their financial products deliberately to be obscure as a way of making profits. At the least the credit agencies mistakenly failed to stop this process; at worst they abetted the actions for a share of the rewards.

A third remediable problem is that financial institutions did not follow their own best practices for risk management. In the short run, they will surely make internal changes, but experience suggests that some years from now there will be another problem. Developing solutions is not straightforward. Sarbanes-Oxley is already creating competitiveness problems for U.S. financial markets, and it did not work to forestall this crisis. The Basel II rules for capital did not stop the problems from developing either. However, we think there are ways to improve capital requirements and risk management.

Policymakers did not provide warning of the emerging dangers in the mortgage market. We cannot expect policymakers to second-guess markets or to know when assets are overvalued. But we can expect them to warn of the growing risk of certain assets that might generate large rewards but could also lead to large losses. Households should have been warned that continuing large increases in house prices were not a sure thing.

Short-Term Policies to Resolve the Credit Squeeze

Policy actions that have been taken to address the immediate financial and economic problems have garnered criticism both from those who prefer less government intrusion in the economy and from those looking for more aggressive government action. In our view, policymakers have struck the balance about right—attempting to forestall the worst spillover effects and cushion the greatest harms while not trying to put a safety net under all financial investments or risks. Our discussion of short-term policies is divided into four categories: fiscal and monetary policy; the problems facing commercial and investment banks; policies regarding Fannie Mae and Freddie Mac, and policy regarding mortgage foreclosures.

Congress and President Bush agreed in February on a significant package of tax cuts to stimulate (primarily) household spending. When discussions of fiscal stimulus began, we were among the economists who worried that it would be poorly designed and end up doing more damage to the federal budget than good for the economy. However, the stimulus package that was adopted largely met the criteria enunciated by many economists of being timely, targeted, and temporary. Therefore, the package will likely provide a considerable boost to economic activity this year. Given subsequent financial and economic developments, this fiscal stimulus looks even more desirable in retrospect.

The Federal Reserve has slashed the federal funds rate by 3¼ percentage points since September. This has been an appropriate response in our view to the dramatic widening of risk spreads and the risk of a financial meltdown and abrupt drop in economic activity.

Both commercial and investment banks have been under pressure in this crisis. The Fed has vigorously filled its role as "lender of last resort" by providing large amounts of liquidity to financial institutions through a series of creative new lending arrangements and by organizing the sale of Bear Stearns to JPMorgan. Although these actions increase the moral hazard that financial-market participants will take larger risks knowing that a safety net is in place, we think they were the right choice under the circumstances. However, this additional moral hazard makes it even more critical that we implement long-term reforms to enhance regulation of risk-taking by financial institutions.

Fannie Mae and Freddie Mac, the government-sponsored enterprises that play critical roles in the mortgage market, have recorded billions of dollars in losses during the past year. Given the possibility of future losses and the thin capital cushions that Fannie and Freddie hold, policymakers should be making contingency plans for the institutions' futures. If either institution becomes insolvent, the options include:

- Forbearance, either by temporarily suspending mark-to-market accounting or by relaxing their capital standards.

- Government equity investment.

- Outright nationalization.

Several million households will likely default on their mortgages in the next few years, and we support further government efforts to reduce this number. Skeptics have argued that many families who will lose their homes knowingly took the risk of putting little money down or withdrawing a large amount of existing equity; as a result, these families are not especially deserving of government help, and a "bail out" would encourage unduly risky borrowing in the future. Despite these legitimate concerns, we think the government has an important role to play. Foreclosures have negative consequences beyond the families that lose their homes, especially when concentrated geographically as they are likely to be; these consequences include reducing the property values of nearby houses and jeopardizing the stability of surrounding communities. In addition, the dispersion of mortgage ownership through securities and derivatives complicates the modification process and means that fewer loans will be modified than is optimal even from the perspective of lenders. Beyond the actions already taken, therefore, we recommend:

- Clarifying servicers' fiduciary responsibilities.

- Reforming bankruptcy law to allow judges, in limited circumstances, to reduce mortgage amounts to the value of the houses that serve as collateral.

- Expanding eligibility for FHA-guaranteed loans used for refinancing.

Long-Term Reforms to Improve the Financial System

Financial innovation has been a very positive force in our economy, but it also creates problems. New products, new markets, and new institutions are usually more complex and less transparent than their predecessors; they tend to boost leverage and risk-taking; and they tend to skirt existing regulations and supervisory attention. In recent years, regulation and supervision of financial institutions did not fully recognize the problems that were building and did not adapt enough to put effective limits on these problems. We think that targeted policies aimed at improving transparency, reducing leverage, and enhancing prudential supervision can significantly reduce the extent of these problems. Thus, our proposed long-term reforms fall into these three broad categories.

Most of the changes we propose do not require legislation but can be implemented by the appropriate agencies. However, some of the changes would need to be implemented by law.

In our view, financial innovators and regulators are in a race, and the regulators will always lose that race. But it matters how much they lose by. If regulators do not try to keep up, or are completely outclassed in the race, then much of the benefit of financial innovation will be offset by the cost.

First, financial instruments and institutions should be more transparent.

One key problem with financial innovation in recent years is the high degree of complexity and low degree of transparency. Nontraditional mortgages—including interest-only mortgages, negative amortization mortgages, and mortgages with teaser rates—were apparently not well understood by many who borrowed this way or lent this way. Unconventional credit-market instruments—such as derivatives on asset-backed securities—were intrinsically complicated and unfamiliar even to sophisticated investors, and they had a very short track record that was exclusively from a period of rapidly rising house prices. Transparency was further reduced by arrangements that purported to insulate investors from risk, such as credit default swaps, bond insurance, and shifting liabilities off balance sheets.

As we know from many examples, self-interest is a powerful economic force. Good regulation harnesses that force. By increasing transparency, we can give investors better tools to monitor financial risk-taking themselves. We recommend:

- For mortgages, simpler disclosures, counseling in advance for subprime borrowers, and perhaps a default contract from which people could opt out.

- For mortgages, further restrictions on the design of mortgage contracts under the HOEPA rules and a broadening of HOEPA coverage, both along the lines proposed by the Federal Reserve.

- For mortgages, federal oversight of state regulation for all mortgage originators.

- For asset-backed securities, public reporting on characteristics of the underlying assets.

- For credit ratings agencies, greater clarity in presenting ratings across asset classes, reporting of the ratings agencies' track records, and disclosure of the limitations of ratings for newer instruments.

- For commercial banks, clearer accounting of off-balance-sheet activities.

- For derivatives, a shift toward trading on exchanges, which will encourage standardization of instruments.

Second, financial institutions should be less leveraged and more liquid.

Even if private investors had perfect information, they would tend to take greater financial risks than are optimal from society's perspective. The reason is that taking risks in a financial transaction can have negative consequences for people not directly involved in that transaction. These spillover effects arise in part because of the risk of contagion in the financial system, and they arise in part because of the government safety net including bank deposit insurance and the role of the Federal Reserve as lender of last resort. The parties to a transaction have no reason to take account of these externalities, as economists label them, and this provides the traditional rationale for government financial regulation and supervision.

In recent years, the lack of transparency and divergent incentives caused a run-up in financial risk-taking, both in the assets purchased and the degree of leverage used to finance those assets. These forces helped to fuel the housing bubble, and it greatly worsened the consequences when the bubble deflated.

To be sure, the financial system is already moving to reduce leverage and increase liquidity. Those institutions with larger capital cushions are weathering this crisis far better than their less-conservative competitors, and they now find themselves in position to purchase assets at favorable prices. Those institutions with greater amounts of liquid assets have been less subject to "runs" in which their investors scramble to get their money out first. These examples provide strong lessons for future institutional strategies.

Still, these private responses should be accompanied by regulatory changes. We recommend:

- For commercial banks, capital requirements for off-balance-sheet liabilities and required issuance of uninsured subordinated debt.

- For investment banks, regulation and supervision of capital, liquidity, and risk management.

- For bond insurers, higher capital requirements.

Third, financial institutions should be supervised more effectively.

Government oversight of risk-taking by financial institutions does not take the form solely of laws and regulations. Prudential supervision is another crucial component of public policy. In recent years, supervision did not adequately monitor or constrain mistakes being made by financial institutions, and we must improve supervision going forward.

Note that our focus in this report is primarily on *what* should be regulated rather than *who* should do the regulating. We think the highest priority in regulatory reform is not to change boxes on the organization chart but to change what happens inside each box. That said, we are hardly enthusiastic about the existing hodgepodge of regulation. Restructuring of responsibilities among regulatory agencies would contribute to better oversight of the financial system.

We recommend:

- For commercial banks, closer supervision of risk-management practices.

- For commercial banks, consolidation of federal regulation and supervision.

- For bond insurers, closer supervision of underwriting standards for new products.

Section 1: The Origins of the Crisis

Housing Demand and the Perception of Low Risk in Housing Investment

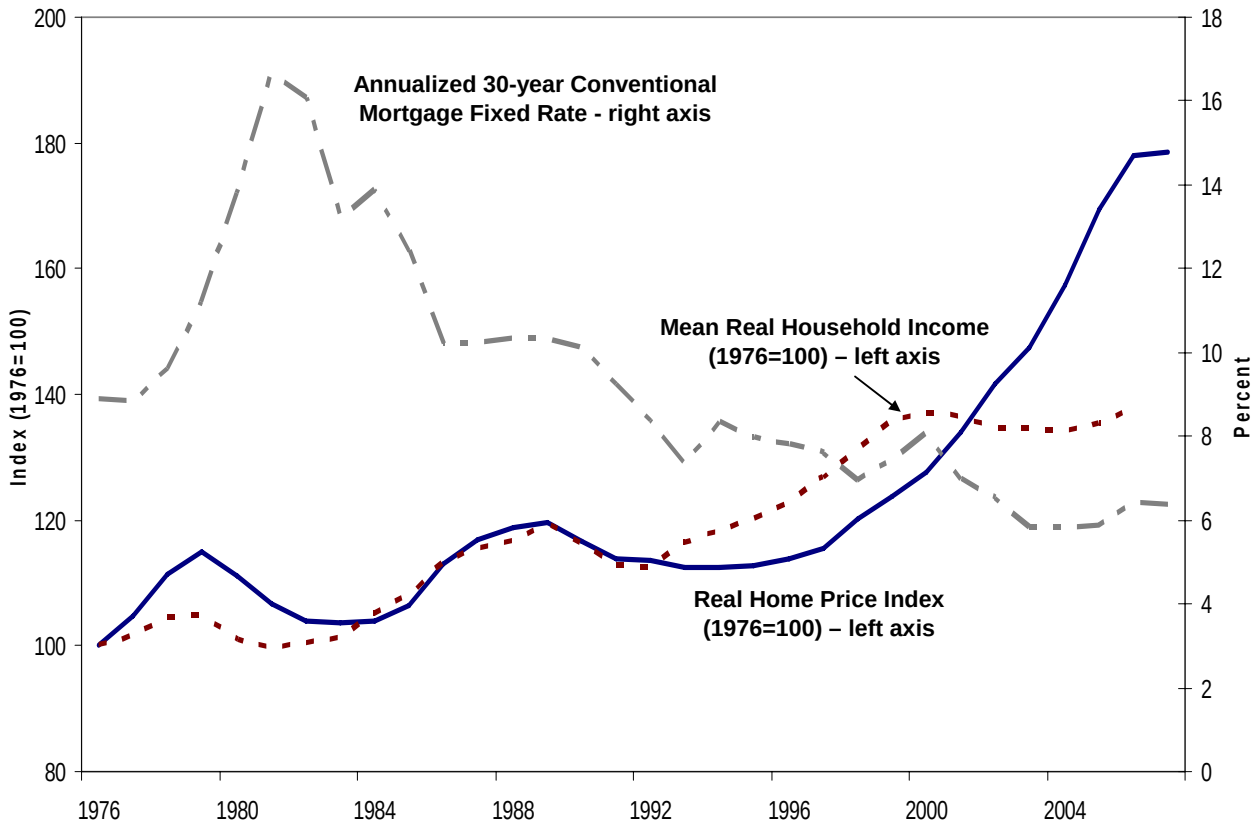
There is a simple reason why people believed that house prices would not fall. Over the period 1975 through the third quarter of 2006 the OFHEO index of house prices (one that measures prices for the same dwelling, in many metropolitan markets) hardly ever dropped. In nominal or current dollar terms it fell in very few quarters and only in 1981-82 did it fall to any significant extent. That was the period of the worst recession in postwar history, and even then the price index only fell by 5.4 percent. From 1991 through the third quarter of 2007, the OFHEO house price index for the US showed increases in every single quarter, when compared to the same quarter in the prior year. Rates of price increase moved above 6 percent in 1999, accelerating to 8 and then 9 percent before starting to slow at the end of 2005. Karl Case and Robert Shiller (2003) report that the overwhelming majority of persons surveyed in 2003 agree with or strongly agree with the statement that real estate is the best investment for long-term holders. Respondents expected prices to increase in the future at 6 to 15 percent a year, depending on location.

The continuous advance of nominal house prices has not always translated into real price increases, after taking into account general inflation.

Figure 1 shows that, between 1975 and 1995, real home prices went through two cyclical waves, rising after 1975, falling in the early 1980s, and then rising again before falling in the early 1990s. From 1975 until 1995, housing did increase faster than inflation, but not that much faster. After the mid 1990s, however, real house prices went

on a sustained surge through 2005, making residential real estate a great investment and widely perceived as being a very safe investment. [1]

Figure 1:Real Home Prices and Real HH Income (1976=100); 30-year Conventional Mortgage Rate



Source: OHFEO; Federal Reserve; Bureau of the Census. Home Prices and Income are deflated by CPI less Shelter.

A variety of factors determine the demand for residential housing, but three stand out as important in driving the price increases. The first was just described. When prices rise, that can increase the pace of expected future price increases, making the cost of owning a house decline. The expected capital gain on the house is a subtraction from the

[1] The Case-Shiller Index is also widely used to measure housing prices. It has a broadly similar pattern to the one shown here, but does not go back as far historically.

cost of ownership. The second is that when household income rises, this allows people to afford larger mortgages and increases the demand for housing. Over the period 1995-2000, household income per capita rose substantially contributing to the increased demand. However,

Figure **1** shows that the increase in house prices outpaced the growth of household income starting around 2000. One sign that house prices had moved too high is that they moved ahead much faster than real household income. People were stretching to buy houses.[2]

The third factor is interest rates. After soaring to double digits and beyond in the inflationary surge of the 1970s and early 1980s, nominal rates started to come down thereafter, and continued to trend down until very recently. Real interest rates (adjusted for inflation) did not fall as much, but they fell also. From the perspective of the mortgage market, nominal interest rates may be more relevant than real rates, since mortgage approval depends upon whether the borrower will be able to make the monthly payment, which consists mostly of the nominal interest charge. Regardless, with both real and nominal interest rates lower than they had been for many years, the demand for mortgage-financed housing was increased.

Asset price bubbles are characterized by a self-reinforcing cycle in which price increases trigger more price increases, but as the level of asset prices moves increasingly out of line with economic fundamentals, the bubble gets thinner and thinner and finally bursts. At that point the cycle can work in reverse as people hurry to get out of the asset before prices fall further. This was the pattern of the dot com bubble of the late 1990s, when investors were enthralled by the promise of new technologies and bid up the prices of technology stocks beyond any reasonable prospect of earnings growth. There were some crashes of particular stocks and finally prices of most technology stocks plunged.

[2] The relation between household income and housing demand is not exact. See for example Gallin (2004)

Similarly, house prices in the last few years in some markets moved so high that demand was being choked off. The suspicions increased that price rises would slow down, and prices ultimately fell—beginning in 2007 according to both the Case-Shiller and the OFHEO indexes.[3] Instead of learning from the experience of the tech bubble that asset prices can move too high and then crash, Americans looked at what had happened in equity markets and decided that housing was a much safer and more understandable investment.

The rise in housing prices did not occur uniformly across the country, a fact that must be reconciled with our story of the origins of the bubble. If there were national or international drivers of the price boom, why did these not apply to the whole market? In some parts of the country there is ample land available for building, so that as mortgage interest rates fell and house prices started to rise, this prompted a construction boom and an increase in the supply of housing. Residential housing starts increased from 1.35 million per year in 1995 to 2.07 million in 2005, with 1.52 of the two million built in the south and west. Demand growth outstripped supply, however, in very fast growing areas like Las Vegas and in California and east coast cities where zoning restrictions limited the supply of land. In the Midwest there was only a modest run up in house prices because the older cities that were dependent on manufacturing were losing jobs and population. So the answer to the puzzle is that while the factors encouraging price increases applied broadly (especially the low interest rates), the real impact on prices depended on local conditions.

An additional note on this issue comes from looking at other countries. The decline of interest rates was a global phenomenon and most of the advanced countries saw corresponding rises in housing prices.[4] In some of these countries, there have been subsequent price declines, suggesting a price bubble like that in the U.S. In general, the experience of other countries supports the view that the decline in mortgage interest rates was a key factor in triggering the run up of housing prices. (Green and Wachter (2007))

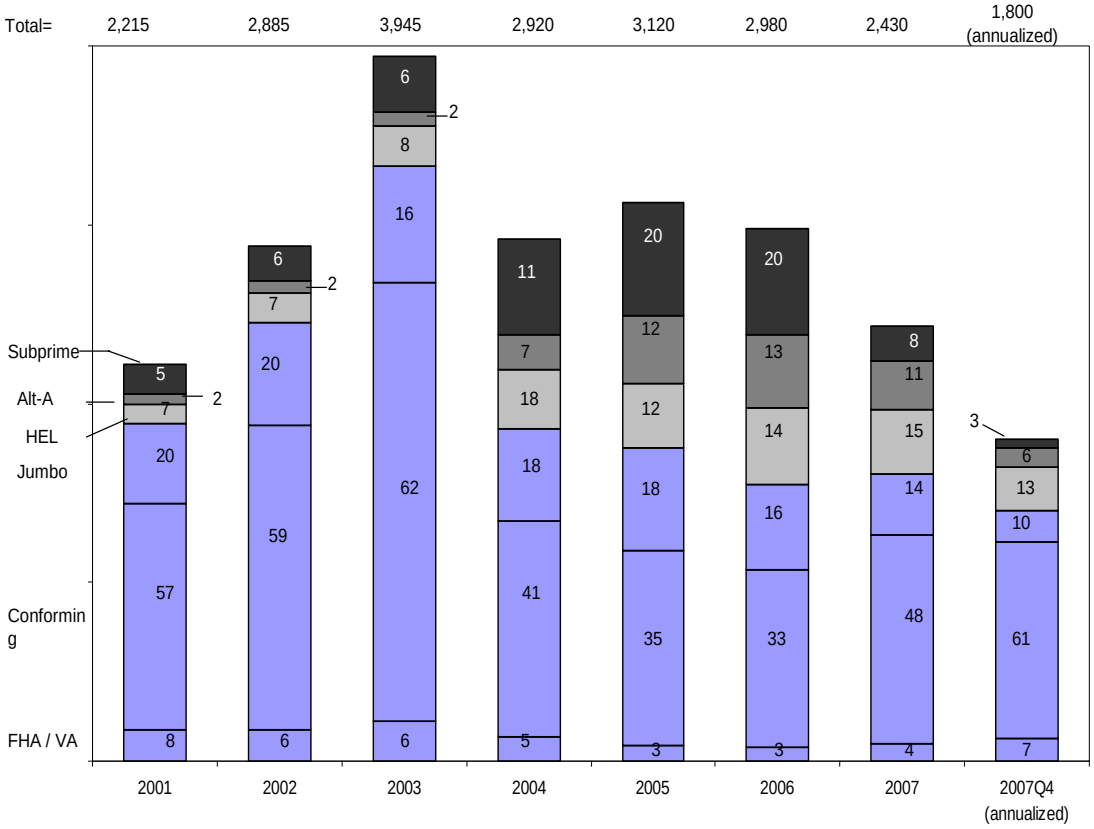
[3] The Case-Shiller index started to decline a little earlier than OFHEO and has fallen by substantially more. That is to be expected since the Case-Shiller 10-city index follows the markets that have seen big price declines.

[4] Germany is the exception, where there was a huge building boom following reunification, resulting in an oversupply of housing.

The Shifting Composition of Mortgage Lending and the Erosion of Lending Standards

As the economy recovered from the 2001 recession, the expansion of lending was in conformable and other prime mortgages, but as the boom proceeded a larger fraction of the lending was for subprime and home equity lending. Figure 2 illustrates. In 2001 there were $2.2 trillion worth of mortgage originations, with 65 percent of these in the form of conventional conforming loans and FHA and VA loans. An additional 20 percent were prime jumbo mortgages issued to those with good credit buying houses that were too expensive to be conforming, and 85 percent of these loans were prime. There was a huge expansion of mortgage lending over the next couple of years and in 2003 nearly $4 trillion worth of loans were issued, but the share of prime mortgages remained steady at 85 percent as the volume of conformable mortgages soared.

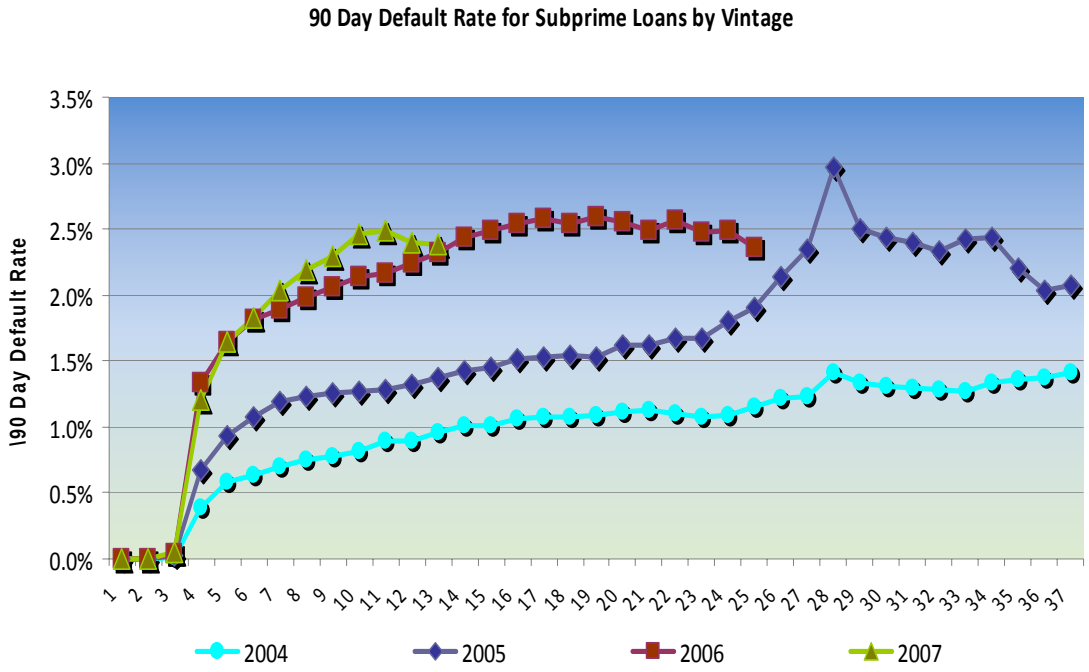
Figure 2: Total Mortgage Originations by Type: with share of each product; billions, percent



Source: Inside Mortgage Finance. HEL is Home Equity Loan.

The total volume of mortgage lending dropped after 2003, to around $3 trillion a year in 2004-06 but the share of subprime and home equity lending expanded greatly. Prime mortgages made up 64 percent of the total in 2004, 56 percent in 2005 and 52 percent in 2006 (the balance in that year was that 48 percent, were Subprime, Alt-A or home equity). There appears to have been a significant change in lending patterns apparent in the composition of loans going back to 2004. Figure 3: shows that the mortgages that were issued in each successive year after 2004 had higher and higher 90-day delinquency rates (the mortgage payment was 90 days or more overdue).[5]

Figure 3: Since 2004, Delinquencies Have Increased Each Successive Vintage Year.



Source: McDash Analytics

The period 2001-07 was one of rather modest growth in household income, but household consumption continued to grow as the personal saving rate, already low, continued to decline. Americans were tapping into the rising wealth they had in their

[5] Figure 3 does not prove there was a change in lending standards, as our colleague Jason Furman pointed out, because house prices slowed their increase and then started to fall over this period, which also contributed to the rise in delinquencies. However, the figure is consistent with the more anecdotal evidence that lending standards deteriorated.

homes in order to finance consumption. Greenspan and Kennedy (2007) estimate that homeowners extracted $743.7 billion in net equity from their homes at the peak of the housing boom in 2005 – up from $229.6 in 2000 and $74.2 in 1991. The increase in house prices allowed a borrowing spree. Even households that had good credit ratings were taking out subprime loans in order to borrow more. In addition, there was an expansion of loans to lower-income, higher-credit risk families, including from the Government Sponsored Enterprises, Fannie and Freddie, as they sought to expand home ownership for the benefits it brings in terms of sustaining neighborhoods.

There is a lively industry in the United States that offers guides for people who want to make money by buying residential real estate and then re-selling it at a profit. Carlton Sheets is perhaps the most famous of these real estate gurus, but there were many others on late night TV promising high returns and no money down. The Miami condominium market was a favorite place for real estate speculation as investors bought condos at pre-construction prices and then sold them after a short time at a profit. Speculative demand—buying for the purpose of making a short-term profit—added to overall housing demand.[6]

By their nature fraudulent practices are hard to assess in terms of the volume of outright fraud, but based on press reports and interviews, it seems clear that shading the truth and outright fraud became important in the real estate boom. Borrowers would lie about their income or the extent of their debts, or manipulate their credit scores. Consumer lending has been facilitated by the expansion of the credit scoring infrastructure. Based on past history, lenders determined that households with high credit ratings were unlikely to default, to the point they were willing to make loans without documentation of income (no-doc or low-doc loans). Credit scores can be manipulated, however, by people who became signatories on the credit accounts of friends or relatives with good credit ratings, for example. Without having to make regular payments on a loan themselves, they would acquire the high credit rating of the other person. Another fraudulent practice occurred with speculators. Mortgage lenders want to know if a household will actually occupy a house or unit being purchased; or if it will be rented out

[6] Since pretty much anyone who buys a house factors in the expected capital gain on the house, everyone is subject to speculative demand. The reference here refers to people or companies that bought houses they did not intend to live in or use as vacation homes.

or re-sold. This knowledge affects the probabilities of default or of early repayment, both of which can impose costs on the lender. Some borrowers said on their applications that they were planning to live in a property, but once the mortgage went through they did not do so.

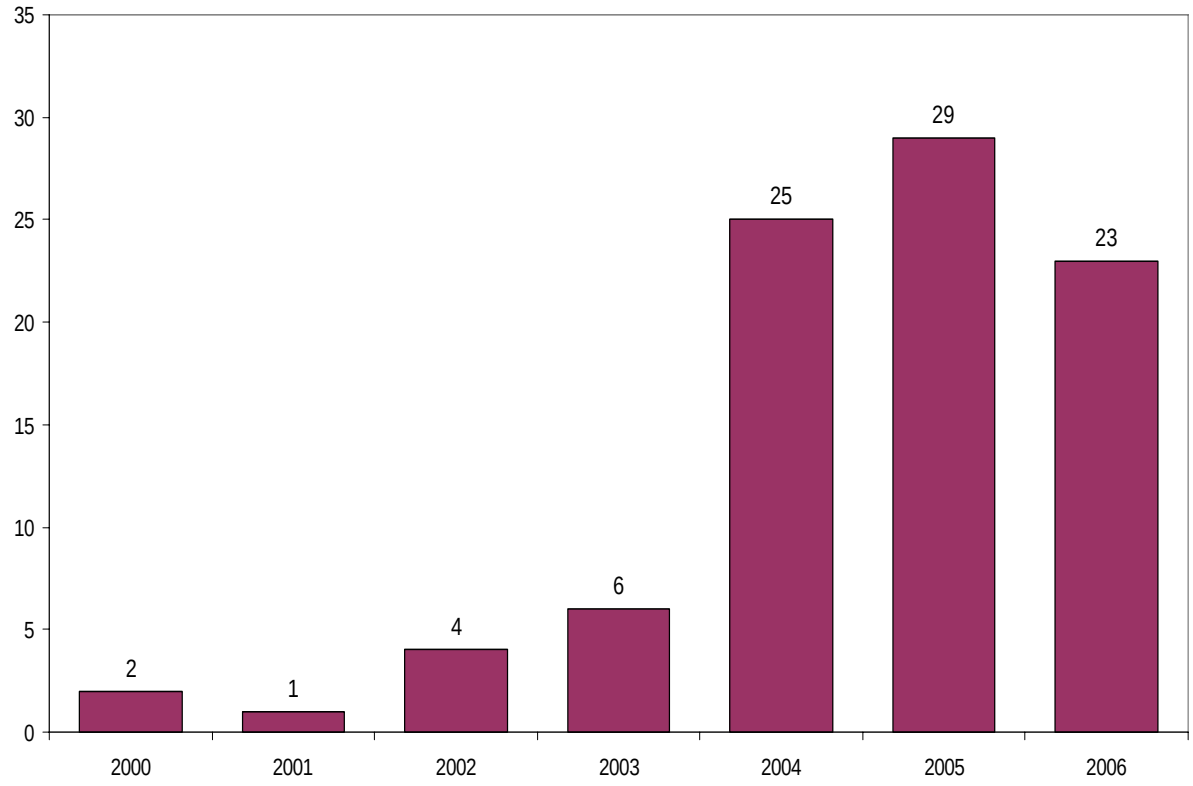
There were also deceptive and fraudulent practices by mortgage originators and brokers. Families that lacked the income and down payment to buy a house under the terms of a conforming mortgage were encouraged to take out a mortgage that had a very high loan to value ratio, perhaps as high as 100 percent (often using second or even third mortgages). They started with no initial equity in the house. Such borrowing typically requires a rather high interest rate and high monthly payment, one that likely violates the usual rules on the proportion of household income needed to service the debt. Originators got around this problem by offering low initial payments that would last for two or three years, before resetting to a higher monthly amount. These so-called "teaser" interest rates were often not that low, but low enough to allow the mortgage to go through. Borrowers were told that in two or three years the price of their house would have increased enough to allow them to re-finance the loan. Home prices were rising at 10 to 20 percent a year in many locations, so that as long as this continued, a loan to value ratio of 100 percent would decline to 80 percent or so after a short time, and the household could re-finance with a conformable or prime jumbo mortgage on more favorable terms.

Misrepresentation by borrowers and deceptive practices by lenders were often linked together. A mortgage broker being paid on commission might lead the borrower through an application process, suggesting places the borrower might change the answer or where to leave out damaging information. Sometimes the line will be fuzzy between a situation where broker helps a family navigate the application process so they can buy a house they really can afford, and a situation where the broker and the applicant are deliberately lying.

Figure 4 provides further illustration of the shift into riskier lending as the boom progressed. It shows the proportion of mortgage originations for home purchase that were made based on interest only or negative amortization loan provisions ("refis" are excluded from this data). Someone borrowing with an interest only loan pays a slightly lower monthly payment because there is no repayment of principal. Since the principal

repayment in the first few years of a mortgage are usually very small, this is not a big issue in the short run, although the impact mounts up over the years. A negative amortization loan goes even further, and borrowers do not even pay the full amount of the interest accruing each month, so the outstanding balance rises over time. Such a mortgage might make sense for families whose incomes are rising over time and where home prices are rising, but it adds a significant amount of risk for both borrower and lender.

Figure 4: Interest-Only and Negative Amortization Loans, *Share of Total Mortgage Originations Used to Purchase a Home (excludes refis): 2000-2006; percent*



Source: Credit Suisse (2007), LoanPerformance

In summary, the boom in mortgage borrowing was sustained by low interest rates and easier lending practices as households cashed in the wealth in their property for consumption, less credit-worthy families were able to buy houses and speculators purchased property in hopes of making money by reselling them. Fraud and deceptive practices occurred on both sides of the mortgage transactions, but as long as house prices

continued to rise at a good pace, the whole structure could continue and even the fraud and deception were buried as people were able to refinance and were unlikely to default on their mortgages and lose the equity they had built up.

With the benefit of hindsight we can look back and see that some of the innovative mortgage products have contributed to the default mess we have now. But there were substantial benefits to those who used the products properly. Young families often face a tough situation in trying to buy homes. They are at an early stage in their careers, earning moderate incomes while they have the expenses of young children. Owning a home in a good neighborhood with good schools is a very desirable and natural wish, but many families lack the down payment necessary and the monthly mortgage payment may be out of reach, especially in high-cost regions such as California or the East Coast. Based on their expected lifetime family income, they can afford a house, but at this early stage of their life-cycle, they are liquidity constrained. Many young families rely on older family members for help, but not all can do this. Mortgages with low payments for the first few years and low down payments provide a way to deal with this problem. Lending standards need to be restored to sanity in the wake of the mortgage crisis, but that should not mean the abolition of adjustable rate mortgages or low down payments for borrowers with the right credit.

Economic Incentives in Housing and Mortgage Origination Markets

The legal and institutional arrangements that prevail in the U.S. housing market produced a pattern of incentives that contributed to what happened. First, there are important protections given to households. These vary by state, but in many states it is possible to repay a mortgage early without penalty. This meant that households were encouraged to take out mortgages with terms that looked good in the short run, but were unfavorable in future years. They expected to refinance later on better terms, and without incurring a pre-payment penalty.

In some states the mortgage contract is "without recourse to the borrower." This means that if a household stops paying on a mortgage and goes into default, the lender can seize the house (the collateral on the loan) but cannot bring suit to recover losses that are incurred if the sale of the property does not yield enough to pay off the mortgage and

cover the selling and legal costs. In principle, this encourages households to walk away when they are unable or unwilling to cover a mortgage payment. This can be an important protection for families facing unemployment or unexpected medical expenses, but it can lead to abuse by borrowers and encourage over-borrowing. In a significant percentage of defaults in the current crisis, borrowers are simply mailing in the keys to the house and are not even contacting the lender to try and work out a settlement that would avoid default. There is debate about the importance of this issue. On the one hand there are reports that the states that have had the most problem with mortgage defaults are the ones that are non-recourse to the borrower. On the other hand, lenders rarely find it profitable to pursue defaulting borrowing—big bank suing poor family in trouble is not a situation most banks want to take to a court.

Currently, most mortgage loans are originated by specialists and brokers who do not provide the funding directly. One financial institution provides the initial funding of the mortgage, but it is then quickly sold to another financial institution, where either it is held on a balance sheet or packaged with other mortgages to be securitized (something we discuss at various points later in this report).[7] The key issue here is that the person or company that originates the loan has little or no financial incentive to make sure the loan is a good one. Most brokers and specialists are paid based on the volume of loans they process. They had an incentive to keep the pace of borrowing rolling along, even if that meant making riskier and riskier loans.

Mian and Sufi (2008) provide evidence that many of largest increases in house prices 2001-2005 (and subsequently large crashes in prices and foreclosures 2005-07) happened in areas that experienced a sharp increase in the share of mortgages sold off by the originator shortly after origination. This started as early as 2000 in a process they refer to as "disintermediation" (i.e. for securitization purposes). These areas were also characterized by high "latent demand" in the 1990s, meaning that a high share of risky borrowers had been denied mortgage applications. The "disintermediation" process, by allowing originators to pass of the risk of their loans, encouraged them to lend to risky borrowers and in so doing increased housing demand and house prices. They find that

[7] Mortgage sales contracts often allowed the buyer to "put" back the mortgage to the seller for a limited period, a year or two. But in an era of rising housing prices and thus low delinquencies, originators did not view these "puts" as a serious risk.

some of these areas that experienced high house price appreciation did so despite experiencing negative relative income and employment growth over the period.

The adverse incentives in the originate-to-distribute model for mortgages occur in other markets where there is asymmetric information—one party to the transaction knows more than the other. An auto mechanic may know much more about any problem a car has than the owner, but he or she has an incentive to tell the owner bad news so that he will pay for extensive repairs. And there are market responses to information asymmetries—reading Angie's list to find a good mechanic, for example. Similarly, in the mortgage origination market, rules were established that were intended to protect the interests of the ultimate holders of the default risk. These rules covered the credit score of the borrower, the loan to value ratio and so on.

So if the institutions that ultimately ended up with the default risk knew about the problems with incentives in the origination process, why did they not do more to counteract them, including charging more for the additional risks? It is hard to get a full answer to that, but the key issue is the one given earlier. Everyone, or almost everyone, became convinced that house prices had nowhere to go but up, so the level of monitoring in mortgage origination eroded. Default rates had remained low for many years and so there did not seem to be much risk involved. Another issue, as we will discuss below, is that the securitization process created an enormous gap between the origination of the loan and the investors who ultimately held the underlying risk, making sound risk analysis extremely difficult.

Securitization and the Funding of the Housing Boom

In the old model, mortgage loans were made by Savings & Loans institutions (S&Ls) and the funds for them came from the savings deposits of retail customers. The S&Ls themselves vetted the mortgages and took on the three risks involved: the risk of default; the risk of pre-payment (which reduces returns); and the risk of changes in interest rates. This system broke down in the S&L crisis of the mid-1980s for complex reasons that link to the era when financial institutions and interest rates were much more

heavily regulated.[8] To oversimplify, the crisis stemmed from both interest rate risk and default risk. As market interest rates rose, the S&Ls had to pay higher rates on their deposits but could not raise the rates on their stock of mortgages by enough to compensate. They tried to avoid insolvency by investing in much riskier assets, including commercial real estate that promised higher returns but then suffered serious default losses. Because of regulations limiting interstate banking, the mortgage portfolios of the S&Ls were geographically concentrated, which made them riskier—the residential mortgage markets in Texas and California suffered high default rates in the 1980s. There were also some fraudulent practices at that time; for example in the Lincoln Savings collapse, the CEO Charles H. Keating was convicted and served time in jail. In response to the losses in the S&Ls, the federal government created the Resolution Trust Corporation to take the assets off the banks' books, and then sold them off. In the process, there were large losses that were covered by taxpayers, roughly $150 billion.

Securitization was seen as a solution to the problems with the S&L model and it freed mortgage lenders from the liquidity constraint of their balance sheets. Before, lenders could only make a limited number of loans based on the size of their balance sheet. Securitization allowed lenders to sell off the loan to a third-party, take if off their books, and use that money to make even more loans. The development of mortgage back securities (MBS) was led by the Government Sponsored Enterprises (GSEs), notably Fannie Mae and Freddie Mac that had been started by the federal government some years earlier to facilitate mortgage borrowing. Mortgages that fit certain rules (they are called conforming mortgages) can be sold to Fannie or Freddie.

The GSEs then package together a geographically dispersed group of mortgages and sell mortgage backed securities (MBS) in financial markets. This is the "first stage" securitization process where investors buy financial assets, MBS, whose returns reflect the returns on the underlying mortgage pool. Investors take on some of the risks, notably the interest rate risk. Importantly, however, the risks of default in the mortgages were retained by the GSEs. They guaranteed the buyers against default losses and pre-

[8] One of these was the result of regulation (Regulation Q) that limited the interest rate that S&Ls could pay on their deposits and led depositors to withdraw funds when market rates rose. That regulation, in an era of double digit market interest rates, exposed the thrifts to a massive potential outflow of funds in the 1979-1981 period, which was avoided when Congress lifted Regulation Q. But even after this occurred, the loss in asset value on the S&Ls balance sheets meant that most had little or no capital at risk.

payment losses, or at least losses above an expected amount built into the rate of return of the MBS when it is issued.

The GSEs can then sell the MBS on the open market, or they can issue their own bonds, use the revenue to buy the MBS and hold them on their own books. They earn a profit because they earn a higher interest return on the mortgage assets than they pay on the bonds that they have issued. This has some similarity to the S&L model, except that Fannie and Freddie can hold much larger pools of mortgages that are geographically dispersed. In addition, the GSEs were seen as guaranteed by the federal government (even though no such formal guarantee exists) so they paid only a few basis points above Treasury yields on their bond issuance. Over the years, this line of business has been hugely profitable for the GSEs and the size of their internally-held mortgage portfolios ballooned until they faced regulatory restrictions pushed by Alan Greenspan, then Federal Reserve Chairman, and others.

The GSEs were major participants in the mortgage market accounting for much of the expansion of prime mortgage lending in the 2001-2003 period.[9] They also bought subprime loans, and expanded that portfolio after 2003 in part because Congress pushed them to provide more loans to low-income borrowers to justify the capital advantage they have because of the implicit federal guarantee. That part of their portfolio has suffered write-downs in recent months and pushed them into losses—Fannie and Freddie had nearly $15 billion of write-downs at the end of 2007 according to OFHEO. Despite this, they remain by far the largest buyer of mortgages originated. It is estimated that 75 percent of new mortgages written in the fourth quarter of 2007 were placed with Fannie and Freddie.[10]

Other financial institutions also issued MBS, but because of the capital advantage of the GSEs, these institutions operated in the "jumbo" market for loans that were for larger amounts the GSEs were allowed to buy, or in the higher risk subprime market. In the boom years, securitization through private financial institutions increased as did the overall contribution of securitization to mortgage funding.

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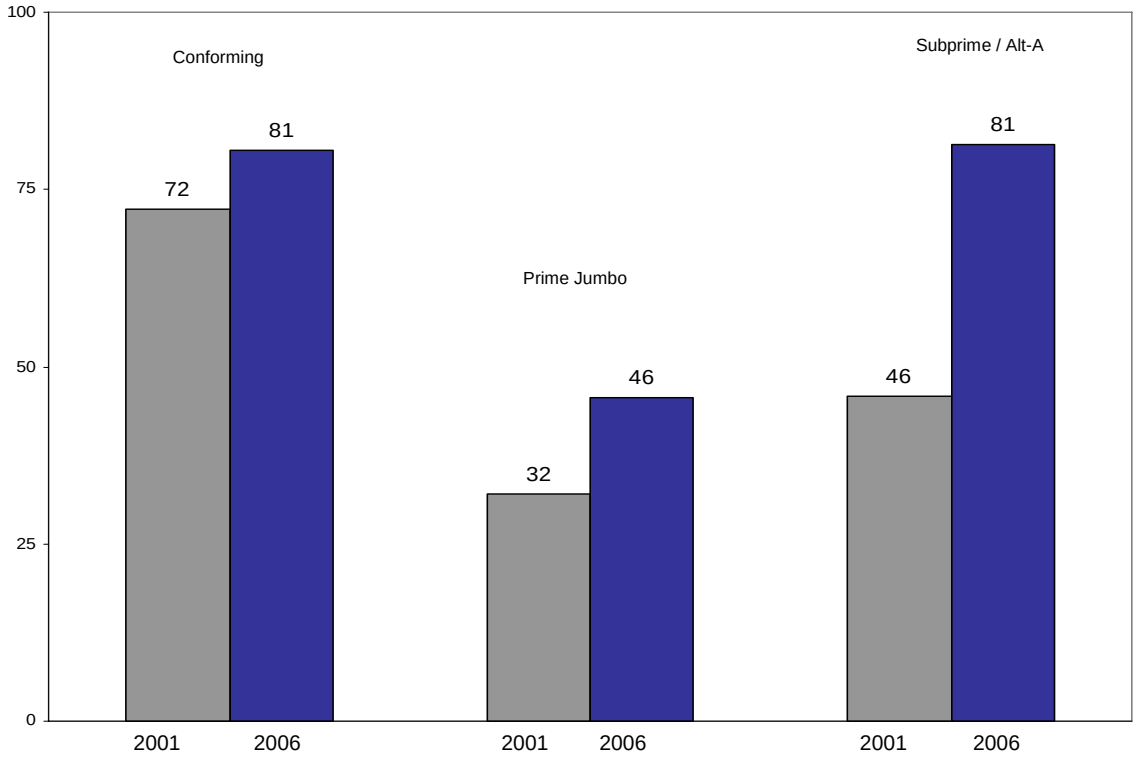
[9] There are different estimates of the extent to which the GSEs provided lower interest rates for borrowers. Most suggest the impact on mortgage rates is fairly small. Presumably without the GSEs, other financial institutions would have had a bigger role.

[10] David Hilzenrath. "Attempting to Heal a Fractured Mortgage Market," *The Washington Post*; April 16, 2008.

Figure 5 illustrates the growing importance of securitization, showing the rates in 2006 for conforming, prime jumbo and subprime / Alt-A loans, for which securitization rates reached 81, 46 and 81 percent, respectively Securitization was already well established among conforming loans, as the GSE's had been securitizing them for two decades; 72 percent of conforming loans were securitized in 2001. The real boom in securitization since 2001 came from subprime and Alt-A loans (Alt-A mortgage loans are made to borrowers with pretty good credit ratings but who do not provide full income and asset documentation), as the share of these loans that were securitized had jumped 75 percent since 2001 . *By 2006, securitization was funding most of the mortgage loans in the lower rated categories, the loans that are in trouble now.*

Figure 5: Securitization Rates by Type of Mortgage, 2001 and 2006; percent



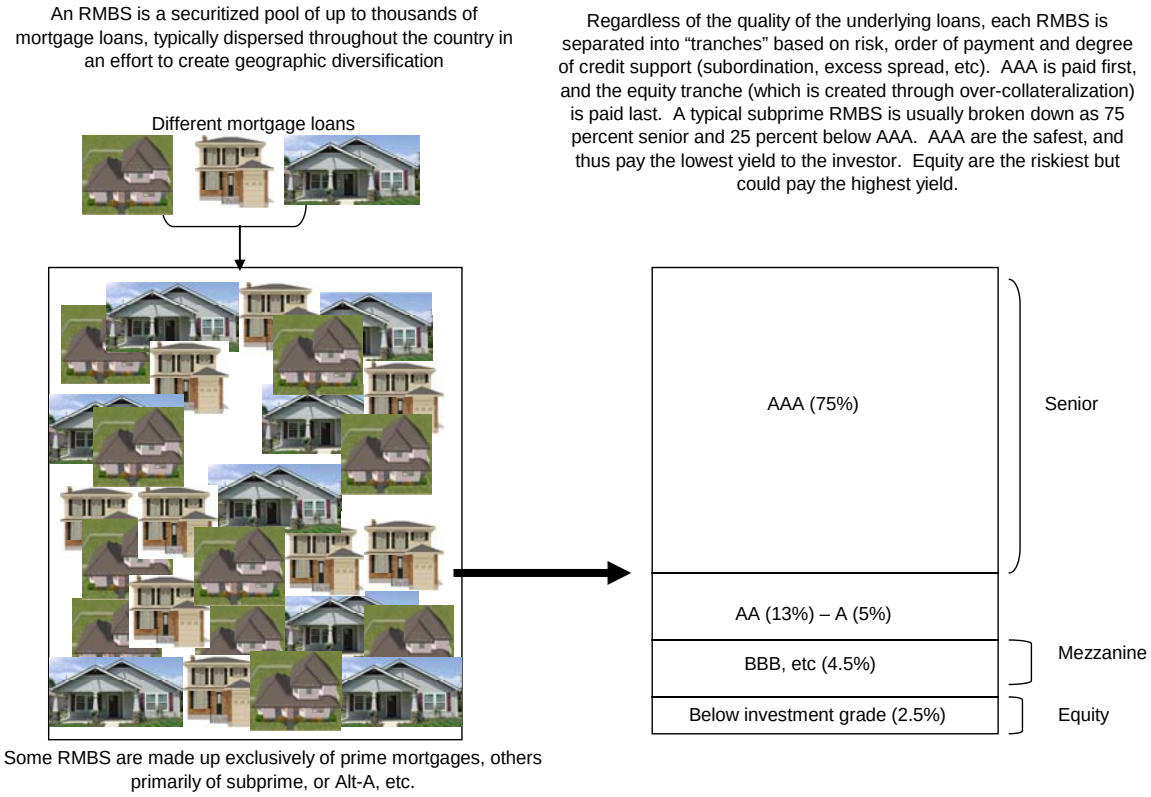
Source: Inside Mortgage Finance

More Securitization and More Leverage—MBS, CDOs and SIVs

Figure 6 illustrates the way that MBS were repackaged in order to increase the funds available to the mortgage market, as well as to generate fees for the re-packagers. A pool of mortgages was split into a set of tranches. The underlying mortgages are of variable quality and there is a high probability that some or many of them will default, particularly when there are subprime mortgages. The mortgages were selected from geographically diverse areas which, it was believed, would protect the health of the overall pool from any local default shocks. Still, an asset based on a simple pool of subprime mortgages would carry a credit rating below or well below AAA.

Rather than sell one asset based on the entire pool, though, an MBS issuer could issue securities with varying risk and return by tranching the securities into different groups based on exposure to the underlying risk of the pool. After buying the receivables of thousands of mortgage loans, an issuer would then transfer them to what is called a Special Purpose Vehicle (SPV), an off-balance sheet legal entity, which "held" the receivables and issued the securities. These were typically separated into senior, mezzanine (junior), and non-investment grade (equity) tranches. A senior tranche had preferred claim on the stream of returns generated by the mortgages; once all the senior tranche securities are paid, the mezzanine holders are paid next, and the equity tranche receive whatever is left. A portion of the mortgages can go into delinquency, but various forms of protection should mean there is still enough income coming into the pool to keep paying the holders of the senior tranche. The holders of the senior tranche have an asset that is less risky than the underlying pool of mortgages; in fact credit rating agencies were willing to give them AAA ratings.

Figure 6: Anatomy of a MBS



The safety of a senior tranche, or any tranche, mainly depended on two concepts: the degree of *subordination* under it and the level of *credit enhancement* in the MBS.[11] Subordination of a tranche refers to the total size of the tranches junior to it. The higher the subordination, the safer the tranche. If, for example 75 percent of a set of MBS is senior, then the senior tranche benefits from 25 percent of subordination, plus any over-collateralization.[12] Over-collateralization, or when the face value of the mortgage assets in the pool is higher than the face value of the re-packaged securities, is a form of credit enhancement used to reduce the exposure of the debt investors to the underlying risk of the pool. The over-collateralized part of the MBS is the "equity" tranche, as its holders

[11] There exists much literature expaining MBS structure; for a more in-depth and very elucidating description see Ashcraft and Schuermann (2008).
[12] Senior tranches of Subprime MBS were typically more subordinated and those in Alt-A or prime MBS to compensate for the higher risk of the underlying pools.

are the first to lose money in case of default and receive whatever money is "left over" if there are no defaults. If, for example, 1.5 percent of an MBS is equity, then 1.5 percent of mortgage payments can default before the most junior debt tranche incurs any losses.

Another important form of credit enhancement is "excess spread," whereby the total incoming interest received from the mortgage payments exceeds the payment made to senior and junior debt holders, fees to the issuer, and any other expenses. This is the first line of defense in terms of protection, as no tranche incurs losses unless total credit defaults become high enough to turn the excess spread negative. (If this does not happen, the equity tranche gets whatever excess spread is left over).

The repackaging of MBS into tranches does nothing to reduce the overall risk of the mortgage pool, rather it rearranges it. The senior tranches are less risky and eligible for high investment grade credit ratings, as they are quite insulated from the default risk. On the other hand, the lower tranches are much more risky and can face losses very quickly; the equity tranche has the potential for huge returns when defaults are low but are also the first to be wiped out when the default rate hits even a small amount above what is expected. A tranche that goes underwater (the stream of income from the borrowers falls below the level necessary to keep paying returns to the tranche) pretty much never comes back. Tranching redistributes the risk according to risk appetite of investors: senior tranches pay a lower yield but are safer bets, and the junior tranches pay a higher yield and much riskier.

The idea of taking risky assets and turning them into AAA rated securities has been received with scorn by many as the mortgage market has slumped. And with good reason in the sense that the riskiness of these securities was in fact much higher than their ratings suggested, because the overall market slump resulted in a correlated wave of defaults. But this financial alchemy is not as strange as it seems, in fact it has been around for a long time in other markets. A public company is an asset with an uncertain stream of returns. Typically, the claims on that income are assigned to two broad groups, the bond holders and the stock or equity holders. The company's bonds may well be of low risk and eligible for a high credit score. The bond holders get first dibs on the returns of the company and the equity holders get what is left over. Most large companies effectively tranche their liabilities into bonds with different seniorities in terms of claims

on the company's income, and they may have different classes of equities too. In short, the idea of different tranches of assets with differing risk levels is not at all new and there is nothing inherently wrong with it. The goal is to provide investors with different risk and return options and to let investors with an appetite for risk absorb that risk. The repackaging did not stop there, however. There were second and third rounds of securitization, and the trouble that emerged there was worse.

Collateralized Debt Obligations (CDOs) represented the second step in securitization. CDO issuers purchased different tranches of MBS and pooled them together with other asset-backed securities (ABS). (The ABS were backed by credit card loans, auto loans, business loans and student loans).[13] A "senior" CDO was made up predominantly of the highly rated tranches of MBS and other ABS, while "mezzanine" CDOs pooled together a higher share of junior tranches. Unlike an MBS, whose assets consisted of actual mortgage payments, a CDO's assets were the securities that collected those mortgage payments; in a sense CDO's "re-securitized" existing securities. A CDO could further re-distribute the risk of its assets by re-tranching and selling off new securities. A mezzanine CDO pooled together junior tranches of MBS and other ABS and converted some of them into new AAA-rated securities.

Figure 6 would look very much the same to describe a CDO rather than an MBS. The issuers worked directly with ratings agencies to structure the CDO tranches so that they could optimize the size of highly-rated tranches in order to lower the funding costs of the CDOs; since the coupon rate on AAAs is lower than those on A- or BBB, it costs less to issue a highly-rated security than a lower one. In principle, the inclusion of different asset types and the pooling of different MBS tranches added diversification to the CDOs and lowered risks. And as an additional protection, CDO issuers would purchase credit default swaps (CDS) or credit insurance to raise ratings on the securities they issued and to shield the AAA tranches from the default risk of these assets. However, only a fraction of the value of the underlying mortgages was actually insured,

[13] The share of MBS in CDO assets grew tremendously since 2001; Mason and Rosner (2007) tell us the FDIC reported in 2006 that 81 percent of CDO's issued in 2005 were made up of MBS.

and when a wave of CDO downgrades hit in 2007[14], many previously highly-rated tranches became exposed to losses. In practice, therefore, the reduced net risk exposure that CDOs appeared to embody was mostly a mirage and, importantly, this second round of securitization made it even more difficult for investors to determine what risks they were actually taking. CDO issuance was around $300 billion in both 2006 and 2007.[15]

One of the constraints on banks and some other institutions is that they must meet capital requirements, that is to say, they must fund a given percentage of their assets with shareholders' money rather than with some form of debt. Capital requirements for banks are mandated jointly by the FDIC, the Comptroller of the Currency, and the Federal Reserve. As we discuss in much greater detail late in this report, since 1989, when the international Basel Accord went into effect, U.S. banks have had to meet both the Basel requirement and a separate U.S. standard. Capital requirements lower the profitability of the banks, since they limit the extent to which banks can leverage any initial shareholder investment (plus accumulated retained earnings). Naturally, therefore, banks looked for ways to circumvent the requirements. Banks eventually settled on Structured Investment Vehicles (SIVs), an off-balance sheet SPV set up by banks to hold MBS, CDOs and other long-term institutional debt as their assets, as their favored means of getting around mandated capital rules.[16] To fund these assets, the SIVs issued asset backed commercial paper (ABCP) and medium term notes as their liabilities, mostly with very short term maturity that needed to be rolled over constantly. Because they obtained the legal title of "bankruptcy remote," SIVs could obtain cheaper funding than banks could and thus increased the spread between their short-term liabilities and long-term assets and earned high profits—just so long as they could borrow at low short term interest rates with low risk premia and the default rate on the long term assets they held stayed relatively low. SIV assets peaked at $400 billion in July 2007 (Moody's 2008b).

Until the credit crunch hit in August 2007, this profitable business model worked smoothly. A SIV could typically rollover its short term liabilities like clockwork. Liquidity risk was not perceived as a problem, as a SIV could consistently obtain cheap

[14] Moody's (2008a) reports that of the CDOs it rated, a record 1,655 were downgraded in 2007 – 10 times the amount downgraded in 2006.
[15] Ibid.
[16] IMF (2008) cites Standard and Poor's to estimate that close to 30 percent of SIV assets were MBS as of October 2007, with 8.3 percent in Subprime MBS; 15.4 percent was in CDO's.

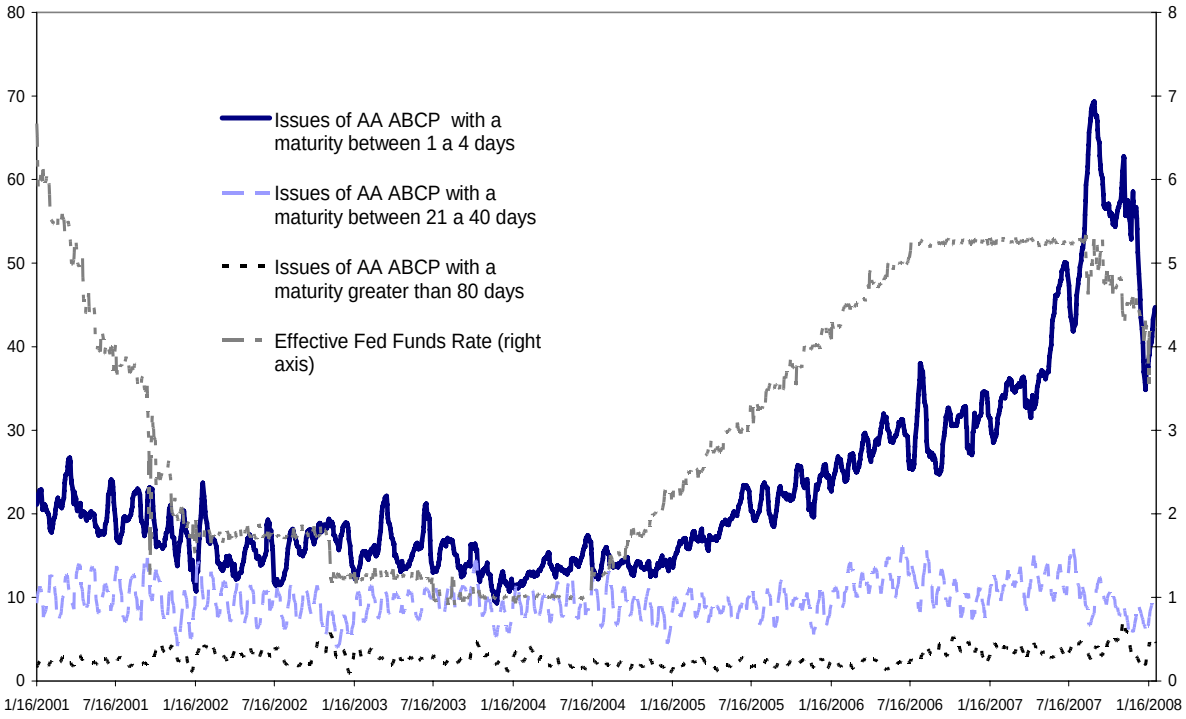
and reliable funding, even as it increasingly turned to shorter term funding (see Figure 7). Technically, the SIVs were separate from the banks, constituting as a "clean break" from a bank's balance sheet as defined by the Basel II Accord, and hence did not add to the banks' reserve requirements. Once the SIVs ran into financial trouble, however, the banks had to take them back onto their balance sheets to avoid alienating investors and perhaps to avoid law suits.[17] Indeed, we saw this process unfold several times since the liquidity crunch in August 2007, as Citibank and others had to take their SIVs back onto their books as the funding sources suddenly refused to rollover their funds and demanded their money back.

The increase in leverage across financial institutions, as well as the growth in aggregate liquidity, was intrinsically linked to the prolonged rise in house prices and asset prices across the board. Adrian and Shin (2007) illustrate that when financial institutions are forced to mark-to-market, meaning that they must assign a value to an asset based on its current market valuation, rising asset prices immediately show up on banks' balance sheets, which increases their net worth and by definition reduces their total leverage. When asset prices are rising (as they were over the last several years), it is highly unprofitable for a bank to be "under-leveraged," and thus in such a situation banks will look for ways to utilize their "surplus capital" and further increase leverage. If asset prices continue to rise, leverage among financial institutions continues to rise as well. This phenomenon, for which the authors provide empirical evidence, leads to expansion in aggregate liquidity. As the authors put it, "Aggregate liquidity can be seen as the rate of change of the aggregate balance sheet of the financial intermediaries." A feedback loop settled in, as the prolonged rising asset prices in mortgage-related products fueled the overall growth in leverage and liquidity, which in turn further increased the demand for these assets. When the crisis hit in 2007 and asset prices plummeted banks, SIV's, a few hedge funds, and other financial institutions swept up in the feedback loop found themselves exposed with very little capital.

[17] The seeming contradiction that a SIV could be considered a "clean break" from a bank's balance sheet, yet the bank could still act as the "bailout of last resort," was made possible by a legal footnote called "implicit recourse" outlined in the Basel II Accord that says a sponsoring bank may provide support to a SIV that exceeds its "contractual obligations" to preserve its "moral" standing and protect its reputation.

Investment banks are not supervised like commercial banks and do not have the same capital requirements. Nor, as we discuss later in this report, are investments subject to the regulatory restrictions that accompany the capital requirements. Institutions such as Bear Stearns played the leverage game to the full, borrowing at very short term and holding risky longer term assets, with little in the way of capital or liquid reserves to cover changing market conditions. Figure 7 shows the rapid increases in short term financing, with maturity as low as one day, that occurred as the boom peaked in 2006 and early 2007 in ABCP markets. In general, increased leverage has been an important element in the financial crisis. When short-term liquidity funding suddenly dried up, financial institutions did not have the level of capital they needed to play the risky investments they were making.

Figure 7: Total Value of ABCP Issuance by Date of Maturity, 10-day Moving Average since February 2001 in millions; Effective Federal Funds Rate, in percent



Source: Federal Reserve

In summary: the potential advantages securitization offers are that it allows loanable funds to shift easily among regions and even countries; it distributes risk to lenders most willing to bear it, which reduces the price of risk; and it shifts risk out of the

heart of the payments system, reducing the risk of financial crisis. In the event that has unfolded, large volumes of the mortgage-backed assets ended up back in the portfolios of the GSEs, in banks or in SIVs that were supposed to be separate from the banks but were not when the storm hit. Bloomberg reported on April 21, 2008 that $290 billion had been taken in losses and write-downs by over 70 of the largest banks world-wide, with most of this total from the US subprime market.[18] The largest losses came from Citigroup ($40.9 billion), UBS ($38 billion), and Merrill Lynch ($31.7 billion). Most of the losses are at US and European banks, but Japanese and Canadian institutions also took losses. In other words, risk that was supposed to be transferred away from big banks and other financial institutions ended up back on their books. Furthermore, the owners of these assets were willing to take risks and buy assets without really knowing what they were buying, because the assets were highly rated and mortgages were thought to be very safe.

The Credit Rating Agencies

The lack of transparency of CDOs made the market completely reliant on the grades of ratings agencies as a signal of the risk of CDO assets. Regulators were not involved in these markets, so rating agencies essentially acted as proxies for regulators; indeed, an office as high as the US Office of the Comptroller of the Currency, which regulates banks, depended on rating agencies to assess CDO quality.[19] Furthermore, CDOs are themselves such complex instruments that independent judgment of risk is very difficult.

The principal agencies – Moody's, Fitch and Standard & Poor's - used complex quantitative statistical models called Monte Carlo simulations to predict the likely probability of default for the mortgages underlying the CDOs and eventually to structure the CDO (or MBS) in the process described in the previous section: separating the risk into the different ranches, and calculating the required amount of subordination and credit enhancement for each tranche as computed by the model. The information fed into these models to calculate default probabilities consisted of the characteristics of the mortgage pool, in terms of credit scores of the borrowers, the cumulative loan-to-value (CLTV)

[18] Yalman Onaran. "Subprime Banking Losses Reach $290 Billion," Bloomberg; April 21, 2008.
[19]Richard Tomlinson and David Evans, "The Ratings Charade," *Bloomberg*, July 2007. As we discuss later, federal law requires or relies upon the use of credit ratings in many other contexts.

ratio, documentation of income (or lack thereof), whether the mortgages were for the borrower's primary residence, as well as historical default rates on similar mortgages. At the outset, this approach was problematic in that the "historical" default rates were largely from the years 1992 until the early 2000s[20] – a period when mortgage default rates were low and home prices were rising. By basing their default probabilities of newly issued CDOs on a period during a housing boom, they did not factor in correctly the possibility of a general housing bust in which many mortgages go into default. The reduction of risk in a pool of mortgages depends on the extent to which default probabilities within the pool are not correlated. If there is a general downturn in housing, then the probabilities of default go up across the board.

Unlike with corporate bonds, where a ratings agency passively rates the risk of a company, with structured products the agencies "run the show[21]." The ratings agencies advised CDO issuers on how to structure the CDO with the lowest funding possible. To do so, CDO issuers would work with the agencies to optimize the size of the tranches in order to maximize the size of highly-rated, lower yielding tranches. Since the agencies were receiving substantial payments for this service, it created a clear conflict of interest. The agencies rate the bonds of thousands of corporations and are not dependent on any particular client, but for the ratings of CDOs each agency depended on a few prize bank clients that would come back again and again. If these banks did not get the rating they wanted they could try another agency, taking their fees with them. According to the New York Times, Moody's profits tripled between 2002 and 2006 to $750 million, mostly because of the fees from structured finance products.[22] No one has demonstrated that the agencies distorted ratings in return for fees (which would be pretty hard to do), but clearly the ratings system needs to be re-structured.

Credit Insurance and Credit Default Swaps

The process of securitization was aided by the growth of credit insurers and derivatives, which in principle allowed the default risk to be taken out of mortgage-

[20] Ashcraft and Schuerman (2008)
[21] Quote taken from Charles Calomiris, professor at Columbia, in Richard Tomlinson and David Evans, "The Ratings Charade," *Bloomberg*, July 2007.
[22] Roger Lowenstein, "Triple-A Failure, *New York Times Magazine*, April 27, 2008.

backed securities and CDO's before they were marketed to general investors. So-called monoline insurers, such as MBIA and Ambac, had emerged in the early 1970s to back municipal bond issues. These insurance companies had very strong credit ratings and they sold default insurance to issuers of municipal bonds. Thereby, they transferred their own AAA ratings to municipalities that would have faced lower ratings and hence higher borrowing costs. The monolines collected fees and the municipal borrowers ended up with lower net costs even after paying the fees. This proved to be a good if not exciting line of business because defaults are rare on municipal bonds. The monolines were able to take advantage of "ratings arbitrage" and it worked out well because the rating agencies were overestimating the chances of defaults on municipal bonds. The fees paid by the borrowers were large enough to compensate for default losses and small enough to make the insurance attractive.

Having developed this line of business, in recent years the monoline companies judged that they could make additional profit by expanding their business model into structured products related to the housing market. As of the beginning of 2008, the seven monolines rated AAA (at the time) insured $100 billion in CDO's linked to subprime MBS[23]. So, just as in the case of municipal bonds, they could conduct a ratings arbitrage, providing an outside credit enhancement to the issuers of mortgage-backed securities to obtain AAA ratings for their bonds. The credit insurance was provided at relatively low cost because it was believed that the risks involved were small.

However, once defaults started to pile up, millions of dollars in AAA-rated CDO's that were guaranteed by the monolines suddenly required payment. For example, when a CDO issued by Credit Suisse went bust in late 2006, nearly all its $341 million in value had been wiped out. Credit Suisse had bought CDS protection from MBIA for the senior tranches and none for the mezzanine tranches. While the mezzanine bond holders lost everything, most AAA and Aaa holders were reimbursed, as MBIA shelled out a reported $177 million to cover their losses.[24] 2007 was a devastating year for MBIA, as well as its competitors. MBIA took a writedown of over $3 billion in 2007 stemming

[23] Christine Richard, "Ambac's Insurance Unit Cut to AA From AAA by Fitch Ratings," *Bloomberg*, January 19, 2008.
[24] Neil Unmack and Sarah Mulholland, "Swaps Tied to Losses Became `Frankenstein's Monster. '" *Bloomberg*, April 15, 2008.

from such losses; Ambac posted a $1.66 billion loss in the first quarter of 2008. Amidst these losses, it became known in early 2008 that many of the monolines held only modest capital reserves against losses, not nearly enough to deal with a broad decline in the housing market. In lieu of such credit concerns, Ambac's credit rating was cut from AAA to AA in January 2008 by Fitch; MBIA, on the other hand, has sought to raise an additional $750 in capital since February to assure the market of its solvency.

An alternative way to provide insurance against default was to buy a credit default swap (CDS), a derivative traded in the financial markets that paid off in the event of default on a specified product, which could range from a CDO to a bank's debt. Monoline insurers have been a big source of CDS protection, but hedge funds have also made up an increasingly large share of them; it is estimated that together, monolines and hedge funds make up 60 to 70 percent of CDS sellers.[25] A CDS is economically similar to credit insurance, but there are significant regulatory differences between the two. Like credit insurance, a CDS transaction involves a "protection buyer" – a bond issuer trying to raise ratings and shield certain bonds from default risk – and a "protection seller," a counterparty who receives a fixed income stream in return for assuming the default risk. However, like the rest of the murky world of derivatives, these transactions are not overseen by any regulatory body. There are no minimum capital or asset requirements for the protection seller, so there is no guarantee that in the case of default the seller will have ample funds to make the full payment. This risk that the seller may not be able to make his payment is what is referred to as "counterparty risk."

Credit insurance and CDS's are overall positive innovations; by assuming the default risk of a transaction, they facilitate lower funding costs and easier access to funding liquidity for institutions that may otherwise not have access to it. However, if the "counterparty risk" becomes a heightened concern, then a CDO issuer who purchases credit insurance or a CDS merely replaces the default risk of his bond with the counterparty risk of the protection seller. In other words, risk that was supposed to be

[25] Satayjit Das, "Insight: CDS Markets May Create Added Risk," *Bloomberg,* February 5, 2008.

transferred away from the issuer finds its way back onto the books. While some are extremely worried about this risk[26], its magnitude remains to be seen.

Federal Reserve Policy, Foreign Borrowing and the Search for Yield

One of the culprits often cited for the financial crisis is the Federal Reserve's policy of keeping interest rates low for a long time in order to help the economy pull out of the 2001 recession. The unemployment rate was rising and inflation was falling (see the analysis in Taylor 2007). The Federal Funds rate was moved down to 1 percent in mid 2003 and held at that level until mid 2004. With short term rates as low as 1 percent, many financial institutions struggled to earn returns they considered adequate. Money market mutual funds had trouble covering expenses and paying any return above zero to their investors, while other fund managers searched desperately for higher yielding assets without taking on undue risks. One fund manager described the situation to us as follows: he felt compelled to purchase mortgage and other asset-backed securities because they offered superior yields and were highly rated by the credit agencies. He knew that the risks might turn out to be larger than were being allowed for, but his clients would have pulled their money out of his funds had he not made the investments. Competing investment funds were advertising high returns and low risks. Because it kept short term interest rates so low for so long, it is argued, the Fed encouraged this behavior.

Another perspective on the same issue is that Fed monetary policy should look at asset markets as well as consumer inflation and the rate of economic growth. Edwin Truman, now at the Peterson Institute, was a senior official at the Federal Reserve for many years, and he argues that monetary policy should be adjusted when there are clear signs of developing asset price bubbles. For example, equity prices moved very high in the late 1990s, especially technology stocks but the whole market too. The equity bubble then burst and many Americans were severely impacted. There had been overinvestment in technology capital stock in the 1990s and the subsequent slump in technology

[26] See Satayjit Das, "Insight: CDS Markets May Create Added Risk," *Bloomberg*, February 5, 2008, for example.

investment after the tech bubble burst was instrumental in causing the 2001 recession. Similarly, the housing bubble resulted in a huge construction boom and associated spending on furniture, appliances and so on. The collapse of the housing bubble has been, together with high oil prices, the reason for the current economic weakness. Since the Federal Reserve is charged with keeping the economy on an even keel, perhaps monetary policy should have raised interest rates sooner and more aggressively to counteract the overinvestment in housing. Some small amount of economic growth might have been sacrificed in 2003 to 2007, but to the benefit of economic growth later, if the slump had been avoided.

We understand this view, but still do not assign much if any role to Federal Reserve monetary policy in the current financial crisis. First, Elmendorf (2007, 2008) has shown that monetary policy was only a little too expansionary in the early part of this decade when judged by the outcomes of unemployment and inflation. Given the other forces affecting the aggregate economy, low interest rates were appropriate. He also notes that trying to stop asset bubbles using countercyclical policy does not make sense. Countercyclical policy is a very blunt tool, and the impact on the overall economy would need to be very large to ensure that the asset price bubble was actually deflated.

Second, it is very hard ex ante to determine when asset price appreciation is really part of a bubble. For example, then Fed Chairman Alan Greenspan warned about "irrational exuberance" in the stock market in 1996 when the Dow Jones index was only at 6,000. Anyone getting out of the market at that point, as some did, would have missed out on large and sustained capital gains. An article by Jonathan McCarthy and Richard W. Peach (2004) of the New York Federal Reserve Bank concluded that there was little evidence of a bubble in house prices at that time.

Third, the Fed determines the short-term Federal Funds rate, but not the broad spectrum of interest rates. This is apparent in the plot of the mortgage interest rate given in Figure 1. The Fed raised and lowered the Federal Funds rate several times over the period shown, with only modest impacts on the interest rate on 30-year mortgages. In

particular, the Fed tightened monetary policy starting in 2004 but the mortgage interest rate stayed very low by the standards of the prior thirty years.[27]

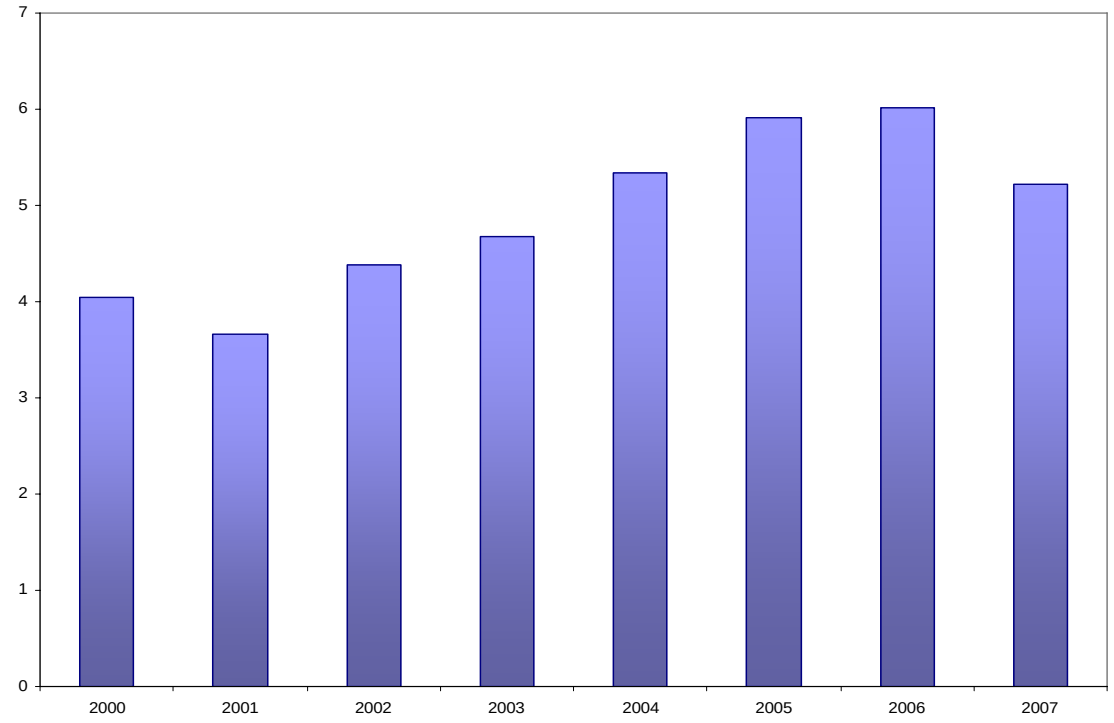
One important reason interest rates have remained low in the United States and around the world is because the supply of savings has been large relative to the demand for funds for investment.[28] The United States is a low saving, high borrowing economy and has financed both its business investment and residential investment by foreign borrowing. In part, this has been direct funding by foreign institutions of US companies and mortgage debt instruments. But since money is fungible, it does not matter greatly which assets foreigners were buying; the key is that they were willing to finance a very large capital inflow to the United States. The inflow of capital has as its counterpart the current account deficit and Figure 8 shows the very large and growing US deficit in recent years. Because of the globalization of financial markets and because of all the money from around the world looking for returns, the US economy was able to finance its housing boom at low interest rates.[29]

[27] One important factor in the crisis is that institutions were borrowing short and lending long, as we noted earlier. To a degree, the low short term interest rate policy of the Fed encouraged this, but importantly, this pattern persisted and even intensified even well after the Federal Funds rate was raised to 5¼ percent. The undoing of the short term borrowers came when the risk premium increased sharply, as we describe below.

[28] Economists have not developed a consensus theory of the determination of interest rates and we do not intend to get into the middle of that debate. It is sufficient to note that both monetary policy and the global supply of and demand for savings are important.

[29] There is another way of looking at this issue which says that it is not that the inflows allowed the US to keep interest rates low; rather it is that capital inflows and the associated high dollar and weak demand for our net exports required us to keep interest rates low in order to generate enough aggregate demand to maintain full employment. If there had been no global savings glut many things would have different, with more US net exports and the FED would have operated a different monetary policy with higher interest rates. A key issue is the composition of economic growth and whether an economic expansion is "balanced."

Figure 8: Capital Inflows to the US Economy (Equal to the Current Account Deficit) Reached Over 6 percent of GDP in 2006



Source: Bureau of Economic Analysis

We cannot know exactly the counterfactual of what the US economy would have looked like if foreigners had not been willing to lend to the US on such favorable terms. But it seems highly likely that there would have been higher US interest rates and less of a housing boom. In some sense, therefore, one can assign a fraction of the "blame" for the housing bubble on those who sent capital to the US economy. That is a tricky argument, however. An important policy goal for the US has been to keep interest rates low on average to encourage investment and economic growth. The discipline in the federal budget developed in the 1990s was justified, correctly, on this basis. Generally, it is better to finance investment with savings generated at home, but if those savings are not forthcoming it is better to keep investing productively and borrow the money. Without access to foreign funds, the US economy would have invested less in business capital. The problem was the diversion of too much investment into housing that was not productive at the margin, a problem we should blame on ourselves more than on those who lent the money. Moreover, foreign investors have taken a big hit from their lending

to us. The dollar has declined and their holdings of mortgage assets have been written down.

Regulation and Supervision

For over 30 years there has been a thrust in US policy towards reduced regulation of private markets. Airlines and trucking were deregulated in the 1970s; President Reagan was a supporter of deregulation, as was his philosophical ally Mrs. Thatcher in the U.K. Financial markets have also gradually been deregulated, going back to the ability of money market mutual funds to issue interest-bearing checking accounts, through the ending of Glass-Steagall prohibitions on banks. Determining how much deregulation is optimal is tricky, however, as we have seen in the electric power industry. The financial sector is just as tricky, or more so.

In order to prevent bank runs, there has been deposit insurance in the United States since the 1930s that has parallels in other advanced economies. If depositors know their funds are protected, they do not have to rush to withdraw money at the first rumor of trouble. Recently the UK bank Northern Rock got into trouble and depositors were lining the streets outside Northern Rock branches because the deposit insurance program in the UK did not provide adequate coverage. In addition, the Federal Reserve, like other central banks, stands as the lender of last resort to provide additional liquidity to banks in difficulty, a role that was extended to the investment bank Bear Stearns in March 2008[30]. Given that the Fed and U.S. taxpayers are on the hook to insure deposits and preserve the stability of the financial system, it has been considered appropriate to have regulators that make sure the institutions are behaving responsibly. In addition, there is a further case for supervision of the mortgage market because buying a house is such a large investment for households and requires a level of sophistication in financial matters that many or most households do not possess. Markets do not work well when there are information asymmetries and this is such a market.

There is a clear case, therefore, for good regulation in mortgage and financial markets. And in practice there was still an extensive regulatory apparatus in place in

[30] At the time, the Federal Reserve could not provide funds to Bear Stearns directly because it was not a deposit-taking bank, which is why it had to step in through JP Morgan, who did have deposits.

financial markets. As described by a senior executive one of the large U.S. banks, there were "roomfuls of regulators" going over the books. On the consumer side, anyone who has taken out a mortgage knows that there is a stack of papers to sign created by state regulators with the goal of protecting borrowers. Why did this level of regulation not work?

This is an issue that will be explored more fully as we look at what should be done to avoid the same problems in the future, but a couple of points here are notable. There is no unified system of bank supervision, rather a patchwork of state and federal regulators. In researching this paper we have been struck by the complexity of SIVs and CDOS, but also astounded by the byzantine complexity of the US regulatory structure. The FED supervises all bank holding companies and banks that are members of the Federal Reserve System. The Federal Deposit Insurance Corporation provides $100,000 of deposit insurance and is the federal regulator of about 6,500 state chartered banks that are not in the FED system. The Office of the Comptroller of the Currency charters national banks while state banking departments charter state banks. Membership in the Federal Reserve System is required for national banks. The Office of Thrift Supervision supervises what is left of the S&Ls. The Financial Standards Accounting Board regulates accounting rules and the SEC regulates corporations, including the investment banks and ratings agencies. The mono-line insurers are subject to state insurance regulation. No one has clear authority. We have developed a national mortgage market with global connections and yet we have no national, uniform regulatory authority.

Despite the limitations of its authority, the Federal Reserve should have done much more to slow or stop the erosion of mortgage lending standards. Then Fed governor Edward M. Gramlich warned his colleagues of the decline of lending standards and the dangers that this posed. There is a consumer advisory board that briefs the Fed on its views and its concerns. The minutes of this group's meeting in 2005 reveal that they were aware of the problems emerging in the mortgage markets and warned the Fed about them. The Federal Reserve had the stature to change things and to influence state regulators. Appropriate warnings given privately or publicly could have significantly reduced the amount of bad lending even in markets where the Fed had no direct legal power. This is not to let the other federal and state regulators off the hook. Many of the

worst lending practices happened in state regulated institutions. These regulators certainly should have done more too.

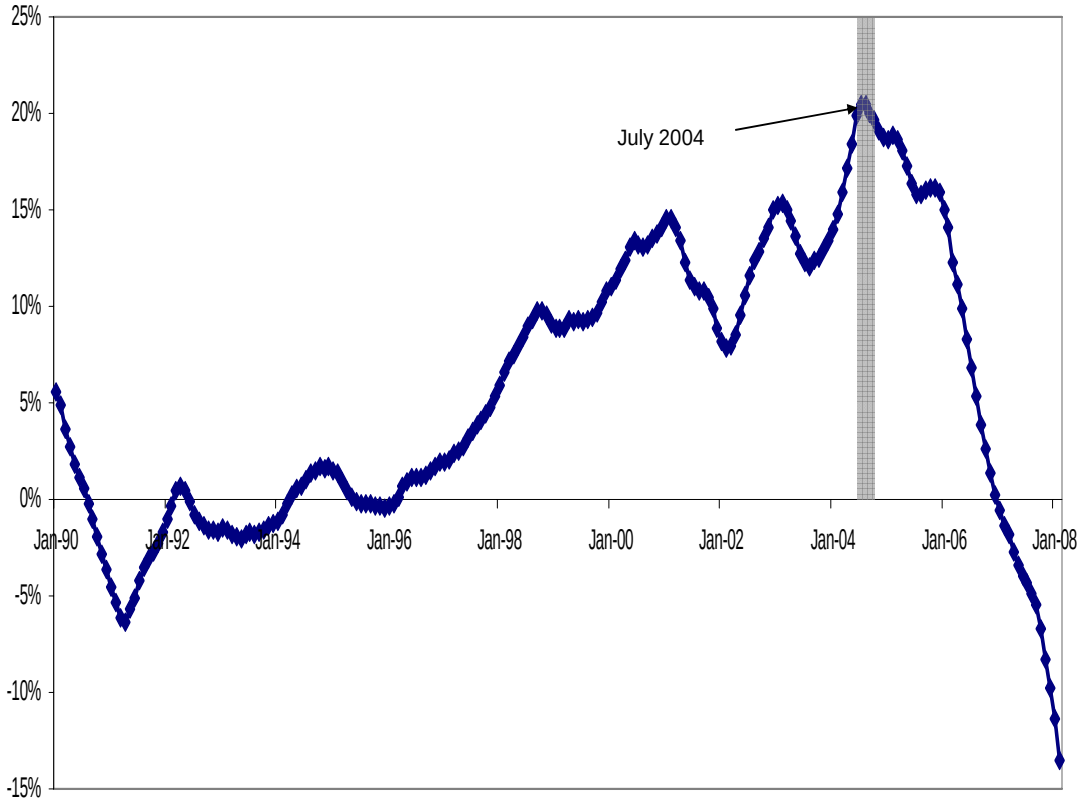
Why did Federal and state regulators not do more? It is hard to be sure, but we suspect it was in part because they believed that less regulation was better and that the market would take care of any problems. The push to deregulate of the past thirty years has led to a lack of discrimination in policy. We need to get rid of bad regulation that stifles competition and inhibits innovation, but we need to improve regulation where it can make markets work better and avoid crises.

On the consumer side, the pile of documents that borrowers sign does not solve the asymmetry problem. Most households sign the documents without reading them or after only a cursory run through. These warnings are like the patient inserts in pharmaceuticals. They do not create informed consumers.

Housing Prices Slow and Defaults Rise: The Bubble is Bursting

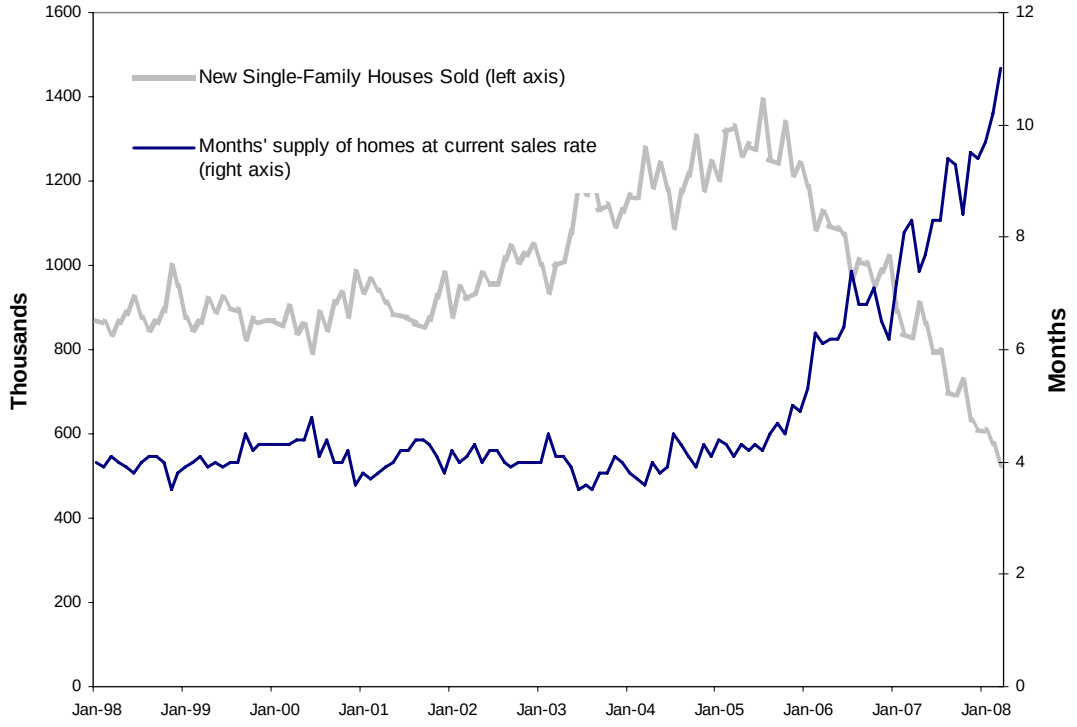
Figure 9 shows that housing price increases started to slow as early as 2004. House prices in boom areas were reaching levels that caused some buyers to hesitate because they doubted whether prices could really continue to rise or because they simply could not afford the houses. In any asset price bubble, prices move further and further above the levels justified by the economic fundamentals. Although it is hard to know exactly what the level is that is sustainable long term, the more prices increase the more people wonder about the sustainability of the market.

Figure 9: Case-Shiller 10-city Home Price Index; year-on-year monthly growth rate, in percent



Once price increases slow, and especially once prices fall, a new dynamic sets in and asset-holders rush to get out before they are left holding an asset of declining value. The housing market differs from more liquid assets because most people do not buy and sell houses quickly and the transactions costs, such as taxes and realtors' fees, are very high. Prices in the housing market tend to be sticky, with houses that are for sale staying on the market a long time and price expectations adjusting only slowly. The impact on new residential construction is very profound, however, as illustrated by Figure 10, which shows the massive decline in sales of new houses and the very large backlog of unsold new houses that is growing very fast.

Figure 10: New Single Family Houses Sold, in thousands; and Months' Supply of Unsold Homes, in months seasonally adjusted



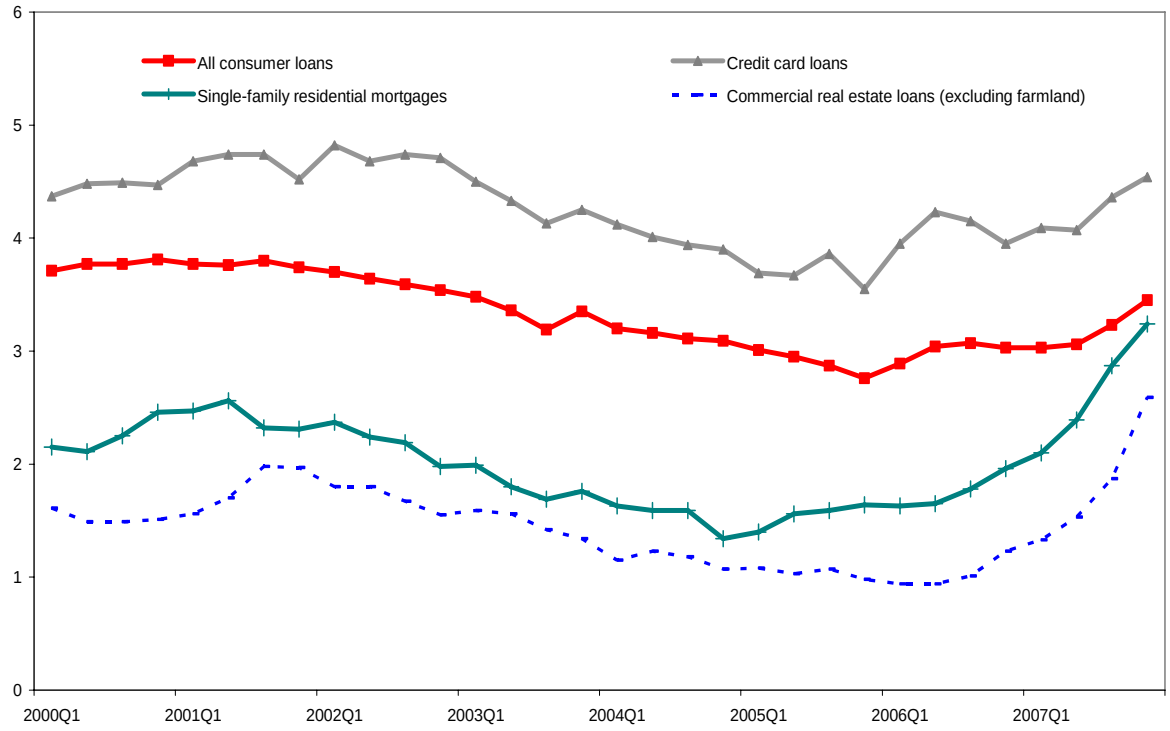
Source: Department of Commerce

Once housing price increases started to slow, the impact was felt in the mortgage market and in other consumer credit markets. Figure 11 shows that mortgage delinquency rates started to turn up in the fourth quarter of 2004, well before the crisis hit and right after the rate of home price increases slowed. Consumer loans and commercial real estate loans also saw increased delinquencies, although starting later, in 2006. The importance of house prices to mortgage delinquency rates was shown by Doms, Furlong and Krainer (2007) and Figure 12: Subprime Mortgage Delinquency Rates in 2006 vs House Price Appreciation 2004-2006; by MSA is reproduced from their study[31]. It shows delinquency rates by location in 2006 against the rate of price change in the local market 2004-2006. The Figure illustrates that there is a strong relation between the two. When house prices are rising strongly, households build up equity and will try to stay in the home. Rising prices also allows the household to refinance and avoid any step up in

[31] Further evidence that home price appreciation is the principal factor in the decision on whether to foreclouse is given in Gerandi, Shaprio and Willen (2007) and Demyanyk and Hemert (2008).

interest rate that has been built into their mortgage contract and also to roll credit card debt into their mortgage with a lower monthly payment.

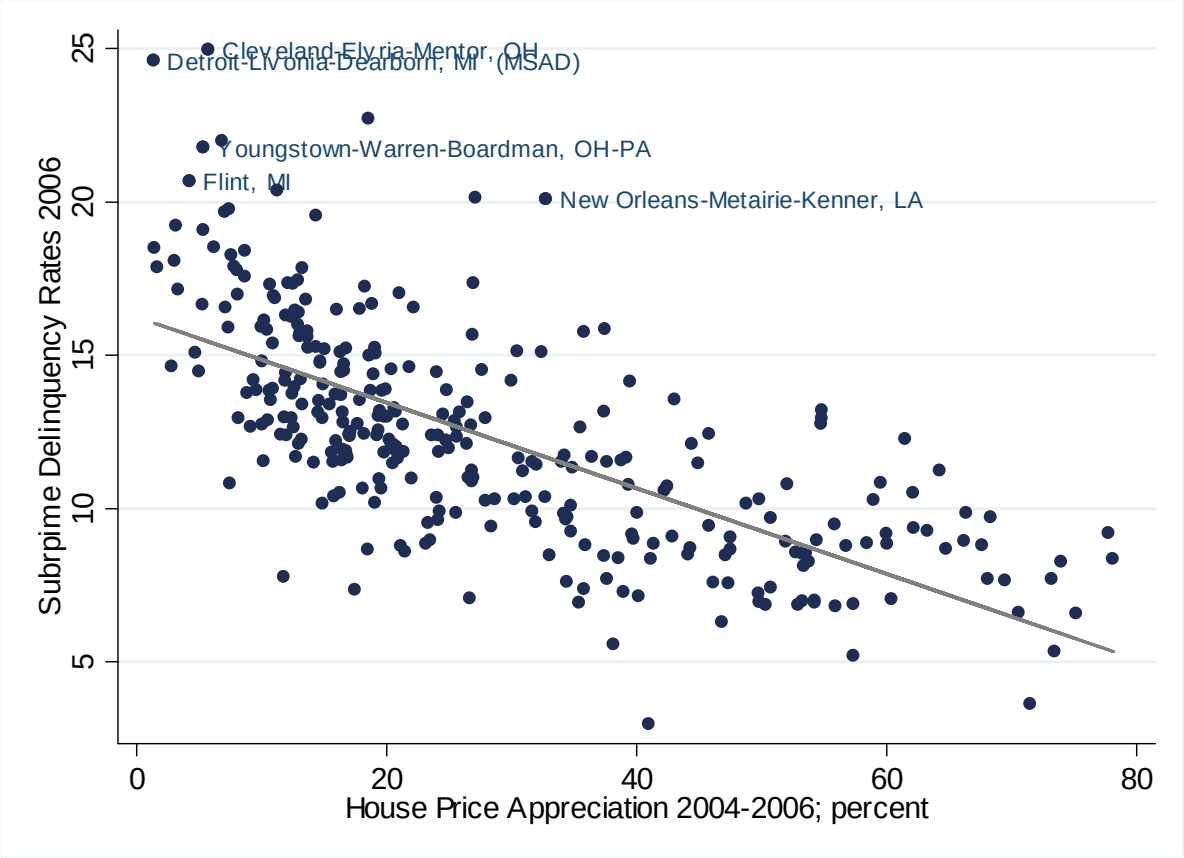
Figure 11: Delinquency Rates on Loans from All Commercial Banks; seasonally adjusted, in percent



Source: Federal Reserve

Figure 12 also shows that overall economic conditions also play an important role in delinquency. Those localities that have experienced job losses and a weak economy (Cities in the "Rust Belt" such as Cleveland, Detroit, Youngstown, and Flint are shown on the chart) will be "off the curve", showing higher than expected delinquencies. This cross-sectional result also applies when macroeconomic conditions change. As of the spring of 2008, unemployment is rising and the economy is weak—additional job losses are very likely. A severe recession is possible, which would exacerbate the problem of mortgage delinquencies. Most families do not want to give up their homes even if they have no positive equity, but if they also face income losses, then they will walk away. Unemployment and high medical expenses are cited in surveys to determine why families default.

Figure 12: Subprime Mortgage Delinquency Rates in 2006 vs House Price Appreciation 2004-2006; by MSA



Source: Doms, Furlong and Krainer (2007); OHFEO Home Price Data; LoanPerformance.

The Spread of the Crisis into Global Financial Markets

Early signs of the spread of mortgage problems into financial markets started at the beginning of 2007 as mortgage defaults pushed some tranches of mortgage backed securities into default and adversely affect the prices of CDOs and related instruments. We list below a timeline of the crisis as it unfolded.

Financial Crisis Timeline

February 8, 2007

- HSBC Holdings, a large London-based bank, announces a $10.5 billion charge for bad debt, topping analysts' estimates by over $2 billion. The company claims that the 20 percent increase in the charge is due to its US subprime mortgage portfolio.

February 28, 2007

- Freddie Mac announces that they will no longer purchase certain subprime loans.

April 3, 2007

- New Century Financial a large subprime mortgage lender files for Chapter 11 bankruptcy.

June 12, 2007

- Bear Sterns announces trouble at two of its hedge funds, High-Grade Structured Credit Strategies Enhanced Leverage Fund and Bear Stearns High-Grade Structured Credit Strategies Master Fund citing deterioration in the value of highly rated mortgage backed securities.

June 22, 2007

- Bear Stearns attempts to bailout its hedge funds by injecting $1.6 billion in liquidity in the "Enhanced" fund, which has lost nearly all its value.

July 31, 2007

- The two troubled Bear Stearns hedge funds file for bankruptcy.

August 1, 2007

- French insurer AXA SA's money-management unit has offered to cash out investors in a billion-dollar bond fund after the fund shrank in size by about 40% last month. Two of the AXA fund's sub-funds had lost 13.5% and 12.6% of their value

August 2, 2007

- German bank IKB Deutche has to be bailed out by a German state-run bank due to troubles from exposure to US Subprime loans.

August 9, 2007

- French bank BNP Paribas said it was freezing three funds due to subprime-related losses
- The European Central Bank and the Federal Reserve expanded funds for lending to banks in response to a widespread liquidity shortage.
- For the first time in years, the amount of Asset-Backed Commercial Paper (ABCP) outstanding falls, signaling a seizing up of credit markets.

August 16, 2007

- The Fed announced a half-percentage point cut of its discount rate to 5.75 percent

September 18, 2007

- Federal Reserve lowered the Federal Funds rate by half a percentage point, to 4.75%

October 15, 2007

- Citibank announces a $6.4 billion write-down.

October 24, 2007

- Merrill Lynch & Co.'s announces an $8.4 billion write-down.

October 31, 2007

- The Fed cuts its target for the federal-funds rate by a quarter point, to 4.50 percent.

November 4, 2007

- Citigroup increases its write-down to $11 billion and CEO Prince resigns.

November 7, 2007

- Morgan Stanley takes an additional $3.7 billion write-down.
- Rating agency Fitch says it will review the ratings on CDOs insured by guarantors including Ambac and MBIA

November 14, 2007

- HSBC takes a higher-than-expected $3.4 billion charge.
- Bear Sterns takes a $1.2 billion write-down for the fourth quarter.

December 11, 2007

- Fed announces a quarter percentage-point cut in the Federal Funds rate.

December 12, 2007

- In coordination with four other central banks, Fed extends up to $40 billion in special loans in the next eight days to banks

December 13, 2007

- Citigroup Inc. brings $49 billion in distressed assets onto its balance sheet.

January 18, 2008

- Washington Mutual Inc reports a $1.87 billion loss in the fourth quarter
- Fitch Ratings downgrades Ambac

January 21, 2008

- While U.S. markets were closed for the Martin Luther King Jr. holiday, major worldwide indexes fell, including drops of 7.2% in Germany, 7.4% in India and 5.5% in Britain

January 22, 2008

- Fed cuts federal funds rate by three quarters of a percentage point

March 16, 2008

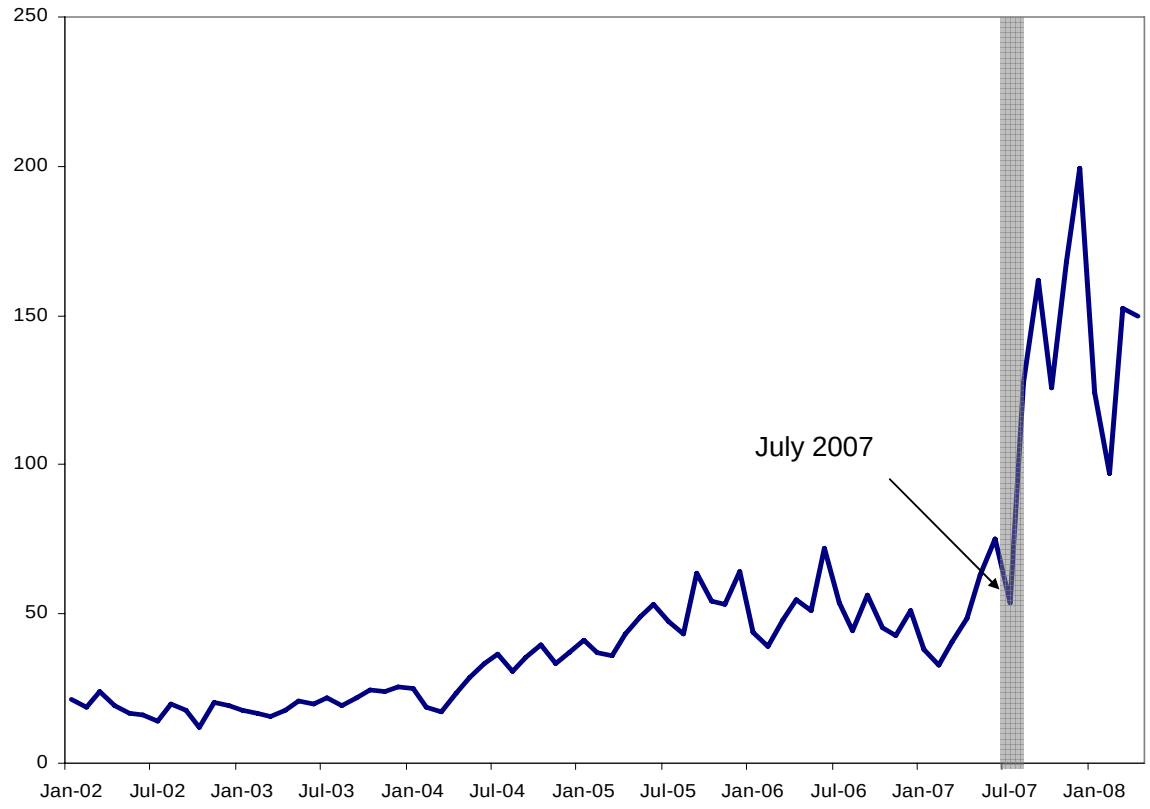
- It is announced that Bear Stearns is to be sold to J.P. Morgan Chase under an agreement brokered by the Federal Reserve and the Treasury and enhanced by a $30 billion loan guarantee from the Fed. This was to forestall the impending bankruptcy of Bear Stearns. This is the first time that the Federal Reserve has provided support to an investment bank.

From the early signs of trouble, it took some months before market participants realized that the problems were not specific to particular assets or to a few institutions but were revealing a pervasive problem in the mortgage market, concentrated in subprime loans. Risk premia spiked up in the summer of 2007. Figure 13 illustrates this point, depicting the spread between the three month Treasury bill rate (the risk free rate of interest on dollar assets) and the LIBOR rate (the rate used for dollar borrowing and

lending among financial institutions).[32] The LIBOR rate is also an important benchmark for many consumer loans and business loans. The spike in this interest rate spread was a trigger for the global financial crisis because it signaled that financial institutions believed that there were significant risks in lending to other financial institutions.

When the risk premium spiked up, it resulted in a re-evaluation of risk or a re-pricing of risk outside of mortgages. Securities that were backed by business loans, consumer loans and commercial real estate were also re-priced. When investors realized that they had underestimated the riskiness of residential mortgages, they went back and changed their perceptions of risk more generally. Risk premia in a range of markets had moved lower of the prior years and they now moved up sharply.

Figure 13: TED Spread (3-month LIBOR - 3-month T-bill); basis points



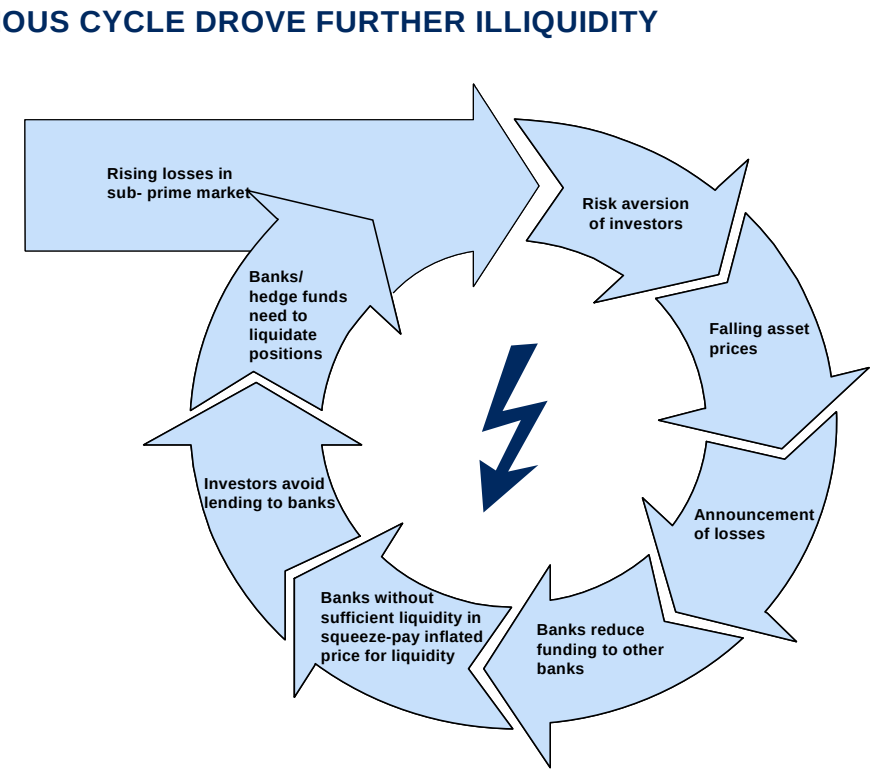
Source: Federal Reserve; British Bankers Association

[32] LIBOR stands for London Interbank Offered Rate and is set by the British Bankers Association based on a survey of interest rates charged by major financial institutions to their most preferred customers. It is used as a benchmark in the United States, Canada and Switzerland as well as the UK.

Once the crisis hit, it generated a chill in lending in global markets. The normal pattern of financial flows that facilitate trade and capital flows around the world was disrupted. Access to credit serves as a vital part of the working capital of any economy, allowing trade within economies and among economies. And this free flow of global liquidity depends upon the expectation that money lent at short term will be repaid. Financial institutions that finance their operations with short term borrowing were unable to roll over their liabilities. When they went to sell assets consisting of CDOs and other securities backed by mortgages, credit cards and other risky assets, they found they could not sell these assets at all or only at very distressed prices. They quickly faced the prospect of insolvency.

Figure 14, created by McKinsey & Company, illustrates the vicious cycle that developed. Rising losses in the subprime market triggered the crisis and started raising concerns about increased risks. The risk premium (which had been very low for a long time) increased and there was a corresponding drop in the prices of risky assets. Financial institutions then announced they had been forced to write down the value of their assets, which led banks to reduce funding to other banks. Desperate for liquidity, banks began to pay inflated interest rates for their borrowing (the risk premium had shot up). Banks were forced to sell assets at discounted prices and the process continued.

Figure 14: The Vicious Cycle that Spawned from the Crisis



Source: McKinsey & Co.

Box: <u>From $170 to $2: A Closer Look at What Happened to Bear Stearns</u>

On March 16 the Fed orchestrated an emergency bailout with JP Morgan to prevent Bear Stearns' collapse. What were the factors unique that led to the company's demise and prompted unprecedented action by the Fed to save the fifth largest investment bank on Wall Street?

Bear Stearns' stake in the Subprime mortgage market grew faster than did the market as a whole, but it also got in to the game relatively late and was thus more exposed to the riskiest loans, the ones originated in 2004 and later. These have been the source of the biggest losses. Data from Inside Mortgage Finance shows that from 2000 to 2005, Bear Stearns' share in the total issuances of Subprime MBS jumped from under 1 percent to over 4 percent. As total issuances of Subprime MBS grew at a compounded rate of 55 percent from 2000 to 2005, issuances by Bear grew at a rate nearly double that.

The company was also heavily involved in the Alt-A securities market, making up 10.7 percent of total issuances in 2006. Losses from write-downs on Alt-A securities were nearly of the same magnitude as those on subprime securities.

Bear leveraged its activity in subprime markets, as well as the rest of its operations, by borrowing heavily on capital markets. Based on its SEC filings, the Wall Street Journal

reports that Bear held $11.1 billion in equity in 2007 and was leveraged at a ratio of 33:1.[33] What made the company especially vulnerable to the credit crunch, though, was its relatively high reliance on short-term funding to finance its leverage. According to sources from a rival bank, Bear relied on overnight funding more heavily than any of its chief competitors on Wall Street.[34]

The problems for Bear Stearns first appeared publicly when two of its hedge funds filed for bankruptcy. Both funds were invested heavily in CDOs and Subprime MBS. In June, Bear Stearns attempted the largest hedge fund bailout since LTCM in 1999 and provided the "Enhanced" fund with $1.6 billion in liquidity, but even that was not enough to stop the cascading losses: a July 17 letter to investors broke the news that each fund had lost virtually all of its value. The funds tried to liquidate their assets but on July 31st, the funds filed for bankruptcy.

Bear's ultimate motive behind the June bailout of its hedge funds was less to protect their capital but more for "reputational risk." Bear's relation to those funds would make lenders and other counterparties reluctant to engage in any financial transactions with the company over fear of how deep its exposure to the Subprime market ran.

The first two weeks of March '08 Bear Stearns effectively found itself in the middle of a "bank run" by panicked clients who withdrew a total of $17 billion from their holdings in the company during the two weeks. By Thursday, March 13, Bear's capital base had dwindled down to $2 billion – down from $17 billion.[35] The major ratings agencies cut Bear Stearns' credit rating from AAA to BBB on Friday, March 14, making it difficult or impossible for the company to finance its operations. In November 2007 Bear Stearns had a notional value of $13.4 trillion standing in derivative contracts such as futures, options, swaps, and other complex agreements. With such a significant position in this complex, but important, market, the company's collapse would have sent reverberations throughout the financial sector, so the Fed stepped in looking for buyers for the company and found JP Morgan[36] on March 16, but only by taking over $30 billion of Bear Stearns' assets.

End Box 1

The crisis which began in the subprime market in the United States quickly became a global financial crisis. Why were other countries so affected? The initial answer is simple enough: Foreign financial institutions, notably those in Europe, had

[33] Jed Horowitz, "In Dealing With Bear Stearns, Wall Street Plays Guardedly." *Wall Street Journal*, March 13, 2007.

[34] "The $2 Bailout," *The Economist*, March 19, 2008.

[35] Robin Sidel, Greg Ip, Michael M. Philips, and Kate Kelly, "The Week that Shook Wall Street: Inside the Demise of Bear Stearns." *Wall Street Journal*, March 18, 2008.

[36] The reason the Fed stepped in through JP Morgan, rather than directly to Bear, was that Bear, unlike JP Morgan, was not a depository institution and thus ineligible to access the Fed's discount window or any other lending. Some speculate that if Bear did have access to the discount window in the weeks prior to March 16, its collapse could have been prevented.

been buying instruments backed by subprime mortgages, so they had been drawn into the U.S. mess. Given that we have a global market, it should not be surprising that a crisis that starts in the largest financial hub in the world would have repercussions globally.

However, the crisis also had implications beyond the loss of value in U.S. subprime securities because it raised the risk premium on a broader swath of assets. For example, Northern Rock had been financing its own mortgage lending by borrowing short term at an interest rate only 30 basis points or so above LIBOR. When the crisis hit, the bank could only borrow at a rate several hundred points above LIBOR, a rate that meant it was paying more for its borrowing than it was getting back on its loans. Lacking adequate liquid reserves, the bank quickly became insolvent. The mortgage portfolio of Northern Rock was not in trouble and default rates were normal, but the bank ran into trouble because it was so dependent on short-term debt with interest rates tied to suddenly crisis-infected market conditions.

The Size of the Mortgage Losses and the Mark to Market Issue[37]

How large are the loan losses that are likely to occur as a result of the mortgage problems? We saw earlier that $260 billion of losses have been taken world-wide, but there are more to come. In April 2008 the IMF issued a global assessment of the financial crisis, including an assessment of risks to global financial stability.[38] The Fund based its estimate primarily on prices for securitized mortgages (from Markit.com) and estimates of cash flow losses for unsecuritized mortgages, assuming a slowdown in the US in 2008. The estimated total loss: $565 billion for losses on prime, subprime, Alt-A mortgages, and unsecuritized and mortgage backed ABS and CDOs combined. Of this amount, $490 billion is in subprime and Alt-A, and of this amount, nearly 74 percent is in highly leveraged institutions.[39] By far the biggest losses are in both AAA and BBB tranches in the most recent vintage, reflecting both relatively poorer performance of mortgages originated most recently as well as investor uncertainty about the underlying pool.

[37] Charles L. Schultze generously provided me with much of the data used in this section.
[38] IMF(2008). See Chapter 1 "Assessing Risks to Global Financial Stability."
[39] Banks, hedge funds and Government Sponsored Enterprises.

David Greenlaw (Morgan Stanley) Jan Hatzius (Goldman Sachs), Anil H. Kashyap (University of Chicago) and Hyun Song Shin (Princeton) made an alternative estimate in February 2008 that the write downs of securities from the mortgage crisis will total about $460 billion.[40] They used several approaches to converge on this number, although Hatzius has recently said he now believes that they underestimated the losses, which he now thinks may be as high as $600 billion. In either case, Greenlaw et al (2008) emphasize that because subprime losses are concentrated among highly leveraged financial institutions, direct losses may be magnified to a higher order in the form of reduction in credit, as these institutions have to de-leverage their balance sheets and reduce liabilities; the paper estimates that $400 billion in direct subprime losses could lead to about $1 trillion in losses to the entire economy.

The IMF and the Greenlaw et al team were looking at financial institutions and the write-downs they are being forced to take on their securities under mark-to-market accounting and they included losses to both US and foreign institutions. According to data reported by Markit.com, recently originated AAA tranches of mortgage backed CDOs were trading at about 50 to 60 cents on the dollar, while BBB- tranches are around 10 cents on the dollar in April 2008.

We do not know what the correct prices for these assets are, but we suspect that the climate of uncertainty has resulted in a downward overshooting of asset prices. The risk premium on mortgage related securities was much too low a couple of years ago, but it is may be too high now. If this is the case then financial institutions are being pushed into insolvency or close to it by accounting rules that force them to declare paper losses. If they can survive the crisis and hold on to these assets, their value may gradually rise as the default rates turn out to be lower than current expectations indicate. One sign that this could be the case is that by early May 2008 Markit.com was reporting higher prices for the highly rated tranches of the securities and falling prices for the lower rated tranches. Since the majority of the securities are highly rated, the average price has moved up, indicating a drop in the market's estimate of defaults. The spreads on credit

[40] Greenlaw, Hatzius, Kashyap, and Shin (2008).

default swaps have gone down, also an indication that the market saw a declining risk premium.[41]

Later in this report we consider the difficult policy questions surrounding the use of mark to market accounting and whether the rules on this should be suspended during a financial crisis or indefinitely. There are great advantages to mark-to-market rules that should not be given up easily, but such rules are based on the assumption that the market always provides a realistic estimate of underlying economic value and this is probably not the case during periods of financial crisis.

Assessing Risk Management Practices after the Fall

There have been two important assessments made of the failures (and successes) of risk management practices at financial institutions in the wake of the crisis. On March 6, 2008 the Senior Supervisors Group of the Financial Stability Forum issued a report "Observations on Risk Management Practices During the Recent Market Turbulence." This report was based on a survey of eleven of the largest banking and securities firms (plus there was a roundtable meeting that included five additional firms). The report identifies risk management practices that helped some of these institutions avoid the worst of the losses and the practices that led to failures.

On April 18, the Swiss bank UBS issued a "Shareholder Report on UBS's Write-Downs" at the request of Swiss banking authorities. It is a lengthy and extraordinary mea culpa detailing the problems that resulted in the very large losses that UBS experienced in the mortgage security market.

Readers are referred to the reports themselves for the detailed analysis of best and worst practices, but a couple of points emerge that are important for this study. The biggest problems occurred where top managers failed to monitor and control the parts of their companies that were trading in CDOs and related securities. Financial institutions had in place risk management rules, but they were not followed, largely because so much money was being generated during the boom times. Without exercising adequate supervision, senior managers believed that the risky assets were simply being sold in the

[41] We stress again, however, that this is only instinct, shared by some others but not all. Financial market participants are wary of the "dead cat bounce"—if it falls far enough, even a dead cat will bounce. It is possible that the recent improvement in securities prices will prove only temporary.

marketplace and not held on the balance sheets of the banks. In fact, large amounts were being held, partly because there was a lag between the issuance of the securities and their sale, and partly because holding the securities was (for a time) so profitable.

As we have noted earlier, a major problem was that the credit ratings provided by the agencies were accepted without adequate knowledge of the risks of the underlying mortgage portfolios. And there was not adequate stress testing of the portfolios against a correlated shock (a broad market decline), nor did the institutions take a complete view of their risks. Different parts of the businesses were considered separately, rather than as part of larger company-wide portfolios.

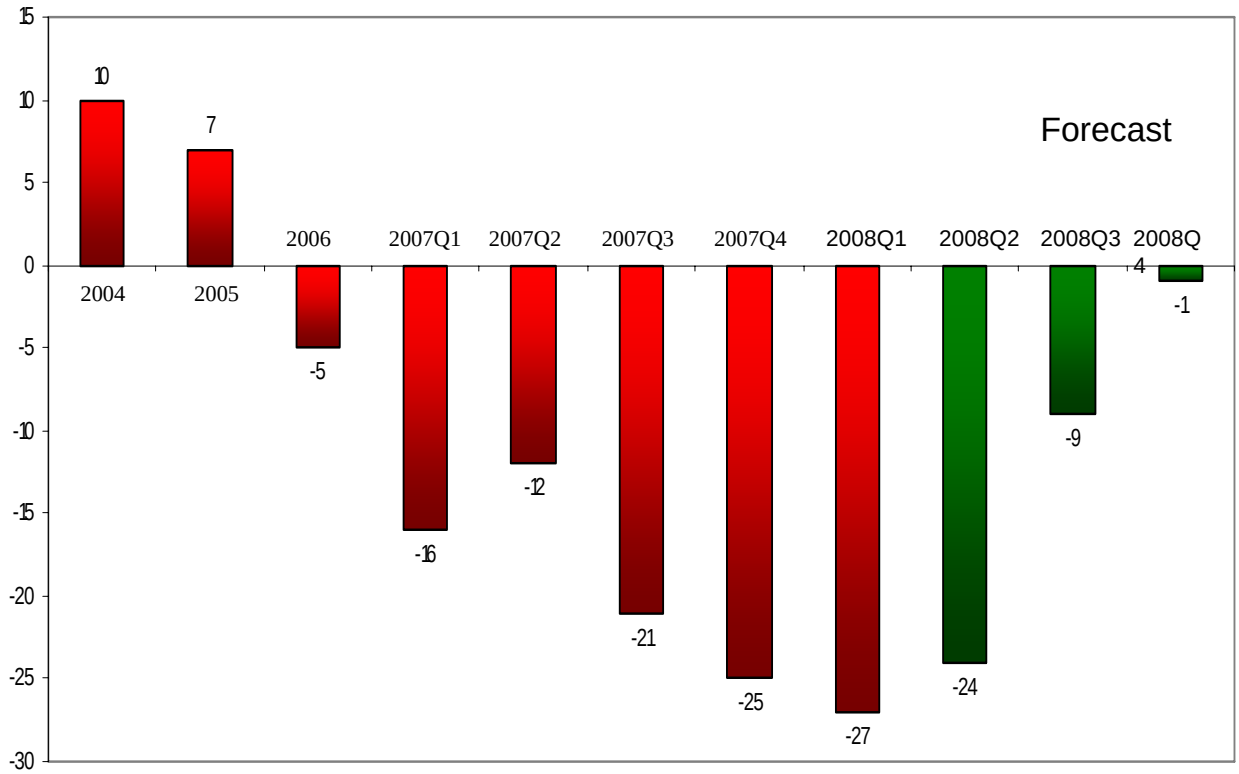
Faced with low interest rates and competitive pressures to generate high returns for investors and high profits for shareholders, several of the financial institutions failed to apply the risk management practices that they already had in place. They have learned a lesson and doubtless will behave differently in the future, at least for a while. This is a discouraging story, however, because the Sarbanes-Oxley Act of 2002 was intended to beef up risk management practices and make senior managers take full responsibility for avoiding this kind of crisis.

The Impact on the Real Economy

The most immediate large impact of the crisis on jobs and economic growth so far has been the direct effect of the sharp decline in residential construction. And while most forecasters say that the sector should bottom out soon, each new quarter's data shows the decline continuing. Figure 15 shows the pattern of residential investment over recent quarters, with the forecast of Macroeconomic Advisers for the next few quarters. The decline in residential housing alone subtracted one percent from overall GDP growth in 2007, an impact that is unlikely to diminish in the first half of 2008. Even though they are among the more optimistic of overall forecasters, Macroeconomic Advisers see no let up in the free fall of residential construction until the second half of the year. Their forecasts and those of others have become progressively more pessimistic as time has passed. We saw in Figure 10 that there is an exploding backlog of unsold new single family homes. Adding in the stock of unsold existing homes, plus empty units in multifamily dwellings creates an even darker picture. The Chief Economist of Freddie

Mac estimated that, in the fourth quarter of 2007, there was an *excess* inventory (above the usual level) of around 900,000 units—roughly a year's worth of construction at the current pace.[42]

Figure 15: Residential Fixed Investment, Annual or Quarterly at annual rate; percent



Source: Bureau of Economic Analysis

Then there are the indirect effects of the crisis and the loss of housing wealth. There are estimates that housing prices will decline about 20 percent, leading to a loss of about $4 trillion in household wealth.[43] Standard estimates of the impact of housing wealth on consumption indicate that such a decline could trigger a drop in the pace of consumption of about $200 billion at an annual rate, equal to about 1.4 percent of GDP. So the depressing effect of housing wealth on consumption adds on to the direct impact of residential construction. We do not know exactly how the home price decline will

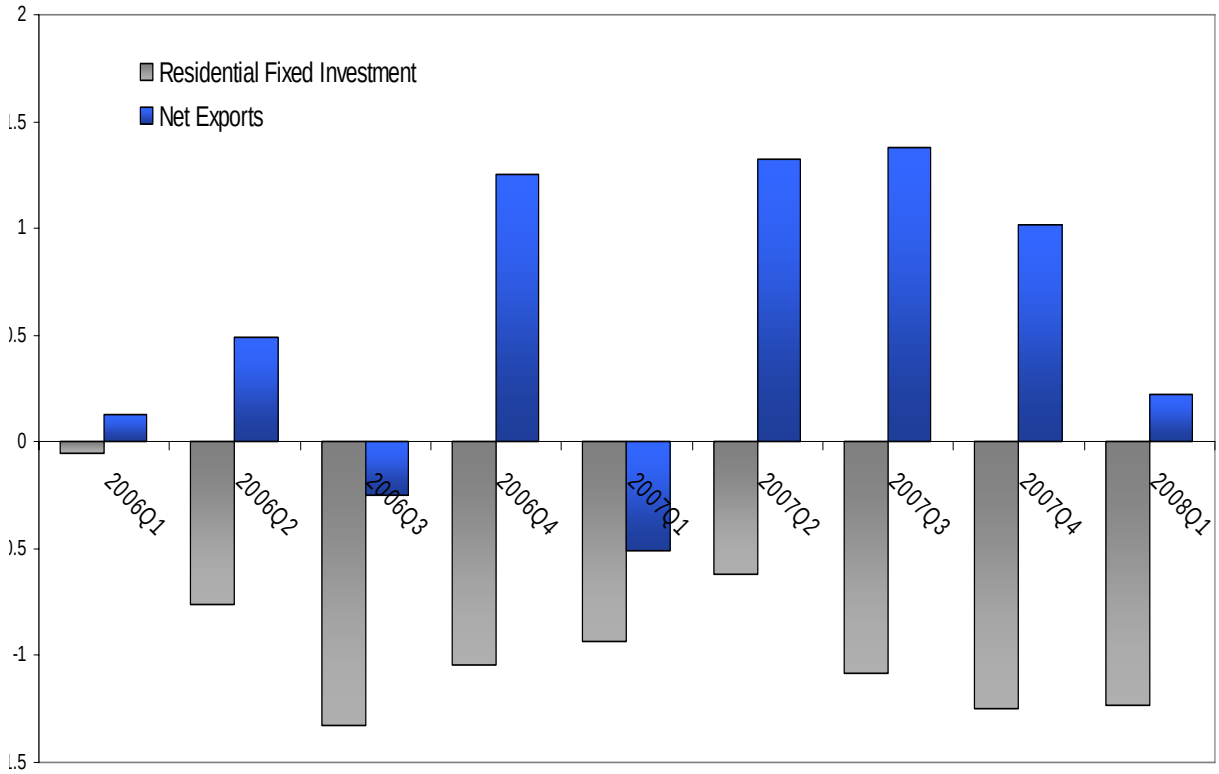
[42] Presentation made to the National Economists Club, March 2008.
[43] The 20 percent figure, peak to trough, is a standard figure, although some estimates suggest a figure of 25 percent. In an interview with a leading mortgage lending institution, we were told that the 20 percent figure looked about right on average, with 30-35 percent in California and Florida and smaller figures elsewhere.

play out and whether households will respond as expected, but there is no question that the direct and indirect effects of the mortgage crisis have sharply reduced economic growth and are not over yet. Since oil prices are soaring well over $100 a barrel—enough to cause a recession by themselves, many would argue—it is not surprising that a recession is widely forecast, or thought to be ongoing.

Finding a silver lining in the current economic mess may seem inappropriate, rather like congratulating someone who has suffered severe economic reverses because they will be paying less tax for a while. Nevertheless there is a silver lining in terms of easing the long standing problem of the U.S. external imbalance. The U.S. has been running a large and growing trade and current account deficit for years (Figure 8 showed recent years) driven by rapidly growing consumption and an overvalued dollar. Economists wondered if this deficit could ever be significantly reduced because even if the dollar dropped, it would be hard to "make room" for any increase in net exports through reductions in consumption and investment. Policies to accomplish the reduction in domestic demand, such as increased taxes, would be deeply unpopular.

The current economic downturn, however, is rapidly creating plenty of room for stronger exports and weaker imports. Consumption growth has slowed to a crawl and of course residential investment is plunging. These reductions in demand are having a direct effect on imports because as we spend less, we spend less on imports. In addition, the decline in the dollar that started in 2002 has now accelerated, pushing the dollar to the point that American exporters are facing very favorable terms relative to European and Canadian companies and better terms relative to the Japanese. The combined effect of weak demand growth in the U.S. and a lower dollar have triggered a growth in net exports that has partly offset the direct impact of the housing decline in terms of the contributions to or subtractions from GDP. Figure 16 shows these offsetting effects over the past several quarters. If the U.S. economy avoids a severe downturn, the strong growth of exports will be an important factor.

Figure 16: Residential Fixed Investment and Net Exports, Contributions to Real GDP Growth, percents



Source: Bureau of Economic Analysis

The Possibility of a Severe Downturn

The consensus forecast for 2008 is that there will be very slow growth or a mild recession in the first half of the year followed by a pick up in the second half, spurred by the fiscal stimulus and helped by the rapid easing of interest rates that the Fed has instituted. This relatively benign outlook is far from assured, however, and the economy could downshift into a more severe recession this year, or end up sliding back into recession after the boost from the fiscal stimulus is passed. Nobel economist Joseph Stiglitz has raised the possibility of a severe depression on the scale of the Great Depression. We find that idea farfetched, but the dangers of a more severe recession – especially if financial markets experience further convulsions or if oil prices continue their rapid climb.

A mixture of forces characterizes market economies, some that restore balance and some that generate instability. The housing market provides examples of both. The decline in house prices has increased housing affordability and will encourage some families to buy a house that would not have at higher prices. The decline in financial asset prices has encouraged the formation of "vulture funds" that step in to buy the assets at price discounts planning to resell them later at a profit. Both of these reactions help to restore balance. Working in the other direction, falling asset prices make people fearful of further price declines and may lead to hurried sales. Similarly, if the economy looks to be headed into recession, many families fear for their jobs and cut back on their spending, contributing to a decline in consumption and adding to the recessionary pressure. The negative forces pushing the economy down may be gathering steam, producing a self-reinforcing recession could develop that is more severe than the recessions of 1990 and 2001. The financial crisis will have been the trigger to recession, together with high oil prices, but the subsequent dynamics of the recession would then follow the path followed during past serious recessions, for example, the sharp downturn of 1982.

Another possibility is that there will be another step down in the financial sector, where there are further bankruptcies of major financial institutions. We described above the range of possible losses associated with the mortgage defaults, but the impact of these declines could be magnified through the high leverage that banks have built up. The reduction in overall liquidity could be much greater, especially if current mark-to-market asset pricing rules continue to eat away the capital cushions of U.S. financial institutions, and lead to a drop in lending to small businesses and consumers that has the effect of curtailing economic activity. In fact Greenlaw et al. (2008) suggest even without a further bank failure the losses will be enough to trigger a significant curtailment of lending.

And of course if one of these two scenarios gets started it is likely to trigger a combination of both. For example, credit constraints limit spending, the economy goes into recession, which further discourages spending and increases credit defaults, undermining the financial sector even more. The real question is how far this interaction would go.

Regardless of how deep the recession is, it is generally agreed that we are currently in the worst *financial* crisis since the Great Depression. Fortunately, the economy outside of finance is intrinsically much more stable than it was in earlier times and policy making is much better informed and has more tools to work with, so there is little likelihood of a depression. But it is unfortunate that we have put ourselves in the current mess. This is clearly a situation we should make every effort to avoid in the future.

Lessons from the Analysis of the Origins of the Crisis

- Some factors that contributed to the crisis are ones that are not amenable to change, except at unacceptable cost. For example, a much more aggressive tightening of monetary policy earlier in the cycle might have constrained the housing boom, but at the price of substantially slower growth. There should be better ways to avoid crisis.
- Similarly, the housing boom would surely not have continued as it did if funds had not been available on a large scale from foreign lenders. But closing off the US borders to foreign capital is not acceptable. The price would be too high and, given the integration of US companies with the rest of the world, it would be infeasible.
- The erosion of mortgage lending standards stands out as something that could and should have been stopped. The challenge going forward is either to create an incentive structure within the "originate to distribute" model that leads to the outcome we want. Or to provide a better and more integrated force of regulators to make sure that there is not too much bad behavior. Or to use a combination of the two.
- The second factor that stands out as ready for change is that securitization of mortgage assets went beyond the point of value and created assets that were not transparent to the point of absurdity. We know from economic theory that markets with information asymmetries are trouble and the compounding layers of securitization seem designed to exacerbate this problem. We do not know what was in the minds of those creating these assets. At the least they did not realize how severe the problems were that they were creating. At worst they designed

their financial products deliberately to be obscure as a way of making profits. At the least the credit agencies mistakenly failed to stop this process. At worst they abetted the actions for a share of the rewards.

- Financial institutions did not follow their own best practices for risk management. In the short run, they will surely make internal changes, but experience suggests that some years from now there will be another problem. Is this problem amenable to policy change or not? Sarbanes-Oxley is already creating competitiveness problems for US financial markets and did not work to forestall this crisis. One important issue in this area is determining whether banks were over leveraged and had inadequate capital. Apparently, Basel II rules did not work either.
- The general public was not given adequate warning of the emerging dangers in the mortgage market. We cannot expect policymakers to second guess markets or to know when assets are overvalued. But we can expect policymakers to warn of the growing riskiness of certain assets that might generate large rewards but that could also lead to large losses. Households should have been warned that continuing large increases in house prices were not a sure thing.

Section 2: Short-Term Policies to Resolve the Credit Squeeze

The U.S. economy now faces four serious and interrelated problems. First, as we described in Section 1, the economy is very likely in recession or faces a significant likelihood of recession. Second, housing is overbuilt and overpriced. As we saw in Figure 10, construction has fallen more than half from its peak and shows no signs of bottoming out, and the inventory of unsold new single-family houses has risen dramatically relative to current sales rates. Moreover, both house-price futures and analysts' estimates of sustainable house-price levels point to further sizable declines in house prices.

Third, the financial system is reeling, and lending to households and businesses is impeded. Uncertainty about the value of mortgage-backed securities, and especially about the value of complex derivatives of those securities, has induced a general reassessment of financial risk, going well beyond the subprime mortgage market and beyond the residential mortgage market altogether. The resulting uncertainty about the solvency and liquidity of many financial intermediaries has led these institutions to try to reduce the risk and augment the liquidity of their balance sheets. Those steps in turn have pushed down the price of risky or illiquid assets and pushed up the rates charged for borrowing by households and businesses, as just noted.

Fourth, absent further policy action, several million families will likely default on their mortgages in the next few years and lose their homes to foreclosure. In some cases, this will occur because resetting mortgage rates push monthly payments out of people's reach. However, declines in short-term interest rates since last year have reduced the magnitude of this problem. In more cases, foreclosures will occur because falling prices push house values below mortgage amounts, and people struggling to make their mortgage payments will be unable to refinance their homes under those conditions and will ultimately stop paying. Economist Mark Zandi of Moody's has projected that 14 million families may end up with negative equity in the next two years and that 2 million of them will lose their homes.[44] Foreclosures are clearly costly to homeowners in both personal and financial terms, and foreclosures are costly to lenders, who may

[44] Zandi (2008).

recover no more than half of the mortgage principal. Foreclosures are also costly to neighborhoods, communities, and cities, especially when the foreclosures are concentrated in geographic areas as they often are.

These four problems have generated a large number of significant policy *proposals* and a smaller number of policy *actions*. Congress and President Bush agreed on a tax rebate that will be distributed in coming months to roughly 130 million families. The Federal Reserve has slashed the Federal funds rate by 3¼ percentage points since September. In addition, the Fed has vigorously filled its role as "lender of last resort" by providing large amounts of additional liquidity to financial institutions through a series of creative new lending arrangements and by organizing the sale of Bear Stearns to JPMorgan. Moreover, the Administration, Congress, and state and local governments have implemented and discussed a variety of targeted policy changes involving Fannie Mae and Freddie Mac, the Federal Home Loan Banks, the Federal Housing Administration, bond insurers, and more.

The various policy moves have garnered criticism from all directions: from those who prefer less government intrusion in the economy, from those looking for more aggressive government action, and from those who agree with the overall level of government involvement but think the specific actions could have been chosen better.

In our view, policy actions to date have struck the balance about right between intervention and leaving it to the market—attempting to forestall the worst spillover effects and cushion the greatest harms while not trying to put a safety net under all financial investments or risks. Specifically, the fiscal policy changes and actions of the Federal Reserve in response to the crisis have all been broadly appropriate in our view. On the fiscal side, despite strong partisan differences on a wide range of other issues, the President and the Congress were able to agree in February on a $152 billion fiscal stimulus package. The package focuses on tax rebates to individuals and households earning below $75,000 and $150,000, respectively. There are also tax breaks for businesses. Many economists—including the authors of this study—initially opposed the use of discretionary fiscal stimulus. These economists generally argued that the history of previous fiscal stimulus measures suggested that the action would ultimately be poorly timed, poorly constructed, or would be more damaging to the Federal budget than helpful

to the economy. However, the stimulus package that was adopted largely met the criteria enunciated by many economists of being timely, targeted, and temporary.[45]

On the monetary side, the Federal Reserve has acted quickly and aggressively to cushion the downturn. At this writing, the Federal Reserve has lowered its target interest rate—the rate banks charge each other for overnight funds—by 325 basis points in just eight months. The latest indications are that further cuts will be limited, although of course dependent on the flow of incoming data. The Fed has also injected liquidity into the financial system, allowing banks to borrow to avoid being caught short of funds. Other central banks, notably the European Central Bank, have also provided additional liquidity to their money markets.

The Fed has so far placed greater priority on fighting the downturn than containing the inflationary shocks of higher oil prices and a falling dollar. According to the latest data, for example, the price index for personal consumption expenditures—the Fed's preferred price measure—increased 3.3 percent during the past year. The core PCE price index, which strips out the rapidly rising prices for food and energy, increased 2.1 percent over the same period, slightly above the top of the Fed's apparent comfort range, which is 2 percent.[46] Indeed, core inflation has exceeded the Fed's comfort zone for most of the past four years, and overall inflation has exceeded it by a wider margin. Further monetary easing will be constrained by inflation worries.

Even with the policy actions that have been taken, there is a large degree of uncertainty over what will happen next in the housing market, financial markets, and the economy more broadly. Optimists point to the large amount of losses declared by U.S. financial institutions and the significant amount of new capital raised as signs that the intermediation process is on the mend. Indeed, many (but not all) indicators of market stress have improved over the past month. In addition, news about the broad economy suggest declining activity but at a modest rate. The current consensus of economic forecasters is for a "mild" recession similar to the ones experienced in 1991 and 2001.

But pessimists note that the housing sector remains in free fall, that the depressing effect of falling wealth on consumption is mostly still to come, and that other countries

[45] For discussion of these criteria, see Elmendorf and Furman (2008).
[46] Bernanke (2005).

that have experienced large housing corrections generally experience slow growth for some time. Moreover, lending will be constrained for some time because of the state of financial institutions' balance sheets, and one month without any terrible new financial tremors does not constitute sustained recovery. This view points to a sustained and perhaps deep downturn.

To their credit, policy makers in charge of both fiscal and monetary policies have moved aggressively and with alacrity to try to prevent a severe downturn. However, it may become necessary to do more. If the economy remains weak going into the winter, it is very likely that an additional stimulus package will be developed in Congress. We would expect the Fed to step in if another major financial institution collapses in the manner of Bear Stearns. Moreover, inflation concerns could limit significant further rate reductions if the economy is only moderately weak, but there could indeed be further cuts if unemployment were rising very rapidly. Some people have argued that monetary and fiscal policy have no more ammunition to shoot at a deeper recession, but we disagree. Policymakers can respond and would respond to a further sharp downturn.

This section of the paper focuses on policies aimed at addressing the immediate problems generated by the turmoil in financial markets. We turn first to the short-term issues facing banks. After that we tackle policies to respond to Fannie Mae and Freddie Mac, and finish the section with policies focusing on the mortgage foreclosure problem.

Problems Facing Commercial and Investment Banks

As we discussed earlier, the subprime mortgage mess has been a rude awakening for those who thought that the mortgage securitization process would somehow insulate portfolio lenders, especially commercial banks but also the investment banks that developed and sold the securities, from future mortgage problems.

The write-downs and defaults of structured securities have now cut into the banks' capital bases, in some cases by sizeable margins. Certain investment banks that had not created SIVs, meanwhile, also suffered major losses from the CDOs they held on their books. Bear Stearns found itself in a liquidity crisis, which led to its quick sale in mid-March. Pressured both by markets and by regulators, financial institutions that once

thought they had comfortable capital cushions aggressively sought new capital from the markets and, in certain cases, from sovereign wealth funds and private equity firms.

The financial sector is not out of the woods. The banking system as a whole has capital well above the regulatory minimum: In the fourth quarter of 2007, the capital-to-asset ratio at FDIC-insured banks stood at 10.37 (having declined from 10.44 in the previous quarter), the leverage ratio was 7.98 (down from 8.14), and the total risk-based capital ratio was 12.79 (up from 12.74) compared with the 6 percent threshold commonly viewed as "well capitalized."[47] Still, knowledgeable market experts have projected that a number of large institutions may still have substantial losses to be recognized in the near-future, not only from CDOs backed by residential real estate loans, but also from securities backed by commercial and personal loans (and perhaps from individual loans as well). Fed Chairman Bernanke and others have also warned that a number of small to mid-size banks with significant concentrations of real estate loans on their balance sheets also could fail or, like their larger brethren, be forced to raise additional capital.

The Federal Reserve as Lender of Last Resort

In addition to the aggressive reductions in the federal funds rate, the Federal Reserve has also acted vigorously as the lender of last resort. This lending has been viewed by the Fed as a necessary response to financial fragility and the real risk of a financial meltdown, and we generally agree with their response.

The Federal Reserve's activities as lender of last resort have taken several forms, in increasing aggressiveness as time went along and conditions in credit markets appeared to worsen.

Broad-Based Lending

The Fed expanded discount-window-type lending in several steps. Some of the following actions were taken just by the Fed, and some were taken in a coordinated way with other central banks.

First, the Fed has simply encouraged institutions with access to the discount window and with standard collateral to take greater advantage of the borrowing

[47] Federal Deposit Insurance Corporation (2008).

opportunity. To do this, the Fed has narrowed the spread between the discount rate and the target Federal funds rate, . Also, it initiated anonymous auctions designed to alleviate the apparent stigma often associated with discount window borrowing—known as the Term Auction Facility, or TAF, and beginning on December 17, 2007.

Second, the Fed has expanded the nature of the collateral accepted for a loan. For example, in August 2007, the Fed began accepting agency mortgage-backed securities rather than the usual Treasury securities in repurchase operations. On May 2, 2008, the Fed announced that it would accept a broader array of asset-backed securities, including securities backed by education loans.

Third, the Fed has traded Treasury securities directly for asset-backed securities through the Term Securities Lending Facility (or TSLF), which the Fed first announced on March 11.[48] The sharp widening in spreads of agency mortgage-backed securities relative to Treasuries before that date appeared to be both unfounded and damaging to the economy. It appeared unfounded because, even if Fannie Mae and Freddie Mac were really in such deep trouble themselves, the government would very likely view them as "too big to fail" and would therefore step in if the companies were unable to honor their commitments. It was damaging to the economy because it hampered the supply of credit to the housing sector at a time when that sector is already reeling from an abrupt withdrawal of credit, and because agency MBS are a critical part of the short-term funding "grease" that keeps the rest of the financial system humming.

Fourth, the Fed expanded the set of institutions that can borrow from it. On March 16, the Fed established the Primary Dealer Credit Facility, which granted access to borrowing facilities to the primary dealers. This represented the first time the Fed has been willing to loan directly to securities firms since the Depression.

These actions surely increase the risk faced by the Federal government. The risk can be limited by requiring a significant "haircut" on the value of the collateral. We are not in a position to judge the adequacy of the haircut required by the Fed. However, accepting agency MBS as collateral probably does not really increase the risk faced by

[48] The situation can be described as follows. Traditionally, the Fed trades money for Treasury bonds. Then the Fed tried to stabilize the market for agency MBS by trading money for agency MBS (with offsetting trades of money for Treasuries to sterilize the intervention and leave the funds rate unaffected). Lastly, the Fed offered to trade agency MBS directly for Treasuries.

the Federal government at all: If the Federal government would ultimately prevent a default by Fannie and Freddie anyway, absorbing some of that commitment in advance does not add to the overall risk. More generally, a capable lender of last resort is likely to make money on its lending, because it steps in only when financial markets are sufficiently self-destructing that the feared assets are highly likely to increase in value when panic subsides. We may have reached that point regarding mortgage-backed securities (and perhaps other asset-backed securities) in the U.S. economy.

Was the Fed Correct to Rescue Bear Stearns?

In mid-March, creditors began a run on the nation's fifth largest investment bank, Bear Stearns. This prompted the Federal Reserve to provide $30 billion in credit to J.P. Morgan Chase to back its loan to Bear to keep it from having to file for bankruptcy protection and potentially roiling credit markets more broadly. The Fed's loan also gave J.P. Morgan just enough time to make an offer for Bear the following weekend, which the bank sweetened in a revised offer several days later.[49]

The Fed's action was the first time that it had come to the aid of a major investment bank, albeit indirectly, and stood in stark contrast to the hands-off attitude of government officials in 1990, when Drexel Burnham Lambert, then one of the largest Wall Street investment firms, was allowed to fail. The chief reason for this difference in reaction was that Bear was simply much more interconnected with the rest of the financial system than was Drexel almost two decades ago From press reports, the Fed appears to have had ample reason for believing that had Bear Stearns been forced into bankruptcy, its counterparties could have dumped the collateral for their repos on an already depressed market. But probably more important to the Fed's thinking was a worry that Bear's bankruptcy would trigger a run by creditors of *other* investment banks, which also depended heavily on short-term financing.[50]

[49] At a Senate hearing in April it was revealed that the Fed also had extended another $25 billion in credit directly to Bear Stearns, as part of the Fed's new temporary facility for loans to primary dealers of government securities.

[50] As one entry on *The Wall Street Journal's* blog of March 17 noted, consider the enormous change in the size of the securities repurchase or "repo" market which permits dealers to make markets in a wide variety of securities (a repurchase agreement is like a bank deposit in the sense that an institution seeking funds sells its securities to a buyer, obtaining the funds it needs to support its assets, with an agreement to repurchase the securities at a later date). In 1990, when Drexel Burnham failed, the $372 billion in

In our view, rescues (like Bear Stearns) are appropriate as long as shareholders end up with very little. Still, even if Bear shareholders ended up with very little, the counterparties to Bear's debt obligations were protected from the massive uncertainty and potential losses from a collapse of Bear. This moral hazard seems to us to be a price that was worth paying in this situation, given the potential damaging consequences of doing nothing However, we recommend later in this report that in the future the Fed should have the equivalent of "bridge bank" authority to handle possibly similar situations, while investment banks should be subject to somewhat tighter regulation.

What Next for Financial Markets and Institutions?

How do we know if the Federal Reserve needs to do more? Despite the Fed's aggressive liquidity provision to date, it has considerable resources remaining to continue serving as lender of last resort to key institutions under its current (or similar) programs. Yet, two different situations might call for qualitatively different further action.

One is further defaults and institutional collapses among either investment banks or commercial banks. The Fed's rescue of Bear Stearns indicates that it also surely would mount a similar effort if one of the other (now) four largest investment banks were to have a similar liquidity problem. A somewhat harder question is whether the Fed should or would do the same for a somewhat smaller investment house. Understandably and rightfully, the answer to that question should be ambiguous.

The Bear Stearns rescue also signals what the Federal Reserve and very likely other Federal authorities would do in the event one or more large commercial banks were to encounter similar difficulties: protect all depositors (though not shareholders), and not just those with account balances under the federal insurance ceiling of $100,000 per account, in order to prevent a wider deposit run on other large banks (with large uninsured deposit balances). In fact, there is clear legal authority under the Federal Deposit Insurance Corporation Improvement Act of 1991 for regulators to take such

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securities rep credit was equivalent to 13 percent of the $2.8 trillion in federally insured bank deposits. By 2007, securities repo had risen to $2.6 trillion, or 60 percent of the value of the federally insured bank deposit market of $4.3 trillion. Moreover, as the same *Journal* blog entry noted, two thirds of repo loan must be rolled over each day, making them the functional equivalent of bank deposits. The Fed understandably feared a "run" on the repo market had it not intervened to provide liquidity to Bear Stearns, much as it fears a run on "bank deposits" in the event of a failure of a large commercial bank.

action if two thirds of the Fed's board members, two-thirds of the FDIC's board, and the Secretary of the Treasury, in consultation with the President, agree to do so.[51]

But how large does a bank have to be in order to qualify for the systemic risk exception? While the answer to that question should remain ambiguous, the Fed's lending to Bear Stearns implies that any of the one of the top five or so commercial banks (and perhaps more) would qualify. It should be noted, however, that even if authorities did invoke the systemic risk "exception," shareholders of the relevant bank would be wiped out and senior management most likely would lose their jobs. Further, under FDICIA, taxpayers would be unlikely to pick up the tab for any losses, since the FDIC then is directed to recover its costs by assessing the banking industry as a whole.

The main challenge now for the regulatory authorities is to keep any "systemic risk" event from even happening. In theory, FDICIA gives them the tools – indeed a mandate -- to do so. Under the "prompt corrective action" (PCA) provisions of the Act, regulators must enforce capital standards – which specify how much shareholder capital and reinvested earnings a bank must have in relation to its assets – by compelling banks whose capital positions fall below the standards either to raise more capital (which a number have been doing), sell assets (so that the capital-to-asset ratio rises), or face various restrictions on their activities (more intensive oversight and reduction or suspension of dividends). Perhaps most important, FDICIA authorizes regulators actually to take over a bank as it nears insolvency but is not yet technically insolvent (when its ratio of capital to assets falls to a low level).[52] The principle behind this system of prompt corrective action is sound: as long as banks have a financial cushion of shareholders' money, depositors and taxpayers (who ultimately stand behind the Federal deposit insurance system in the highly unlikely event that the banking system as a whole cannot absorb bank failure losses) are fully protected. This is true even for banks that are nearly insolvent, since a timely regulatory takeover should be able to catch a bank before it fails and costs the deposit insurance fund (and ultimately the banks that back it) any money.

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[51] In that event, the General Accountability Office must perform an audit to verify that the systemic risk exception was justified.

[52] In that event, shareholders are compensated for the amount of any capital remaining, if the bank later proves to be solvent.

The other scenario requiring more vigorous Federal Reserve (or broader government) action is the drying up of lending to households and businesses. This might occur gradually even in the absence of any catastrophic event attracting a lot of attention. One might view this possibility as a "Japan scenario," where the financial sector is so crippled that lending is hampered for a long period. In this scenario, the government might need to turn to outright purchase of asset-backed securities rather than simply loans. And, in more extreme circumstances, the government might make equity investments in financial institutions. The most likely place to make these investments is in Fannie Mae and Freddie Mac, as we discuss shortly.

To avoid this outcome, regulators should continue to push financial institutions to recapitalize. Financial institutions should reduce dividends and search aggressively for new investors. Neither of these more extreme scenarios seems likely to us now, but both are possible.

Policies for Fannie Mae and Freddie Mac

The two financial institutions that are most critical to our housing market are Fannie Mae and Freddie Mac. These government-sponsored enterprises (GSEs) have recorded billions of dollars in mortgage-related losses, and their stock prices have declined more than half over the past year. Given their thin layers of capital available to absorb future mortgage losses—about 4 percent of total assets—now is the time for policy makers to consider contingency plans for their futures.

Background

Fannie and Freddie have been anomalies in our economy from their creation—"odd ducks" in the recent words of Freddie president Richard Syron—because they are supposed to serve both their shareholders and the government.[53] Although both entities are privately-held public corporations, they each have a federal mandate to make mortgages more affordable to low and middle income homeowners. The GSEs have done this by buying and holding in their portfolios mortgages under a steadily rising

[53] James R. Hagerty, "For Fannie, Freddies, It's Policy vs. Profit," *The Wall Street Journal*, April 3, 2008. p. A4.

ceiling, and by guaranteeing the timely payment of interest and principal of mortgage-backed securities collateralized by these "conforming" mortgages.

The current crisis has revealed that federal policy makers also want to exercise control of the GSEs for another reason: to help cushion the housing market in times of distress. The fiscal stimulus package that Congress enacted in February, for example, also temporarily increased the conforming mortgage limit from its previous level of $417,000 to as high as $729,750 in some high-price markets. The express purpose of this provision was to help stabilize housing prices by enabling homeowners in areas of the country where home prices are especially high (primarily in coastal states) either to buy or refinance their homes with mortgages that Fannie or Freddie previously could not securitize or purchase (because the mortgages exceeded the conforming ceiling).

Over time the GSEs have become an instrumental part of our housing landscape. Together, the two GSEs own or guarantee roughly half of all outstanding mortgages. According to one recent report, Fannie and Freddie are likely to buy or guarantee 80 percent of all new home loans made in 2008, up from 55 percent last year.[54] But with their rapid growth and size, the GSEs have also become so indispensable to the housing market and to the wider economy – because housing-related activity itself is so important to the economy – that the federal government cannot afford to allow them to default on the bonds they have sold to investors. Were that to occur, the entire housing market would be severely damaged, since mortgage originators no longer would be able to sell most (conforming) mortgages, either to the GSEs or to the investing public through the GESs' guaranteed mortgage-backed securities. In addition, the insolvency of either or both of the GSEs would cause the thousands of financial institutions that currently hold GSE debt (issued directly or guaranteed) to suffer potentially substantial losses, further weakening the financial system at an already precarious time. Investors, of course, know all this, which explains why Fannie and Freddie historically have been able to sell their securities into the market at interest rates only slightly above Treasury rates.

The fact that the federal government is widely believed to stand behind the GSEs' liabilities means that neither Fannie nor Freddie is likely to experience a "run" like the one that brought down Bear Stearns, *even if it becomes apparent that they have*

[54] Ibid

insufficient capital to cover all of their liabilities. To offset the moral hazard this knowledge otherwise would create for the managers of the GSEs to take imprudent risks, Congress has required the GSEs to meet capital standards set by and enforced by the GSEs' regulator, the Office of Federal Housing Enterprise Oversight (OFHEO). Yet even OFHEO joined in the effort to use the GSEs to help brake the decline in housing prices. In mid-March, the regulator permitted each GSE to use a portion of its "surplus" capital to purchase more mortgages.

The problem that policy makers must face up to – preferably sooner than later – is what do about the GSEs if housing prices continues to decline, as is widely expected, and thus cause even more mortgages in the GSEs' portfolio or backing its collateralized pools to become delinquent. In that event, in order to conform to current mark-to-market accounting requirements, both Fannie and Freddie will be compelled to recognize substantial additional losses. One respected private analyst has forecast that both Fannie and Freddie would become insolvent if housing prices, on average, fall another 15 percent from year-end 2007 level.[55] Indeed, in early May, Fannie reported that if all its assets and liabilities were measured at "fair value" (a concept, admittedly, whose validity is subject to question when markets are highly illiquid), its common equity actually would be negative. But even if the GSEs suffer losses well short of insolvency, the capital of both GSEs is likely to fall below current requirements, presenting regulators and policy makers with yet another major challenge.[56]

At a minimum, this scenario would cause the share prices of both Fannie and Freddie to fall much further. The two institutions may respond to this situation either by raising their fees or by increasing the size of their portfolios of profitable prime mortgages. Either way, policymakers might object because the increased fees would be passed on to households taking out mortgages and the increased portfolio size would increase the interest rate risk the institutions are taking. The increased portfolios, it is likely to be argued, would expose the federal government and thus taxpayers – as the

[55] Temple (2008).
[56] In particular, questions surround the sufficiency of Fannie's asset write-downs, the real value of its deferred tax losses, and whether it has properly stated the size of its liabilities. See Jonathan R. Laing, "The Next Government Bailout?" *Barron's*, March 10, 2008.

implicit guarantor of the GSEs' liabilities – to greater risks and potential losses.[57] In fact, in its most recent annual report to Congress, the GSEs' regulator, OFHEO, noted that Fannie Mae in particular already was taking a "somewhat aggressive" approach to interest-rate risk.[58] If the risk-taking proves profitable, the GSEs' shareholders (and executives whose pay may be tied to stock performance) will reap the rewards, while if the strategy fails, government and taxpayers will pay the costs.

As important as possible future interest rate risk may be, the real problem for the GSEs to date has been default risk. Given the past history of interest rate gyrations in the 1970s and 80s it has been possible for the GSEs (and other financial institutions) to stress-test their portfolios for interest rate risk, and they have done this regularly. As needed, they buy derivatives to hedge against excessive exposure to interest rate risk. The financial difficulties being faced by the GSEs today are the result of defaults, and the GSEs carry the default risk not only from the portfolio of mortgages that they hold on their own books, but also on those that have been securitized as mortgage backed securities. (MBS are guaranteed against default stemming from excessive defaults in the underlying mortgages). Limits on the size of the mortgage portfolio held on the books of the GSEs have done nothing in practice to deal with the most important source of risk currently facing the institutions and ultimately taxpayers. Moreover, a substantial part of subprime losses have come from loans that Congress has forced them to take on under affordable housing goals.

In normal times, the GSEs were able to make large profits because of the borrowing advantage they have from the implicit government guarantee. The two-part policy response has been to limit this profit opportunity by restrictions on the loan portfolio and to force the institutions to burn up some of their profits by subsidizing affordable housing loans. GSE managers, like so many others in this crisis, have been at

[57] The story of the savings and loan debacle of the 1980s is largely one about institutions that were insolvent or nearly so that gambled heavily, all the while knowing that the Federal government backed their deposits. More recently, even executives of firms without explicit Federal guarantees, have levered their balance sheets in an effort to drive up apparent returns on equity, seeking the greater compensation that was tied to financial performance measured this way. One recent example of this behavior, involving Merrill Lynch, is chronicled by John Cassidy, "Subprime Suspect: The Man Merrill Lynch Loved to Hate," *The New Yorker*, March 31, 2008.

[58] Cited in Michael R. Crittenden, "Some Progress Cited at Fannie and Freddie," *The Wall Street Journal*, April 16, 2008, p. A2.

fault in underestimating potential default risk and underestimating the potential for house price declines. They knew that the subprime loans they were issuing were likely to prove unprofitable, but they did not realize how bad things would get.

Policymaking for Fannie and Freddie is complicated by the ambivalence many policymakers feel toward them. There is considerable hostility stemming from the fact that the GSEs have reported huge profits in the past, paid their senior executives large amounts, and spread political contributions around liberally, only to reveal accounting errors that required billion dollar restatements of income. Many policymakers feel that the executives profited personally from the companies' ability to borrow at low rates with an implicit government guarantee. Both the Fed and Treasury also argued that the GSEs were taking on undue interest rate risk by holding such large portfolios of mortgages on their books and regulators have forced the companies to reduce these portfolios. Some policymakers, mostly Democrats, have pushed the GSEs to make more loans to lower income and minority households in order to expand the benefits of homeownership. The argument is that the GSEs should use any excess profits they make from their borrowing advantage to help such families.

While the three authors of this study agree that policy makers should begin now to seriously explore various contingency options for dealing with the GSEs, we currently do not yet fully agree on the optimal course of action or on the reasons for the GSEs' current problems. Accordingly, we find it most useful if we lay out the options, and the merits and drawbacks of each, and let readers form their own opinions.

So far, the regulators have lifted the portfolio caps on Fannie and Freddie and reduced their capital ratio in order to encourage them to buy additional prime mortgages. The Treasury has also encouraged them to issue more equity capital, which they have done. Beyond these measures, perhaps most likely response to the current situation, is that policy makers will sanction some sort of forbearance: either by temporarily suspending mark-to-market accounting, which elsewhere in this essay we discuss as a possibility for otherwise marketable assets held by commercial banks (and other financial institutions) when markets are significantly distorted or interrupted, or by explicitly relaxing the GSEs' capital standards. This approach could "work" – in the sense that it would allow both GSEs sufficient time to earn their way out of any temporary financial

difficulties – if any write-downs really do overstate the extent of losses the GSEs eventually may be forced to absorb. But buying time will not "bring back" mortgages that actually become delinquent. At that point, the holder of the mortgage clearly suffers a loss that must be recognized in the financial statements if those statements are to have any meaning at all.

The other options for policy towards the GSEs, beyond forbearance of some type, are pretty clear:

1. Permit the GSEs to remain as government sponsored private companies and to operate under a set of rules that allows them to be profitable but does not allow them to profiteer at the expense of taxpayers.
2. Fully privatize the GSEs and remove any government guarantee, explicit or implicit.
3. Nationalize the GSEs,

In our view, the first of these options is the only one that is likely in the near future—indeed it is the strategy being followed to this point. However, the other two options are being considered by commentators. Each would remove one of the masters – either government or shareholders – to which the GSEs currently are subject.

The option to formally end the implicit U.S. government guarantee of the GSEs' debt and to fully privatize the two institutions has been well articulated over the years by Peter Wallison at the American Enterprise Institute. The government would no longer appoint any of the board members of the GSEs and would no longer require the two institutions to meet its current "affordable housing" goals by purchasing or guaranteeing a certain amount of mortgages that can be afforded by low-to-moderate income borrowers.[59] Presumably, if the government wanted to continue subsidizing these borrowers, it would do so directly, either through the tax code, through grants, or perhaps lower fees and costs for mortgage insurance provided by the Federal Housing Administration.

[59] In fairness, Wallison has also suggested the nationalization of Fannie Mae and Freddie Mac, the fourth option we outline below, but Wallison believes this to be second-best compared to privatization. Peter Wallison, "Private Profits, Public Risks," *The Wall Street Journal*, March 20, 2008. http://www.aei.org/events/filter.all,eventID.1678/event_detail.asp.].

The transition to fully private status would be difficult right now, however, given the current financial turmoil. Specifically, efforts would be required to avoid a situation in which the fully privatized entities and investors in their securities would dump these instruments on the market and thus further depress prices, thereby causing still additional write-downs by institutions that may still be holding them. In addition, the GSEs face the problem that they carry a legacy cost structure that would make them uncompetitive in straight ahead competition with the private sector. When the airlines were deregulated, the legacy carriers had a salary and cost structure that was much higher than that of new entrants to the industry and most of them have been through bankruptcy and several have disappeared. It would take a wrenching adjustment at the GSEs before they could compete head-to-head and this would have to be factored into any transition.

There is a fundamental problem with the "full" privatization options, even if transition difficulties are overcome. In our view, there is no chance, even with the elimination of Federally appointed directors and an affordable housing requirement, investors will believe that the Federal government will never come to the rescue of the creditors of the newly privatized entities. The reason is that even after being fully privatized, both GSEs would continue to be too large and too essential to the health of the housing market and to their counterparties for policy makers to permit their creditors to suffer loss. As of year-end 2007, Fannie Mae reported total assets of over $882 billion, and had guaranteed almost $2.2 trillion in securities. The corresponding figures for Freddie Mac were $794 billion and $1.7 trillion, respectively. At these sizes, both GSEs are far larger than Bear Stearns, and with their off-balance guarantee exposure counted, both institutions rank among the nation's largest financial institutions.

To be sure, if the GSEs were to become the equivalent of other commercial banks, they would then be subject to the same rules that govern banks, including capital standards and the prompt corrective action regime. Under the existing leverage requirement that now applies to banks, both Fannie and Freddie would be required to raise more capital, or shrink their current balance sheets. While either or both steps would reduce the risk of a future governmental rescue of the institutions' creditors, it would not eliminate that risk. It is conceivable that breaking up both GSEs in multiple "clones" would solve the problem, but in the wake of the Bear Stearns' bailout, it is far

from clear how many pieces of the GSEs would have to be created to completely remove any expectation by the entities' bondholders that they would be rescued from loss.

In short, the problem with full privatization, especially at this point in the financial crisis, is that either no one would believe that the GSEs were really private. Or, if they did believe it, the GSEs might become the financial sector equivalents of Pan-Am.

Full privatization removes (or tries to remove) government as an overseer or potential rescuer of the GSEs. Nationalization goes in the other direction and gets the shareholders out of the mix. The case for nationalization is straightforward: If the GSEs are meant to achieve given social objectives established by Congress – affordable housing and emergency aid to housing markets in times of stress – then why not have GSE functions carried out directly by government? In the past, when secondary markets for mortgages were not as well established, one can understand why the government would want to harness private sector initiative to address this shortcoming. But now that the markets for asset-backed securities are well developed, and indeed that the private sector is now heavily engaged in securities-related innovation unrelated to the GSEs, the case for having federally-sponsored private sector entities continue to perform the same role as aggressively as they once did is much weaker[60]

There are also transition problems associated with nationalization. Current shareholders would have to be compensated and given the uncertain values of some of their assets and liabilities (especially obligations to make good on their guarantees of MBS), and there inevitably would be much controversy over the proper valuation. Either the shareholders would be paid too much (with the government absorbing any mortgage losses not accounted for), or too little, with shareholders later complaining or possibly suing.

All three of the current authors believe that full nationalization immediately is unlikely, but one of the authors (Litan) believes that the right policy option is to follow a path that would lead to nationalization if the GSEs become insolvent. Under Litan's

[60] If the GSEs were nationalized, it would be possible to pay their executives and employees on a scale somewhat above the civil service schedule (a step we would support). Several agencies or governmental entities – including the Federal Reserve Board, the Office of the Comptroller of the Currency, and the recently created Public Company Accounting Oversight Board (where the salaries are the highest) – already do this, and all have records for being able to attract outstanding talent.

proposal, Congress would adopt legislation subjecting the GSEs to the "prompt corrective actions" provisions of FDICIA, although administered by the OFHEO (the GSEs' safety and soundness regulator). In particular, OFHEO would be given the same authority to nationalize a GSE at some point short of insolvency as the bank regulators now have to assume control over a near-insolvent depository institution. By doing this, Congress would delegate the all-important decision of *when* (or if at all) to nationalize either GSE to a regulatory authority, but under conditions the Congress itself would spell out – for example, what capital ratio would trigger such action. To be sure, doing this would not totally de-politicize the nationalization decision, but by making that decision turn on an independent assessment of the financial condition of either GSE, it could substantially take politics out of the matter – again, in the same way, that similar decisions have been vested in banking regulators rather than in Congress itself.

Litan stresses that by subjecting the GSEs to a PCA regime Congress would *not* be deciding on their nationalization. That outcome would rest on how badly the two institutions fare in the future. Perhaps just the fear of such an outcome would induce the institutions' executives to be more prudent (although we recognize that there may be nothing either GSE could do to avoid nationalization if housing prices decline substantially). That is one of the intended objectives of PCA for banks, and we see no reason why it shouldn't be present for the GSEs as well.

The other authors prefer instead a middle ground proposal where, in the short run, should the GSEs need some sort of rescue, the federal government would inject additional equity into the GSEs. Later this equity stake would be sold as the financial health of the entities improves. The OFHEO regulators should ease the rules on affordable lending and allow the GSEs to earn their way back to solvency, generating reasonable but not excessive profits for shareholders and a good return on any government funds invested. Even though interest rate risk has not been the problem in this crisis, it could be a problem in the future and OFHEO must monitor both interest rate and default risks aggressively. The affordable lending goals for homeownership have not worked out to the advantage of the low-income borrowers who now find themselves in homes that are under water and that they cannot afford. The GSEs should continue to seek out lower income and minority families that can realistically buy homes, but should

not go beyond this. They should be required to provide affordable housing loans at zero profit to them, but should not be required to take expected losses. In addition, the GSEs have programs to create affordable rental housing, often working with non-profit groups, and these have been successful and profitable. They should continue.

Once the housing market and the GSEs have stabilized, a long term plan for the GSEs should be developed. It is possible that if the GSEs survive their current turmoil, they could restructure their organizations to compete in the marketplace. The federal government would establish similar rules for these organizations once they became fully private that apply to other large financial institutions. In the event of bankruptcy, the government would step in to avoid financial sector instability. Shareholders would not be protected (as was the case for Bear Stearns shareholders) and bondholders could expect to take haircuts on their holdings. Given the financial market turmoil, however, it is hard to assess now what the specifics would be for the right long-term solution.

Mortgage Foreclosure Policy: Addressing the Current Default Mess

We do not think that enough has yet been done to address the mortgage foreclosure problem, and we support further actions in this area. Congress and the Administration have recognized the importance of policies that tackle the mortgage mess directly, and the measure sponsored by Representative Barney Frank that would enable the FHA to guarantee the reduced mortgages of eligible borrowers and willing lenders has been passed by the House. However, designing effective policy responses to the housing and mortgage problems is not easy: Many analysts and policymakers have struggled during the past six months to develop effective forms of government intervention and have been disappointed by a lack of appealing options. Still, the government can and should do more in our view. We begin with the general case for further government involvement and then turn to specific policy options.

To be sure, these proposals and others focused on the mortgage mess are not silver bullets for our economic problems: They will not prevent a rise in foreclosures, halt the decline in house prices, restore stability in financial markets, nor avert a recession. However, they can reduce the scale of these broader problems, helping to avert an overshooting of housing prices and helping to stabilize the prices of risky financial assets.

Moreover, they can do so with limited repercussions for future mortgage lending and risk-taking, and at fairly low cost to taxpayers.

Rationales for Further Government Involvement in the Mortgage Market

History shows that the best way, by far, to organize economic activity to maximize people's material well-being is through markets and private property. One hallmark of market-based economies like ours is that people generally make their own economic decisions—what to buy and sell, what to save and borrow. This system is sustainable only if people bear the consequences of those decisions. Therefore, some analysts and policymakers have asked the very legitimate question of why the government should become more involved in the mortgage market rather than letting market forces play out by themselves. Several arguments against further government are advanced.

To start, skeptics can note, foreclosures are an unfortunate fact of life in this country. Even in good times, many families end up with mortgages they cannot sustain. For example, Federal Reserve Chairman Bernanke noted in a recent speech that foreclosure starts (the commencement of foreclosure proceedings by the mortgage lender) in 2005 and 2006 were under 1 million per year and that more than half of foreclosure starts typically result in sale of the property—suggesting that about half a million families actually lost their homes to foreclosure in each of those years.[61] With the sharp deterioration in underwriting standards during the past few years, still more families presumably ended up in mortgages that are unsustainably large even with government help. Trying to keep these families in their current homes, so the argument goes, simply would prolong their struggle with high mortgage payments and prevent other families with stronger economic positions from buying and living in those homes.

In addition, skeptics can argue that many families who will lose their homes are not especially deserving of government help. People with negative equity in their houses will be disproportionately those who bought houses without putting much money down or who refinanced and withdrew equity to support other consumption. These people are not actually losing much housing equity and have enjoyed a comparatively nice lifestyle.

[61] Bernanke (2008).

It is unfair, so the argument goes, to help homeowners who are defaulting and facing foreclosure while not helping people who kept renting rather than taking out mortgages beyond their reach or people who are also stretched to meet their mortgage payments but are making the sacrifices to do so. Moreover, helping borrowers and lenders who entered into contracts that are now unworkable will create so-called "moral hazard" by encouraging unduly risky borrowing and lending in the future.

These arguments contain some truth. However, they are not the whole truth. Despite these legitimate concerns, the government has a crucial part to play in resolving the current mortgage mess. Here's why.

First, the government has long had an active role in housing and housing finance. This role stems partly from the view that homeownership encourages responsible citizenship and strengthens people's ties to their neighbors and communities. It also stems partly from the view that financial markets do not always conform to economists' idealized conception of markets: Asymmetric information between borrowers and lenders, leveraged financial institutions that are vulnerable to "runs" when savers' confidence falters, and the possibility of contagion in the financial sector all justify government involvement. For these reasons and others, the federal government has granted tax deductibility for mortgage interest and excluded most house-price appreciation from capital gains taxes; it has fostered mortgage lending through its regulation of savings institutions; it has established the Federal Home Loan Bank System and the Federal Housing Administration; it has created Fannie Mae and Freddie Mac and provided an implicit guarantee to their securities; and so on. We now face challenges in housing finance that are unprecedented since the Depression of the 1930s, and it natural to think that government should play an important role in resolving the crisis.

Second, in all areas of economic policy, we balance the need for people to bear responsibility for their decisions with the goal of protecting vulnerable members of society. The families facing foreclosure appear to be a tremendously varied group: Although some struggling mortgage borrowers do not deserve our sympathy, many others were victims of predatory lending practices, entered into mortgage contracts they could not fully understand, or took risks on their mortgages to escape unpleasant or dangerous rental housing. These families do deserve our sympathy and our help. To be sure, some

of these families would not own their current homes if risks had been recognized fully during the past several years, but government policy can ease their transition to a world with appropriate recognition of risks.

Third, the effects of turmoil in the housing and mortgage markets are felt well beyond the families that borrowed too much and the financial institutions that lent too much. Concentrated foreclosures lower property values throughout the communities in which they occur, hurting every family trying to sell its home in such areas.[62] Wild gyrations in financial markets pose risks to everyone's savings, including many people who were not trying to increase their leverage to squeeze out a higher return. The weakening of the overall economy hurts many workers who lose their jobs and cannot find new ones. Indeed, the downside risks to economic activity are especially pronounced now, and continued distress in the housing and financial sectors could launch a reinforcing downward spiral in which financial turmoil begets economic weakness, which causes further turmoil, and so on.

Fourth, mortgage markets are not functioning in a normal manner now. For example, many families that could easily obtain mortgage credit just a year or two ago now have great difficulty obtaining mortgages, in part because some of the largest mortgage lenders have suffered massive losses and are struggling to maintain their viability and because many types of mortgage-backed securities are viewed especially negatively in financial markets. Regulatory policy should have been employed more vigorously to reduce the swing in the financial pendulum toward laxness in lending, and government guarantees can be used selectively to reduce the swing toward stringency in lending.

Fifth, our standard approach to mortgage securitization severely limits the likelihood that servicers will modify large number of mortgages in ways that will prevent defaults. Mortgage servicers and lenders have several legitimate reasons to avoid writing down principal, which may be the most effective way to induce borrowers who have negative equity to stay current on their loans: Other borrowers will want the same deal, which greatly raises the cost, and some borrowers will default later even with a

[62] One respected macroeconomic forecasting firm, Moody's.com, has projected that every foreclosed home lowers the value of homes on that block by 1.5 percent. Cited in Luke Mullins., "Nightmare on Main Street," *US News and World Report*, March 10, 2008, p. 42.

principal write-down, which raises the cost as well. Each mortgage servicer also does not take account of the impact of its decision on other parties; each failure to renegotiate contributes to downward pressure on home prices and overall economic activity that hurts other lenders, servicers, and homeowners. In good times, when foreclosures are at a lower level and more dispersed geographically, such externalities may be ignored without significant consequences. But in the current troubled state of the housing market and the economy, these externalities are likely to be more significant.

Other factors imply that yet fewer loans will be modified than is optimal from the perspective of lenders. One obstacle is the dispersion of ownership through securities and derivatives. Although the pooling and servicing agreements (PSAs) generally give servicers the authority to make modifications that are in the interest of the lenders, the degree of latitude varies across contracts, and ownership of different tranches creates different incentives for different investors; all of this makes modifications a judgment call, which opens the door to legal challenges. In addition, some servicers who are willing to accept lower payoffs on some mortgages will want borrowers to obtain new mortgages from other lenders, and the current problems in mortgage markets make that very difficult for some borrowers.

Mortgage Policies Pursued to Date

A considerable number of actions have been taken so far, although these actions collectively affect a fairly small fraction of those expected to face serious trouble in the next couple of years. First, the easing of monetary policy has reduced the magnitude of interest-rate resets. Floating-rate interest rates on subprime mortgages often reset relative to the LIBOR, which now stands considerably below its level a year ago.

Second, as we noted earlier, the fiscal stimulus law raised the threshold for conforming mortgages from about $417,000 to 125 percent of the median house price in an area, with an overall cap of $729,750. But this increase applies only to mortgages originated between July 1, 2007 and December 31, 2008. Raising the conforming threshold is helpful because securitization of prime, jumbo mortgages has diminished significantly. Origination of such mortgages continues, at a reduced pace, with lenders holding them in their portfolios rather than securitizing them (and therefore raising the

interest rate relative to the rate on conforming mortgages). Moreover, this change does not substantially affect the risks or costs imposed by Fannie and Freddie, which depend primarily on their portfolio holdings rather than their securitization activities.

Third, changes have been made to extend the reach of the Federal Housing Administration (FHA). Since the 1930s, the FHA has guaranteed mortgage payments and charged borrowers an insurance premium for this guarantee. Last fall the administration instituted the so-called "FSA Secure program." This program offers FHA-guaranteed refinancing to adjustable-rate borrowers who are delinquent on their payments due to an interest-rate reset and who were timely on their payments for the six months prior to the reset. (In the basic FHA program, refinancing help is offered only to borrowers who are current on their loans.) In addition, the February stimulus package raised the limit on loans covered by FHA from about $360,000 to the conforming limits for Fannie and Freddie, as urged by the administration. And the Administration has implemented a small further expansion this spring.

Fourth, funds have been appropriated for mortgage counseling. Many families who lose their houses to foreclosure never contact a credit counselor or their mortgage servicer in advance. Yet, counseling by local organizations, and the interaction with mortgage servicers that results, has had a high success rate in the past.[63] Therefore, it makes sense to appropriate additional funding for this purpose just as quickly as counseling organizations can build their capacity and use the funds effectively.

Fifth, in December the administration announced an agreement by the "Hope Now" alliance of mortgage servicers, the American Securitization Forum, and other industry participants to put some adjustable-rate mortgage borrowers on a "fast track" to mortgage modifications that would maintain the initial low interest rates for five more years. The extension of the teaser rate reduces the present value of mortgage payments by roughly 15 percent in a standard case, which is less loss to lenders than would come through foreclosure. The "teaser freezer" reduces legal challenges by limiting the fast track to borrowers that are highly unlikely to keep paying their existing mortgage but likely to pay a modified one, and by using collective action to establish a presumption that servicers following the guidelines are acting in the lenders' interests. The impact of

[63] Gramlich (2007b).

the plan is modest because the limited eligibility for fast track means that many borrowers do not meet the criteria and because the plan only addresses reset problems and not negative equity problems. Both of these limitations are intrinsic, to a degree, in that the desire to make modifications are so clearly in lenders' interests that servicers will avoid legal challenges. In recent Congressional testimony, Mark Zandi estimated that the plan may eventually help up to 250,000 households. The success of the Hope Now initiative to date is unclear: Hope Now has reported that, in the first quarter of this year, more than 400,000 subprime loans were scheduled to reset. About 200,000 of these loans were paid in full through refinancing or sale, about 14,000 loans were modified, and roughly 500 entered the foreclosure process. Thus, the number of modified loans is low, suggesting that the initiative has not done much directly, but the number entering foreclosure is even lower, suggesting that resets are not a large problem for borrowers or that lenders are taking other steps to manage the situation**.**

Sixth, the administration announced a voluntary agreement by servicers to delay foreclosures by 30 days while a potential loan modification is evaluated. This "Project Lifeline" is a positive step but is unlikely to have much effect on the ultimate number of foreclosures because it represents only a small delay in the process.

Recommended Further Mortgage Policies

Given the limitations of the existing programs to ease distress among households facing foreclosure, a number of additional steps that extend a helping hand but that do not entail an undue risk of moral hazard or unfairness seem appropriate.

<u>Clarifying servicers' fiduciary responsibilities</u>

Servicers appear to have significant latitude to modify mortgages, and the American Securitization Forum holds that servicers' responsibility is to the mortgage pool as a whole rather than to each tranche of ownership individually. Establishing that responsibility formally through legislation would be useful, although this step would help only prospectively. Liability of mortgage servicers to lenders under existing mortgages is what it is and very likely cannot be changed or clarified.

Reform of bankruptcy law

As background, note that household bankruptcies generally fall into one of two categories. Chapter 7 bankruptcies are liquidations, in which a household's debts are paid off to the extent possible using a household's non-exempt assets, and the excess debt apart from certain exceptions is discharged. Chapter 13 bankruptcies are reorganizations, in which a household's debts are written down to an amount that can reasonably be repaid in 3 to 5 years, and the excess is discharged. The 2005 bankruptcy reform restricted chapter 7 to households with below-median income or with income that just covers necessary non-debt expenses. In the first three quarters of 2007, about 370,000 chapter 7 cases were filed and about 230,000 chapter 13 cases. Primary residences receive special treatment in at least two ways: First, under the so-called homestead exemption, equity in a primary residence is exempt up to a threshold that varies by state but is capped at $125,000 by federal law. Second, mortgage debt on primary residences cannot be reduced—or "stripped down" (often called "crammed down")—by a bankruptcy judge like most non-secured debts.

One proposed reform of bankruptcy law would be to allow judges to reduce mortgage amounts to the value of the houses that serve as collateral. This would encourage homeowners that are currently under water to stay in their houses and continue to pay on their reduced mortgage. Clearly this reform would not come without cost. As opponents argue, it would induce an increase in bankruptcy filings and would likely have some detrimental effect on the future supply of mortgage credit. Lending is like other businesses in that free entry and exit tends to keep profits near normal levels. If some people pay less for their loans because of strip-downs, other people will pay more. The reduction in amounts collected may be small because servicers often would not collect much from these people anyway—although one needs to account not just for the existing bankruptcy cases but also for an increase in the number of households who declare bankruptcy rather than riding through downdrafts in house prices and continuing to make mortgage payments.

Research has generally shown that borrower-friendly laws tend to restrict the supply of credit, although not all studies agree on this point. Also, underwriting standards are higher for second homes than for primary residences, perhaps in part

because of the bankruptcy rules. People are not helped unless they declare bankruptcy, which provides an incentive for more people to declare bankruptcy. One consequence is that payments on other types of household debt may decrease. Lastly, bankruptcy judges have a great deal of discretion, so treatment of similarly situated people might vary widely.

However, if eligibility for "strip-downs" in bankruptcy were carefully limited, as is the case for the proposals that have received the greatest attention in Congress, then the effect on future credit supply would probably be quite limited as well. Moreover, this reform has the key advantage of targeting mortgage relief to those families that are in the most perilous economic circumstances. By applying these forced principal writedowns only to households that declare bankruptcy, the change focuses on people who need help the most and are most likely to walk away from their loans (which means that servicers and lenders probably lose the least as well). This targeting is difficult to achieve through most other policies for addressing current mortgage problems. In recent Congressional testimony, Mark Zandi estimated that 570,000 homeowners would benefit from this change during the next three years.

None of the authors of this study are enthusiastic about this idea because it could make it much harder and costlier for low-income families to obtain mortgages. However, we do see the potential benefits to be gained, and thus on balance, we support limited bankruptcy relief.

Expand eligibility for FHA-guaranteed loans used for refinancing

Two templates for a significant expansion of the role of the Federal Housing Administration have been circulated widely in Congress—one by Chairman Christopher Dodd of the Senate Banking Committee and the other by Chairman Barney Frank of the House Committee on Financial Services. Under their similar proposals, eligibility for FHA-guaranteed loans would be broadened to help more families refinance their mortgages when they have negative equity in their homes. Such an expansion would be an appropriate and important step forward for several reasons.

First, the FHA's traditional mandate is to assist individuals underserved by the traditional mortgage market, and it has many years of experience in doing so. Given the

pullback in private mortgage lending and securitization, it is natural to increase the FHA's role as a counterweight. Although under normal circumstances, the FHA helps only borrowers who are current on their loans, last fall the administration expanded the program to include adjustable-rate borrowers who had been making timely payments but became delinquent following interest-rate resets. With negative equity now becoming a key contributor to rising foreclosures, an expansion of FHA programs to address borrowers with negative equity is the logical next step.

Second, these proposals are appropriately selective in the families they help. Although every foreclosure can be painful for the families involved and for the neighborhoods and communities in which they live, not every family can afford to stay in their current homes with a reasonable amount of government help. The FHA expansions that have been put forward recognize this hard truth, and they are explicitly limited to owner-occupiers that satisfy solid underwriting standards and represent good credit risks at their new mortgage amounts.

Third, the proposals have been constructed carefully to limit eligibility to circumstances where loans can be refinanced at low or zero cost to taxpayers. The proposals do not simply throw open taxpayers' wallets to help anyone who would prefer to make smaller mortgage payments. Instead, they require servicers of existing mortgages to take substantial write-downs of the principal amounts owed, and they ensure that the FHA shares in any renewed house-price appreciation. The low expected cost to the government means that these proposals are not bailouts in the sense of providing large amounts of taxpayer money to get borrowers or lenders off the hook. And the fact that borrowers must share any future housing price appreciation with the government minimizes any possible moral hazard impacts for borrowers in the future.

Fourth, these proposals provide an important incentive for servicers to reduce principal amounts owed. Chairman Bernanke and others have urged mortgage servicers to consider writing down principal amounts in the many cases where that approach will generate more value for investors than foreclosure. Mortgage servicers have not traditionally pursued this type of workout and probably lack standard procedures for doing so. In addition, they may be especially reluctant to mark down principal in cases where they would continue to hold the mortgage and thus be exposed to its various risks.

The proposed legislation addresses these problems by offering a safe harbor against legal liability for servicers who participate in the program and by providing an FHA-guarantee for the new mortgage that facilitates its purchase by someone else. Importantly, participation in the program would be voluntary for servicers and lenders, so this approach would not restrict future credit supply.

One remaining obstacle is the prevalence of second liens. Schemes to refinance first mortgages into more appropriate ones typically cannot go forward without re-subordination of the original second liens. This has reportedly proven difficult when the holders of the second liens are different from the holders of the first liens. Looking for ways in which the government could help to coordinate this process should be an important goal. Perhaps the government could serve as a clearing house for the relevant information—for example, by offering to collect from lienholders the addresses of properties on which they hold liens, and then to share that information with any other lienholders who report liens on properties at the same addresses.

We are skeptical, however, about further proposals to use some type of auction process for bringing more loans to the FHA. The appeal of such auctions is clear: They appear to provide a mechanism for the government to take timely action on a large number of mortgages. However, it is unclear how such auctions could distinguish effectively among families and mortgages in the ways that are needed. For example, if the government buys pools of mortgages offered at the largest discounts, and if servicers know more about their customers than the government and are sophisticated in using that information, then the government will end up buying the riskiest mortgages. This selection problem would expose the government to additional risk and expense.

Section 3: Long-Term Reforms to Improve the Financial System

Even as policy makers in the Congress, the Administration, and the Federal Reserve address the immediate fallout from the current financial turmoil, attention must be paid to the longer run challenge of significantly reducing the probability and severity of something like the recent events from unfolding again.

Already, much has happened. Regulators have tightened up in various ways. Lawsuits have been filed against mortgage lenders and investment banks, among others,

for failure to disclose relevant facts. And markets, which react more quickly than policy makers and often more ruthlessly, have already forced wrenching changes in the way mortgage credit is originated and securitized.

Given all this, is there any reason why policy makers – legislators, the Administration, or regulators – should do any more than has already been done, by regulators, the courts or the market? In principle, we see several rationales for government to regulate to supplement and ideally strengthen these other reactions:

- Many borrowers do not have the skills or information need to make informed decisions. This is the main reason for the lending disclosure laws that currently exist. The subprime turmoil suggests that these laws were insufficient.
- There is asymmetric information in lending markets. Borrowers know things about themselves and the risks they may pose to lenders that they may wish not to disclose. The same is true of lending institutions. Properly crafted laws can rectify these asymmetries.
- Government regulation of insured depository institutions – specifically, setting and enforcing minimum capital regulations through regular monitoring and supervision – is essential in light of government insurance provided to depositors and because of the systemic risk that failure of large banks in particular may pose. This remains true even under the 1991 reform that imposes the costs of deposit insurance on the banking system as a whole, since government regulation solves the problem of coordinating supervision and oversight of the insured institutions, and in any event Federal taxpayers provide fallback financial protection for the deposit insurance system.
- Some government involvement is appropriate even for non-depository financial institutions, whose failure could pose systemic risks to the overall financial system and thus the wider economy. This is one of the reasons securities regulators require the regular disclosure of relevant financial and non-information of publicly traded companies (financial firms included). In addition, both the Federal Reserve and the Securities and Exchange Commission now carry out "consolidated supervision" of large, integrated financial enterprises in part to help better protect the financial

system from systemic risk.[64] The Fed's rescue of Bear Stearns' creditors in mid-March, together with its creation of a temporary facility to lend to primary dealers of U.S. government bonds, has upped the stakes considerably: with the ambit of Fed lending thus considerably expanded, should not also the potential new borrowers also be subject to some sort of safety and soundness supervision and regulation?

- Memories in financial and credit markets can be short, as new participants come into the field and others leave. Putting in place the right rules now can thus help prevent a whole new generation of financial and real estate market participants from engaging in the kind of speculation and other risky behavior that led to the most recent subprime troubles.[65] In addition, although lawsuits and adverse publicity now may punish those lenders who unfairly took advantage of unsophisticated borrowers, well crafted government requirements can ensure that borrowers are protected long after this litigation and publicity passes.

We think a key problem is that regulation failed to keep up with financial innovations. More, and better, regulation is needed—but it should be designed to limit the unwanted side-effects of innovation without stifling innovation altogether. Even good regulation will not, of course, prevent financial markets from swinging between confidence and fear. However, good regulation can reduce the frequency, magnitude, and broader consequences of the swings.

Financial innovators and regulators are in a race, and regulators will always be behind in that race. That doesn't bother us, nor does it mean that policy has no role in improving the functioning of financial markets. That the race between innovators and regulators exists is simply a sign of vibrancy in our financial sector. The important issue for policy is to ensure that regulators are never too far behind cutting edge innovation. If regulators do not try to keep up, or are completely outclassed in the race, then much of

[64] These regulators also are doing this in response to pressure from the European Union, which has its own system of consolidated financial supervision to which it threatened to subject U.S.-based financial conglomerates had they not been subject to consolidated supervision by at least one regulatory body here.
[65] If the real estate pessimists are right – in particular, if downsizing by aging baby boomers suppresses housing price increases or even contributes to their long-term decline – then it could be a very long time before housing prices again increase at anything close to the rate of this decade. If this occurs, there clearly will be a new generation of participants in financial and real estate markets who almost certainly would have little or no knowledge of recent excesses, arguably strengthening the case for amending the rules and not relying solely on market forces to prevent a reoccurrence of the behavior that contributed to the recent turmoil.

the benefits of innovation will be offset by the problems generated by a lack of transparency and excess leverage.

In this section we set forth our recommendations for long-run policy reform. We begin with some overarching comments on the use of monetary policy to prevent future crises, and then we discuss more specific microeconomic reforms that relate to the origination and securitization of mortgages and other loans. We close with some thoughts about the future role of the Federal Reserve and other financial regulatory bodies. .

Monetary Policy Should Not Attempt to Stop Asset-Price Bubbles

Between January 2001 and June 2003, the Federal Reserve cut the target Federal funds rate from 6½ percent to 1 percent—the lowest level in decades. The Fed then held to that target until June 2004, before raising the funds rate slowly and steadily during the following two years. Some observers have argued that the Fed kept rates too low for too long, and that the abundance of low-cost credit set the stage for the housing boom-bust and current financial turmoil. One policy implication of this view is that, going forward, the Federal Reserve should explicitly aim to prevent future asset price bubbles.

As one example of this view, chapter 3 of the IMF's recent *World Economic Outlook* explains: "Central bank orthodoxy suggests that monetary policymakers should refrain from targeting any specific level of asset prices and should respond to changes in asset prices only insofar as they affect inflation and output outcomes and expectations." The chapter goes on to say: "Some argue that there are benefits to be derived from 'leaning against the wind,' that is increasing interest rates to stem the growth of house price bubbles and help restrain the buildup of financial imbalances." The chapter tilts strongly toward the heterodox view, concluding: "In economies with more developed mortgage markets, economic stabilization could be improved by a monetary policy approach that responds to house price developments in addition to consumer price inflation and output developments."

We explained earlier that we agree with the charge that low interest rates helped to fuel the run-up in housing construction and house prices. But what implications should be drawn? Should the Fed have reacted to indications of an inflating housing

bubble by pursuing tighter monetary policy in the beginning or middle of this decade? We think not.

We view the Federal Reserve as setting monetary policy based on forecasts of the difference between actual and desired inflation and the difference between actual and potential output. This dependence of policy on the inflation and output gaps is quite similar, of course, to the original formulation of the Taylor rule (named after Stanford professor and former Under-Secretary of the Treasury John Taylor), except that Taylor himself initially used *contemporaneous* inflation and output gaps. In reality, the *expected* gaps are more important because the economy reacts to monetary policy with a lag.

In this framework, the question of how monetary policymaking should respond to financial innovation in the housing sector can be divided into two parts.

First, should the forecast methodology change in order to capture the changing impact of housing sector developments? The answer to this question is clearly yes. One of us (Elmendorf) worked on forecasting at the Fed between 2001 and 2006. During that period, the outlook for house prices became much more central to the overall economic forecast. Moreover, much more attention was paid to mortgage borrowing, including cash-out refinancing, home equity credit lines, and equity withdrawal through housing turnover. So, the fact is that housing developments were taken into account in projecting future overall inflation and output changes and in setting monetary policy. To be sure, model estimates based on the experience of the preceding ten or twenty or thirty years always will lag behind an evolving reality, and forecasters need to make appropriate allowance for that.

Second, should house prices enter the policy rule separately, aside from their role in output and inflation forecasts? That is the real question posed by the heterodox view of monetary policy, and we think the answer should be no.

One problem is that detecting and quantifying asset bubbles in advance (and thus without the benefit of 20/20 hindsight) is extremely difficult. Bubbles often begin with rational increases in asset prices that are then extrapolated to an irrational degree by market participants and become self-fulfilling for a time. Discriminating between the rational and irrational increases is not straightforward. Federal Reserve Chairman Alan

Greenspan thought he might have detected such a shift when he wondered about possible "irrational exuberance" in stock prices in late 1996. As it turned out, the S&P 500 moved quickly above that level in the next year and has never been below it since. This is not to say that informed analysts cannot sometimes find evidence of overvaluation of assets, including housing. Federal Reserve economist Josh Gallin argued in a 2004 paper that the price-rent ratio helps to predict house-price movements, and he showed that this ratio was then at an all-time high, nearly 20 percent above its average during the preceding three decades.[66] This analysis certainly seems prescient, but it is unclear how confident policymakers should have been of this particular result at the time.

The other, and we think more significant, problem is that monetary policy is a very blunt tool for preventing asset bubble inflation. Those who advocate "leaning against the wind" need to be explicit about what they mean quantitatively and what consequences their recommendations would have for the overall economy. For example, John Taylor said last summer that the Fed should have set the funds rate significantly higher in the first part of the decade—above its actual value beginning in 2002 and three percentage points above its actual value by early 2004.[67] This alternative policy certainly would have dampened the excesses in the housing market, as Taylor showed. However, it would have had very high costs for the overall economy, which Taylor did not show or discuss.[68,69]

If monetary policy is not helpful in addressing housing bubbles, what is? The answer, we elaborate more fully below, is regulatory policy. Limiting excessive risk-taking and leverage would reduce both the extent to which bubbles inflate and the collateral damage when they burst. Designing financial products and institutions that are

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[66] See Gallin (2004).

[67] See Taylor (2007).

[68] See Elmendorf, "Was the Fed Too Easy for Too Long?," (2007). The paper concluded that "the paths of inflation and unemployment imply that monetary policy should have been a little less expansionary" in the early 2000s, with a funds rate about 50 basis points higher between mid-2004 and mid-2006 than actually occurred. However, "the slightly better policy that one can envision with hindsight would not have materially altered recent events."

[69] Chapter 3 of the 2008 IMF report cited earlier presents model results in which including house prices directly in the policy rule improves economic outcomes in economies where housing collateral is important for borrowing. However, this result appears to be an artifact of the baseline policy rule, which uses contemporaneous output and inflation gaps. With this baseline rule, any variable with significant predictive power for future output or inflation will find a useful role. That is exactly why central banks use *forecasts* in setting economic policy, but it does not speak to the real question at hand, which is whether housing price forecasts should somehow enter separately in the central bank's policy making calculus.

robust to asset-price declines is also crucial. Properly designed regulatory policy is more targeted to the problem at hand than is the blunt tool of monetary policy.

Mortgage Origination

It is vital in seeking reforms to improve the process of mortgage origination to keep in mind that financial innovation, coupled with various policies aimed at improving access to mortgage credit, has enabled many subprime borrowers to purchase homes who otherwise would not have been able to only a short time ago – and that, even in the wake of the current difficulties, many of these borrowers will avoid foreclosure and continue to enjoy their home-owning opportunities.[70] While it may not be possible any time soon to return to the 69% home ownership peak that was achieved in 2005, policy makers should want a *sustainable* home ownership rate to be as high as possible, and thus should not want unintentionally to deny mortgage credit to many borrowers who could service mortgage loans in the future.

The policy challenge that confronts all of us now, therefore, is how to facilitate and ideally encourage continued financial innovation that affords opportunities for home ownership by credit worthy borrowers, while offering reasonable protections to customers and the financial system more broadly against harmful side-effects.

In crafting solutions, it is important to keep in mind that the current crisis was triggered in large part by the widespread belief – held by both borrowers and lenders – that housing prices would continue to rise, and thus mask any misunderstandings that borrowers may have had about what was in their mortgage contracts, or projections by lenders of the likelihood that some of borrowers later would be unable to make their

[70] The Community Reinvestment Act of 1977, for example, encourages insured depository institutions to meet the needs of their communities, which has been widely interpreted to mean that banks should make special efforts to lend to individuals in "under-served" areas and who have low to moderate incomes. The Federal Housing Administration (FHA) insures mortgages for low-to-moderate income borrowers. The Federal Housing Enterprise Financial Safety and Soundness Act of 1992 directs the Department of Housing and Urban Development to set "affordable housing goals" for the two principal government-sponsored housing finance companies, Fannie Mae and Freddie Mac. These goals have been steadily increased, to the point where roughly half of the mortgages these two companies purchases were originated to households with low-to-moderate incomes.

mortgage payments. No "solution" can solve this problem, but wise policy can make the terrain less fertile for these effects to play out in a damaging way.

One might also ask whether fixing problems with mortgage origination amounts to closing the barn door after the horses are out. That is always a problem in cleaning up after any economic mess. But better to do that than to leave the conditions that led to the underlying problems unfixed—there will be more horses to be housed in the future. In our view, the "fixes" to mortgage origination are several, and have high priority:

- Adopt simpler disclosures and pre-mortgage counseling.
- Create standard mortgage offerings with opt-out provisions.
- Restrict some mortgage offerings.
- Strengthen Federal-state cooperation on enforcement.
- Regulate mortgage brokers.

Better Disclosures

The traditional solution to problems arising out of imperfect information is to require more disclosure. Our modern securities laws, for example, are built on the premise that public companies (including mutual funds) must frequently and fully disclose their financial condition and prospects so that investors have sufficient information whether and when to buy and sell. Regulation of pharmaceuticals is more extensive, most likely because of the potential life-and-death consequences of taking them. Not only must pharmaceutical suppliers disclose possible side-effects of their products, but the pharmaceuticals themselves must first be tested for safety and efficacy before being allowed onto the market. Much product liability litigation rests on allegations that defendants failed to disclose or to warn consumers of certain dangers – that is, that disclosures were insufficient or misleading. Much securities litigation rests on a similar premise.

There already exists a substantial body of rules, under federal and state law, requiring various sorts of disclosures before borrowers sign mortgage documents. The problem is not with the sufficiency of the disclosures, but with their *complexity*. The mortgage documents themselves are already complicated, and any system of required disclosure should be designed to make them *easier* to understand. In particular, we

should avoid replicating in the mortgage context what infamous "patient-packet inserts" now do for drugs: providing lengthy explanations in highly technical language, printed in tiny font sizes, of every possible side-effect that consumers could experience in taking a particular drug.

Fortunately, a straightforward remedy for mortgage complexity is available. Alex Pollock, a former President of the Federal Home Loan Bank of Chicago, has proposed a simple one-page disclosure, attached here as Appendix A, that every mortgage lender should be required to provide to every potential borrower**.** Pollock's proposed one-pager is not only concise, but it is written in plain English. It provides the key terms of the mortgage, along with explanations of principal mortgage loan terms, and a summary calculation of what portion of the borrower's income would be devoted to paying for all regular housing expenses. Federal regulators should promptly implement Pollock's suggestion—and avoid complicating it with all kinds of "bells and whistles" that various parties may suggest during any public comment period required before mandating it.

In addition, Federal regulators should consider requiring all subprime lenders in particular to notify borrowers, before they sign a mortgage application, of the presence of other lenders serving borrowers like them in their geographic area. This would at least alert borrowers to the fact that they have choices and do not feel the need to lock in to terms with which they may be uncomfortable, while discouraging unscrupulous lenders from pressuring borrowers to accept such terms. The list of subprime lenders could be maintained by each state banking or mortgage lending supervisor and be available through Internet access in the office of any mortgage broker or originator. Ideally, state regulators would encourage the companies listed to provide and update the key terms on their mortgages (interest rates and points), with the suitable caution that the exact rate and points depend on the borrower's credit rating and decision to trade off the two (borrowers can typically pay a lower interest rate if they agree to pay more points up front). Prime borrowers are not as likely to need such information, which is often widely available in local newspapers and on the Internet. Comparative information for subprime mortgages is generally not as complete.

Pre-Mortgage Counseling or Legal Counsel

Better disclosure is not sufficient if borrowers do not understand the meaning of the information. Mortgage counselors can provide that meaning, ideally situated to the individual needs and circumstances of the borrower.

Given the current mortgage crisis, most of the attention given to counseling thus far has focused on its benefits for homeowners *already having difficulty* making their mortgage payments (or nearing that stage). There is clear evidence that counseling at this point can help reduce foreclosures, by educating borrowers about how to deal with lenders and also how to change their spending patterns so that they can convince lenders to permit some modification of their loans

What has received much less attention, however, is the benefit of counseling *before* individuals apply for a loan. Since the purchase of a home requires a down payment of some sort (given that 100 percent loan-to-value loans are now history), potential home purchasers often must be educated on the need to save, and how, in order to get into a position where their loan application will be approved. Counseling also can educate potential homebuyers about the price range they can afford, given their incomes, credit histories and down payments. A properly educated borrower will be more likely to avoid foreclosure and much less likely to be the victim of an unscrupulous lender than one who is not so informed and educated.

The government should continue to support efforts to improve financial literacy generally, but the reality is that many people who have completed high school never received such training while in school, or have had occasion to since. Furthermore, there are many people who have not finished high school. Indeed, even many who have taken some college courses or completed college may not understand the complexities of taking on a mortgage, especially one with adjustable features, or more broadly the levels of income and assets that are required to qualify for a mortgage.[71]

Accordingly, there is a clear need for greater financial literacy throughout the population, but especially among subprime borrowers whose financial condition and/or education may not prepare them to understand the full implications of applying for and

[71] As the late Edward M. Gramlich (2007b, p. 94) pointed out, "Mortgage contracts are complicated, even for people with advanced degrees in finance."

taking on mortgage debt. What pre-mortgage counseling exists now is largely supported by Federal (and to a lesser extent state) government grants. The main player in the mortgage counseling arena is a non-profit organization, NeighborWorks America (NWA), which has more than local non-profit housing organizations as members.[72] Homebuyers who want to buy through this program must go through mortgage counseling first before being permitted to buy homes.

Another approach is to encourage people buying a house to hire their own attorney. We strongly discourage individuals from participating in a law suit without a lawyer to represent their interests. But in mortgage transactions, the realtors, mortgage brokers and settlement attorneys all have a financial interest in completing the transaction. Borrowers would be helped by someone who understands the process and represents their interests only. Lawyers are costly, but not that costly in relation to the costs of a house. For a few hundred dollars, potential buyers could have an attorney review the documents and point to any problems or particular risks. Importantly, payment for the legal advice should not be based on whether or not the contract goes through.

Ideally, all subprime borrowers should be required to take counseling before applying for a mortgage or be represented by an attorney. Low income borrowers could be served without charge if the NWA model, or its equivalents, were expanded. Moderate and upper income subprime borrowers would pay for the required counseling or legal advice, which could be included in the fees paid when applying for the mortgage.

Default Mortgage Contracts

A further way to simplify the mortgage contract for many people is to establish a simple default mortgage contract from which informed people could opt out.

Research in the burgeoning field of "behavioral economics" shows that default options can have powerful effects on behavior.[73] For example, firms that automatically enroll employees in savings plans but let employees "opt out" have substantially higher saving rates than firms that make employees take the initiative to "opt in."

[72] For one interesting discussion of how mortgage counseling can help borrowers, see Campbell (2007) and Gramlich (2007b)

[73] For a thorough discussion of these effects, see Richard Thaler and Cass Sunstein, *Nudge* (Yale University Press, 2008).

Michael Barr, Sendhil Mullainathan, and Eldar Shafir (forthcoming 2009) have proposed a default mortgage approach.[74] They advocate an opt-out home mortgage plan based on a 30-year, fixed-rate loan. "Eligible borrowers would be offered a standard mortgage (or set of mortgages) and that's the mortgage they would get — unless they choose to opt out in favor of another option, after honest and comprehensible disclosures from brokers or lenders about the risks of the alternative mortgages." They further advocate giving the plan "some bite" by letting borrowers who opt out and ultimately default raise the lack of reasonable disclosure as a defense to bankruptcy or foreclosure. "If the court determined that the disclosure would not effectively communicate the key terms and risks of the mortgage to the typical borrower, the court could modify or rescind the loan contract. This approach would allow lenders to continue to develop new kinds of mortgages, but only when they can explain them clearly to borrowers."

Ideally, the default mortgage approach would be operationalized by the private sector, with some light guidance by federal and state regulators. But if private mortgage lenders do not come up with a satisfactory solution soon, federal regulators in particular could jump start the process by proposing a default contract, and then solicit public comments. Still, there may be additional legal issues at the state and federal levels that would need to be resolved. The default mortgage idea, however, is sufficiently intriguing that policy makers at both the federal and state levels should explore it seriously.

Restrict Some Mortgage Offerings

In addition to the provisions just discussed, we think it is appropriate to restrict mortgage design in certain circumstances. The principal tool currently used to restrict mortgage design is the Home Owner Equity Protection Act of 1994 (HOEPA). This act gives the Federal Reserve authority to restrict the terms of mortgages with APRs above some threshold. Because Fannie Mae and Freddie Mac do not securitize "HOEPA loans," as a practical matter, they are rarely made. Federal law also gives the Federal Reserve authority to prohibit certain terms on all other mortgages that the Fed finds to be unduly onerous - authority which the Fed has exercised. Crucially, rules issued by the Federal Reserve under HOEPA apply to all mortgage lenders, not just those supervised

[74]See also "A One-Size-Fits-All Solution," *New York Times*, December 26, 2007.

by the Fed or other federal regulators. However, these rules are enforced, depending on the lender, by either a federal or state regulator.

When deciding whether to restrict some feature of mortgage contracts, we are deciding whether to deprive some people of a valuable opportunity in order to protect other people who would be hurt. These effects must be balanced against each other before any decisions are made about which contract provisions ought to be restricted or prohibited by law.

Consider the back-loaded payment streams embodied in expected payment increases and prepayment penalties. A household with low income and a poor credit history that experiences a rise in income or other improvement in its ability to make regular payments can meet its obligations under "teaser rates" for a few years—thereby repairing its credit record and then refinancing into a standard mortgage it could not receive at the outset. Of course, this strategy involves the risk that the household will be unable to refinance—perhaps because house prices fall, underwriting standards are tightened, or its credit record is not repaired—but it also has the upside potential of providing a route to home ownership. Thus, this type of mortgage is a source of trouble for some households but a boon to others. More broadly, the greater incidence of back-loaded payment streams in subprime relative to conventional mortgages reflects, at least in part, different needs of the borrowers and not just greater predation.

The rationale for mortgage design regulation is paternalistic: given the complexity of the mortgage instrument, even prime borrowers need some limited protection from mortgage lenders, and borrowers who can only qualify for very high cost mortgages need even greater protection. Either they are being taken advantage of, or they are in a riskier situation (with for example, a higher loan-to-value ratio), or they have misused credit in the past (and thus have a low credit score). Because people taking out higher-rate loans are generally in more vulnerable positions, they have greater need of protection.

Regardless of any policy actions, recent events will sharply limit subprime mortgage availability for some time. Lenders have learned that house prices may not rise forever, that risky loans will sometimes default in the absence of rising house prices; that principal-agent problems with mortgage brokers are acute; and that ratings agencies are not always helpful in evaluating risk. This learning process will automatically lessen

some of the problems in the subprime market. In the wake of the subprime mortgage turmoil, the market has already imposed a kind of design regulation of its own. For all practical purposes, subprime borrowers can no longer borrower 2/28 and 3/27 ARMs, since underwriters cannot persuade investors to buy securities backed by these types of mortgages (ARMs for prime borrowers continue to be available, though low "teaser" rates are not).

In December 2007, the Fed proposed rules—now in the public comment phase—that would make two changes in the HOEPA rules—to lower the threshold to cover significantly more and to restrict additional terms. (Up to now, most subprime mortgages have carried interest rates and fees below the so-called "HOEPA thresholds," so subprime borrowers generally have been given no greater protection than prime borrowers.) We consider these issues in turn.

Broaden HOEPA Coverage

Until recently, loans were covered by HOEPA if they had an APR more than 8 percentage points above the yield on Treasury securities of comparable maturity and fees exceeding 8 percent of the loan amount, or $400 (adjusted for inflation since 19994), whichever is smaller. In December, 2007, the Federal Reserve proposed lowering these thresholds to 3 and 5 percentage points above the comparable Treasury rate for first and second mortgages, respectively. This proposal has the effect of applying the HOEPA restrictions on mortgage design (which we discuss shortly) to a large fraction of subprime mortgages.

The 8 percentage point threshold covered very few loans, and lowering the rate is eminently sensible. Edward Gramlich, a former Fed governor who passed away last year, proposed lowering the threshold to 5 percent, which he estimated would cover about half of subprime mortgages.[75] He worried, however, that a HOEPA trigger below that level might significantly impair the cost or availability of credit for subprime borrowers. The possible negative effect on credit could arise in part because securitizers of HOEPA loans are subject to private litigation for flaws in the underlying mortgages, which as a practical

[75] Gramlich (2007a)

matter explains why HOEPA loans are not securitized and thus largely unavailable. We would prefer that the threshold not be lowered as far as the Fed has proposed.

Strengthen Restrictions on HOEPA Loans

HOEPA currently bans—for mortgages that are covered—large scheduled increases in mortgage payments during the first five years and prepayment penalties that last longer than five years; in addition, lenders are required to verify borrowers' ability to repay their loans. More specifically, the prohibitions are.

- Prepayment penalties more than five years after a mortgage is signed, and then only under certain conditions;
- Charging an interest rate on default that is higher than the rate before default;
- Requiring a balloon payment on a loan with maturity less than five years;
- Extending a "covered loan" that does not account of the borrower's income;
- Directly paying a contractor on a home improvement contract where a covered loan is involved.

We support a strengthening of these restrictions. In particular, we support these additional protections in the Fed's December proposal:

- Creditors would be prohibited from extending credit without considering the borrowers' ability to repay the loan.
- Creditors would be required to verify their income and assets.
- Creditors must establish escrow accounts for taxes and insurance.

Further possibilities that have been proposed include making the payment shock implicit in 2/28 or 3/27 loans subject to the restriction on large scheduled payment increases (as proposed by Gramlich), and limiting prepayment penalties to the term of the

first interest rate.[76] We cannot judge at this point whether these additional proposals would make sense.

Impose restrictions on non-HOEPA Loans

Regulators have other mechanisms for influencing mortgage lending beyond the HOEPA rules. We recommend that Federal financial regulators maintain, in some form, the guidance they provided in June to the institutions they supervise. The "Statement on Subprime Mortgage Lending" encouraged these institutions to evaluate each borrower's repayment capacity at the fully indexed rate rather than a low initial rate, to verify each borrower's income, to limit prepayment penalties, and to communicate clearly with borrowers about the features of available mortgages. Whether this precise guidance goes too far or not far enough in protecting borrowers can be judged over time.

The currently prohibited terms in all mortgage loans, as mandated by the Federal Reserve Board, are:

- Refinancing within the first twelve months after a mortgage loan is taken out, unless the refinancing is in the borrower's interest.
- Replacing a zero or low cost loan with another higher cost loan, unless the refinancing is in the borrower's interest.
- Evading HOEPA's restrictions on closed-end mortgage credit (loans with a fixed maturity) by giving consumers open-ended credit (loans without a fixed maturity) on essentially the same terms
- The Federal Reserve's rules also establish a rebuttable presumption against a lender if it does not document and verify the borrower's income.

The Federal Reserve proposed these additional protections for all mortgage borrowers in its December proposal. Each of them seems reasonable to us in light of recent events:

- Lenders would be prohibited from paying brokers "yield spread premiums" (fees paid by a lender to a broker for higher-rate loans) unless the broker previously has

[76] The Fed's proposal would permit mortgages to contain prepayment penalties only under certain conditions, including a prohibition of any penalty imposed at least 60 days before any possible payment increase.

entered into a written agreement with the consumer disclosing this arrangement (and other facts about its total compensation).

- Creditors and mortgage brokers would be prohibited from coercing a real estate appraiser to misstate a home's value.
- Companies that service mortgages would be subject to new restrictions. For example, servicers would be required to credit consumers' loan payments on the date they are received, and would have to provide a schedule.

At this writing, there is significant sentiment in Congress – specifically by the chairmen of the Senate Banking Committee (Senator Dodd) and the House Financial Services Committee (Representative Frank), and other committee members – for going well beyond the Fed's mortgage design proposals to legislate additional restrictions of this type. We do not believe the current situation or the available evidence supports two possible categories of suggestions in particular.

In one category are the suggestions to prohibit certain mortgage terms, notably all prepayment penalties in all mortgages.[77] A ban on prepayment penalties would enable borrowers to refinance their mortgages more easily when interest rates drop and thus should lower the likelihood of future delinquencies. On the other hand, such a prohibition would increase risks to lenders – and ultimately investors in securities backed by mortgage loans – that expected cash flows would drop when interest rates generally fall. Lenders can be expected to "charge" for this additional risk in the form of higher initial interest rates, discouraging some would-be homebuyers from purchasing a home or making it impossible for them to qualify for a mortgage. At this point, we know of no hard evidence indicating whether the former benefit would outweigh the latter cost.

Another category encompasses proposals that would impose various new duties on mortgage originators and those who securitize mortgages – such as the duty of care, "suitability" requirements (analogous to those that now apply for investment products), and fiduciary obligations (analogous to those of trustees) – that generally would be

[77] The prohibition of prepayment penalties is included in legislation proposed by Senator Dodd, Chairman of the Senate Banking Committee, and in a House bill (sponsored by Rep. Miller of North Carolina), which passed last year but on which the Senate has yet to take action.

enforced by *private rights of action*, or litigation by aggrieved parties. These proposals have unknown benefits and costs.

On the plus side, a duty of care or suitability is not prescriptive, but instead leaves the originator to use its judgment in extending loans to borrowers. This reduces the risk that hard and fast proscriptions may unintentionally raise the cost or reduce the availability of credit.

On the down side, however, because the rules of behavior that are required under any of these duties is not yet clear, and only would emerge through a course of litigation, originators would operate for a time under considerable uncertainty, which could have adverse effects on the costs and availability of credit. Of particular concern are class action lawsuits. Defenders of such litigation point to the fact that only by aggregating the claims of many parties can the threat of litigation act as a meaningful deterrent. Critics of these lawsuits respond that such litigation can become the equivalent of legal blackmail, especially once classes are certified early in a case and defendants can face potentially crippling verdicts if they lose. We are fully aware of the strongly held views on each side of this debate, and we will not seek to resolve them here. Our only point is that because mortgage originators understandably would perceive the prospect of class action litigation to present a significant financial risk, allowing for private rights of action to enforce new standards on mortgage originators could induce them to significantly raise the cost of credit and/or significantly curtail their willingness to extend mortgages to subprime borrowers whom they could view more as future potential plaintiffs than as current mortgage customers.[78]

Nonetheless, the logic behind the proposed new standards for originators – especially the notion that a mortgage should be "suitable" for a borrower – is compelling. After all, as we have noted, a mortgage is a complex financial instrument, much more so than many investment products. If a suitability requirement exists for stock brokers in selling investment products to retail investors, why should mortgage brokers and even lenders not operate under a similar standard?

[78] We discuss in the next section the desirability of imposing "assignee liability" on securitizers for all mortgages, which would affect the underwriting of mortgage backed securities.

The key to implementing any suitability standard is finding the right way to enforce it. In the investment products context, customers of brokers are bound by arbitration agreements, and have their grievances decided by a self-regulatory body, currently FINRA (formerly the NASD). Ideally, there would exist a Federal mortgage origination agency that would serve as the equivalent for mortgage borrowers, and that is a good reason to adopt the proposal for such an entity that the Treasury Department has proposed and that we discuss next. In the meantime, until the creation of such an agency is agreed upon, Congress should explore ways to permit mortgage borrowers to enforce a suitability requirement through arbitration and/or to require the Federal and state authorities that now oversee mortgage origination to enforce the provision.

More broadly, we would urge Congress to be wary of legislating specific limitations, prohibitions or restrictions on mortgage terms precisely because it is so difficult to know with any confidence whether the benefits of any particular provisions outweigh the costs. This is reason for delegating rule-writing to regulatory agencies like the Fed, or ideally, to a new agency whose sole responsibility is the supervision of the mortgage origination process. Regulators are accustomed to weighing benefits and costs (and indeed must do so by Executive Order if they belong to the Executive branch), and can more easily change rules that prove to be ineffective or counter-productive than can legislatures, whose statutes are difficult to alter once they become law. For these reasons, apart from perhaps legislating a general duty of care or suitability, backed by some means of enforcement other than private litigation, we would recommend that the job of fine-tuning the rules governing mortgage origination and the content of mortgage contracts to be left to regulators.

The proposal to limit yield spread premiums, in particular, should reduce incentives by mortgage brokers to steer borrowers to high-cost lenders. Our only reservation to this idea is that we would go further than the Fed and simply ban such incentives arrangements outright, rather than to continue to permit them if the lender and the borrower agree. Otherwise, we agree with the Treasury Department that the Fed should promptly finalize its December 2007 regulatory proposals (the 90-day comment period on them expired in mid-March).

Strengthen Oversight to Enforce Rules of Mortgage Issuance

The numerous flaws in the mortgage origination process that the recent crisis has exposed has prompted calls for tougher regulation of mortgage lenders, especially the relatively lightly supervised state-chartered mortgage entities that were responsible for roughly half of the subprime mortgage originations, both to protect borrowers against unscrupulous practices, and to protect mortgage purchasers, securitizers, and investors against imprudent originations. It is clear, in retrospect, that Edward Gramlich was right to have urged some degree of Fed supervision of mortgage lending (and, if such supervision required Congressional authorization, it should have been sought). Just before he died, he suggested at the Federal Reserve's annual "Jackson Hole" conference in August 2007 that a model of Federal-state cooperation in the supervision of state-chartered mortgage lenders was a step in the right direction and arguably an appropriate compromise (Gramlich 2007a).

We support one specific further step, namely the Treasury Department's proposal to create a new Federal Commission on Mortgage Origination (FCMO) to guide the states in developing mortgage underwriting criteria and monitoring their progress. The key issue is to decide explicitly what such a new Commission would do.

As proposed by the Treasury, the FCMO would establish minimum mortgage underwriting, related education, and license revocation standards to be adopted by the states. The FMOC would have a director appointed by the President, and its members would include Federal bank regulators and state representatives. Apart from establishing the minimum standards, the FMOC's main function would be informational: it would evaluate and issue public ratings of the adequacy of the state systems for licensing and regulating participants in mortgage origination.

Elsewhere in this report we have stressed the importance of improving disclosure and transparency at all stages of the mortgage process, and so certainly we endorse the Treasury's objective in providing the public with more information about the adequacy of state licensing and regulation of mortgage lenders, especially the state-chartered lenders that are not currently regulated or supervised by Federal bank regulators (or that presumably would not be regulated and supervised by the Treasury's proposed "Conduct Regulator"). The critical question to be asked is whether disclosure of this information,

by itself, would encourage states that receive poor or sub-standard ratings by the FMOC to improve. Doubters might argue that legislatures, Governors, and regulators in those states may be embarrassed by these ratings, but otherwise have no incentive to adopt meaningful reforms, especially if opposed by a potentially powerful and well organized mortgage lending industry in those states.

But this skepticism ignores the powerful force of the mortgage marketplace. In particular, state-chartered mortgage lenders in the states that have sub-standard ratings might find it much more difficult, with the Treasury's ratings in place, to sell their mortgages the institutions that purchase mortgages and securitize them. In addition, knowing that the Treasury's ratings are available, investors in mortgage-backed securities are likely to be very interested in the Treasury's ratings, and specifically will want to demand that underwriters of these securities disclose the extent to which the mortgages in the collateral pool come from states with sub-standard Treasury ratings. Investors can be expected to use this information to require higher interest rates on securities backed by mortgages from such states. This likely market reaction – more than any interest group pressure – would help encourage policy makers in the states to police their state-chartered lenders.

It is for this reason that we are hesitant to call for the federalization of all regulation and supervision of mortgage origination. Although there is clear Constitutional authority for such a step – the securitized mortgage market is very much national, and even international, in scope – federalization would require the creation and continued funding of a much more massive agency than what the Treasury has proposed, and should not be necessary if the mortgage market works as we have just outlined. If that proves not to be the case, Federal policy makers could then several years down the road consider the more ambitious step of having the FCMO supervise all mortgage origination.

Are there Problems in the Regulation of the Securitization Process?

The current turmoil has revealed fundamental weaknesses in the transition from the "originate and hold" model of mortgage issuance to the securitization model. Clearly, improvements in the regulation of mortgage origination will help. But the impact of the

weaknesses in mortgage origination was greater because the various stages of securitization made it difficult or impossible for the purchasers of the securities to realize how much risk they were taking, with the failures of the rating agencies an important factor in this. There are additional measures that could be taken at different stages of the securitization process and for other players that would improve the effectiveness and safety of this new of extending credit, not only to homeowners but to other borrowers whose loans have been and will continue to be securitized.

Existing Rules and Responses to the Current Crisis

Like other securities, the underwriting of mortgage securities is governed by Federal and state laws designed to protect investors. At the Federal level, Section 11 of the Securities Act of 1933 subjects underwriters to liability for false or misleading statements made in registration documents filed in connection with sale of mortgage-backed securities to retail investors (but Section 11 does not apply to the sale of CDOs, which are typically sold to institutional investors under the SEC's Rule 144A and do not require registration). In addition, both state and Federal anti-fraud laws prohibit issuers of mortgage-related securities from misleading investors (although these laws typically require a showing of intent or "scienter"). These laws are enforced by public agencies – the SEC and state attorneys' general – and by investors who rely on the representations made by securities underwriters.

Mortgage-related securities carry three major risks for investors: that borrowers of the underlying mortgages may not pay their principal and interest payments on time, or at all (credit risk); that some portion of the underlying mortgages will be repaid early, primarily because homeowners move or refinance (prepayment risk); and that changes in market interest rates will change the present value of the cash flows of payments on the underlying mortgages (interest rate risk). For mortgages backed by subprime loans, the slicing of cash flows into a low-risk tranche, in conjunction with AAA ratings from the credit ratings agencies, was supposed to provide protection against credit risk in lieu of the guarantees provided by Fannie and Freddie.

For better or worse, one of the pillars of the U.S. economic system is that parties that feel they have been injured by others can sue to reclaim losses. The legal system is

effectively part of our regulatory structure. Now that the securities backed by subprime mortgages have been revealed to have had much greater credit risk than any of the parties to mortgage securitization – the ratings agencies, the underwriters, and the investors – ever expected, the litigation has begun to assign blame and to recover damages for what went wrong. A rising number of investor lawsuits already have been filed against one or more of these parties. Purchasers of CDOs also may sue some or all these parties under one or more contract or statutory theories (that do not rely on Section 11).[79] Although it is too early to project the outcome of these lawsuits, the fact that they are already under way and are likely to generate significant adverse publicity for at least some of the defendants or targets should send a strong signal to underwriters and other parties involved in mortgage-security securitization in the future to enhance disclosures and most likely avoid securitizations backed by subprime mortgages altogether. The deterrence impact of this litigation will be even greater to the extent defendants lose in court or even enter into large and highly publicized settlements.

Even without litigation, the market has responded to the crisis. Since investors no longer will buy virtually any security backed by a subprime mortgage – and especially those with high LTVs or without documentation – "liar loans" and no-doc loans simply cannot be originated. Mortgage lenders now routinely require much more substantial down-payments, reportedly 20 to 30 percent of the purchase price. Both Fannie Mae and Freddie Mac have raised the credit score threshold at which they define a prime loan (reportedly from prior scores of 620-640 to 680). Today, the credit rating agencies no longer have the same power that they had before the crisis. Investors are far less likely to take for granted that an AAA security in fact has a low default probability. And the agencies themselves are reforming the way they assess risk, recognizing that they failed.

Regulators have also responded to the situation. The public enforcement agencies, at both the Federal and state levels, have mounted investigations of underwriters, and other participants in the securitization process, including mortgage brokers, originating mortgage lenders, and the mortgage appraisal firms that do "due diligence" for the underwriters (to make sure that the mortgages backing the securities were properly

[79] For a through and timely analysis of the litigation that the subprime crisis has spawned and is likely to generate in the future, see Bethel, Ferrell, and Hu (2008).

underwritten and documented). As we noted earlier, the Federal Reserve proposed in December 2007 new mortgage underwriting rules that, among other things, would ban the no-doc loan and require written agreements between borrower and mortgage brokers on collecting yield-spread premiums. And Federal and state prosecutors are busy around the country investigating many allegations of fraud in the origination process, which various reports suggest played a significant role in contributing to the subprime mortgage problem.

Given all of this activity, is further regulation of securitization necessary and would it be effective? We believe that two new steps are called for. First, credit rating agencies should separate their advising from their rating activities. We discuss this and other aspects of the agencies below. Second, regulators should explore ways to make more transparent the assets underlying any securitized product. In principle, a potential investor should be able to call up a web location that provided information on the characteristics of the mortgage pool (or credit card pool) from which the income was derived to service the security (average FICO score and range of scores, average and range of LTVs, for example). For complex tranched and retranched assets this may not be possible. In these cases, the assets should be marketed only to sophisticated entities and only with appropriate warnings (of course in the current crisis, sophisticated banks bought large amounts of bad securities, so this is no guarantee).

Assignee Liability

One idea for further action, currently being considered by Congress, would add more legal remedies against underwriters of mortgage-backed securities where investors subsequently suffer losses in order to encourage the underwriters to pressure mortgage lender to be prudent when originating mortgage loans. In particular, the House Banking Committee is considering at this writing a comprehensive mortgage reform bill that, among other things, would make underwriters absolutely liable for investor losses due to the failure by mortgage originators to comply with applicable underwriting requirements The bill contains unprecedented Federal consumer protections that will subject Wall Street firms to liability if they buy, sell and securitize loans that consumers cannot repay.

They will be held accountable by consumers and will have the ability for loans to be rewritten and reworked.

In our view, the case for such "assignee liability" cannot be assessed fairly without considering what other measures ultimately are taken to strengthen mortgage origination, as well as the outcome of the pending and likely future litigation against underwriters and other participants in mortgage securitization. The critical question is whether the *additional protection* provided by assignee liability is needed if other reforms are adopted, or whether an additional private cause of action could represent "overkill." The latter outcome is more than a theoretical possibility: assignee liability for HOEPA loans has discouraged Fannie and Freddie from purchasing or securitizing these high-cost loans (those that exceed the HOEPA thresholds). Extending assignee liability to securities backed by subprime mortgages more broadly could have a similar impact on the commercial and investment banks that securitize these mortgages, effectively shutting down originations of most subprime mortgages.

Advocates of assignee liability could claim it is nonetheless needed as a backup remedy in case regulators lack the resources or will to enforce even strengthened mortgage underwriting standards. In addition, it is possible that current and future investigations and lawsuits against participants in securitization will fail to provide sufficient incentives for underwriters, in particular, to discipline careless mortgage originators. In our view, however, the risks of assignee liability outweigh the potential benefits, and at a minimum counsel against adopting it unless and until it is clear that other ways of improving mortgage origination prove inadequate. The private legal system of redressing wrongs has proven costly and cumbersome and we are reluctant to expand its scope.

Requiring Originators to Retain Partial Ownership of the Mortgages they Initiate

Mortgage borrowers are not the only victims of the recent mortgage crisis. Entities that purchased mortgages, primarily for the purpose of packaging them into securities, as well as the purchasers of the securities themselves, have suffered substantial and rising losses because mortgage brokers and originators had insufficient incentives for prudently underwriting mortgages and, apparently in some or even many cases, did not

convey truthful or complete information about the risks of possible delinquency or default.

In principle, market forces should have driven mortgage brokers and originators to behave prudently, since failure to do so would cause mortgage buyers to quit doing business with them in the future. However, the continued rise of housing prices masked the problems that lay ahead: that at the point that many subprime mortgage borrowers could no longer refinance, they would be unable to service their debt, especially on ARMs whose interest rates reset at levels substantially above the initial teaser rates. In the meantime, however, brokers and originators earned fees simply on volume: by generating and then selling more mortgages. Indeed, under one particular form of brokerage arrangement, the "yield-spread premium," brokers were paid more by originators the higher the interest rate.

The rapidly growing volume of litigation launched against lenders, home builders and other defendants in the wake of the subprime meltdown eventually should lead mortgage lenders and brokers, in particular, to be more careful in their underwriting and in disclosures they make to counter-parties.[80] Yet litigation is not likely to cure the fundamental problem in mortgage origination: that up to now, brokers and mortgage originators have had no financial "skin in the game," beyond the possible future threat that they could lose business after selling mortgages. To be sure, in the typical sale of mortgages to a securitizer, the buyer could "put" a delinquent mortgage back to the buyer for a limited period (often as short as a year), but after that period, the seller had no financial risk. In an era of continued housing inflation, originators justifiably viewed this risk as quite small, especially when compared with the immediate fees that could be earned by booking and then selling the mortgage.

With limited incentives for prudence in origination, and in a general environment of rising housing prices, originators also relaxed their underwriting standards to enable more subprime borrowers to qualify for mortgages, and thus to boost origination volumes and thus fees. Thus was developed the "no-doc" loan (in which the mortgage lender

[80] Since the beginning of 2007, 448 subprime-related cases had been filed in the Federal courts through March 2008. An even larger, but undetermined, number of such cases had been launched in state courts. According to one study, the numbers of subprime cases is on a path likely to exceed the 559 legal actions commenced during and after the savings and loan crisis of the 1980s and early 1990s. Martha Graybow, ÚS Subprime Lawsuits Pick Up Steam," *Reuters*, April 23, 2008.

would merely a quick background check on the borrower-applicant, but would not verify his or her income or assets), mortgage loans with no money down, or even better, mortgages that exceeded the appraised value of the home (loans with "loan-to-value" ratios in excess of 100 percent, or "high-LTV loans").[81] In particular, in such an environment, with no verification system in place, reportedly many borrowers simply lied about their financial status in order to qualify for what since come to be known as a "liar loan." One study suggests that fraud may have contributed to as many as one quarter of the delinquent securitized subprime loans.[82]

We believe it is worth exploring ways to ensure that mortgage originators (the bank or financial institution that initially finances the loan) retain at least a fraction of the value after they originate a mortgage. Borrowing the notion that banks should be required to maintain at least a minimum amount of capital to give them appropriate incentives to offset the moral hazard created by Federal deposit insurance, it would be prudent to require mortgage originators to retain some small percentage – say 5 percent – of the face amount of the mortgages they sell to securitizers?[83] Alternatively, such a requirement could be implemented by requiring all mortgages in pools backing mortgage securities to have that minimum percentage retained by the originating lender. Or lenders large enough to securitize their own loans could be required to guarantee the mortgage-backed securities, much as Fannie Mae and Freddie Mac now do with their MBS.[84] With at least some skin in the mortgages they originate permanently – or at least until they paid off or refinanced – originators presumably would be more careful when underwriting them.

There may be several objections or limitations to this idea, and thus it bears further scrutiny by others. For one thing, if investors would value originators retaining a piece of the mortgages in a securitized pool, why isn't the market already encouraging

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[81] The National Association of Realtors reported that between mid-2005 and mid-2006, almost half of the mortgages taken out by first-time homebuyers had no down payments, with the median down payment at only 2 percent. Cited in James Surowicki, "The Financial Page: Home Economics," *The New Yorker*< March 10, 2008, p. 62.

[82] Fitch Ratings (2007).

[83] Congress or Federal regulators clearly would have authority to impose such a requirement directly on Federally-chartered depository institutions that originate mortgages. Congress should also have Constitutional authority under the Commerce Clause to apply the requirement even to state-chartered mortgage originators since the securitization of mortgages involves interstate commerce.

[84] This has been suggested by Alex J. Pollock, "Q&A with Alex J. Pollock," *Mortgage Banking*, February 1, 2008, available at www.aei.org.

this result, especially now that the flaws in mortgage origination have been so well exposed? One answer might be that because the subprime mortgage securities market has now generally collapsed, measures to refine the process have not yet been profitable or worthwhile to explore. In the meantime, therefore, regulators might be able to engender more confidence in the market by imposing a mortgage retention requirement.

Another objection is that originators could blunt the impact of any mortgage retention requirement by purchasing insurance protection, analogous to the credit default swaps that lenders have been buying to protect against defaults of other types of loans. To be sure, the premiums for such insurance should reflect the originators' default experience, but it is possible that any risk-related differentials may be too small in relation to the fees that originators can earn to have much of a deterrent impact. This same point could apply to the retention portion itself, even if it is not insured.

Despite the reservations, we believe that it is worth exploring specific options along this dimension. It is generally much better to create good incentives within the economic system than to rely on regulators or the legal system to discourage bad behavior. If mortgage originators know they face a default penalty it would make them much more careful about the loans they originate.

Regulation of Credit Ratings Agencies

The credit ratings agencies bear significant responsibility for the subprime mortgage mess. The major agencies – Moody's, S&P, and Fitch -- played a critical role in helping underwriters to structure and ensure the ratings of CDOs (and the "tranches" within them) so that securitizers and originators would have a ready market for subprime debt. Indeed, had the agencies not given AAA ratings to at least some portion of the securities backed by subprime mortgage debt, lenders would not have been so willing or even able to originate such mortgages in the first place. Yet clearly the agencies misjudged the safety of the subprime-related securities they rated. In particular, they extrapolated the relatively low delinquency rates of subprime mortgages during the post-2001 economic expansion and the associated run-up in housing prices and wrongly assumed that these trends would continue indefinitely.

For the immediate future, there is little danger that the agencies could contribute to another subprime-like mess. While investors value ratings in principle – because they save them time and money in investigating the credit risk associated with the securities that are rated and because of regulatory requirements – the investment community has lost much faith in the agencies' actual ratings in practice. This is a major reason that the CDO market is now virtually dead, and along with rising default rates and losses, has contributed to wider spreads between privately issued securities and U.S. government bonds. The ratings agencies, meanwhile, each have announced major adjustments in their analytical procedures in an effort to restore some confidence in their ratings.

Certain structural features of the credit ratings business, especially when considered together, make it difficult to design policies that will encourage the agencies to be more prudent, without being excessively cautious, in the future, and further to convince market participants that their ratings have value. Policy makers have also been searching for reforms to enhance the credibility of ratings, while also giving them incentives to be more prudent in the future. For various reasons we outline below, this is easier said than done. Still, we believe that some modest reforms would help.

Even with these reforms, in the absence of fundamental change in the way that ratings are paid for, investors are generally likely to pay less attention to ratings than they did before the current crisis. Issuers will still pay the agencies because the government says they have to, but the market may not reward issuers of better rated securities as handsomely – in terms of lower interest rates – as has been the case historically. Such an outcome will favor institutional investors who can do "buy-side" research themselves, and give even stronger incentives to retail investors either to buy into diversified mutual funds or exchange-traded funds. It is also possible that such an environment would encourage existing ratings agencies to switch to an "investor-pays" model or provide incentives for new entrants to follow that approach.

Still, the increased investor skepticism of the ratings issued by the agencies will make it more difficult for commercial and investment banks in the future to sell any securities backed by subprime mortgages, which in turn will make those mortgages more expensive and less available. Another possible outcome is that securities backed by subprime mortgages still will be sold, but only with more over-collateralization, so that

investors have a larger cushion against loss. This, too, will increase the cost of mortgage credit. More broadly, underwriters of asset-backed securities generally (including securities backed by non-mortgage assets) are likely to return to simpler structures, and avoid the kind of complexity embodied in CDOs, CDO-squareds and other exotic securities of recent vintage. As one market observer has concluded: "The days of trading on ratings are over … Market participants will pay increasing attention to the underlying assets and pools."[85]

Obstacles to Rating Agency Reform

Several structure features of the credit rating business complicate any efforts at reform. First, the current business model of credit rating is fraught with conflict of interest. Originally, when the agencies sold their ratings to buyers, there was no such conflict. Investors would pay for the information only if it clearly proved to be of value. But over time, as technology allowed information to be easily transmitted, ratings information easily leaked out to the market, and as it did, potential buyers could "free ride" off of others, meaning that eventually no buyer would pay for the ratings. The producers of the ratings had to switch their business model, therefore, to one which relied on the *issuers* of securities paying for the ratings, and thus the inherent conflict. In particular, this model has allowed the agencies to offer "advice" to issuers as to how to structure their offerings to qualify for certain ratings. Often this advice requires the issuers to pay the agencies for additional "due diligence." In this way, the agencies became actively involved in designing and earning revenue from the issuance of new securities, such as those backed by subprime mortgages which have since proved to be much riskier than the agencies had initially projected.

Second, a related conflicts problem is that employment at the ratings agencies has come to be seen as a stepping stone to more lucrative jobs at investment banks. The prospect of later earning a job offer from one of these banks can make analysts at the rating agencies more willing than they otherwise might be to cooperate with the banks when they seek ratings for the securities they want to underwrite.

[85] Len Blum, managing director of Westwood Capital LLC, quoted in Kate Berry, "Securitizing Mortgages: When Smoke Finally Clears," *American Banker*, February 1, 2008.

Third, there is limited competition in the ratings business, by design. As discussed next, various provisions in the Federal (and state) law that limit investments to certain ratings "grades" also require that those ratings be issued only by a "nationally recognized statistical ratings organization." The SEC, in turn, handles NRSRO certifications. To its credit, the SEC has certified several additional NRSROs over the past few years – so that there are now a total of nine authorized NRSROs – but still for all practical purposes, three agencies dominate the industry (outside the ratings of insurance companies, which is dominated by A.M. Best).

Fourth, Federal and state laws create more demand for ratings than would otherwise exist through its ratings-related mandates. For example, the SEC allows certain bond issuers to use a shorter prospectus form when issuing bonds with ratings above a certain level. The SEC requires that money market funds invest only in securities with a very high rating from an NRSRO. State insurance regulators use credit ratings from NRSROs for, among others, to determine the strength of reserves held by insurance companies. And, as we have already discussed, the revised bank capital guidelines issued by the Basel Committee, rely heavily on ratings to determine minimum capital requirements for many banks.

What Cannot Be Effectively Changed?

In principle, it would be desirable to find a way to establish some kind of "Chinese wall" between the personnel in the ratings agencies who advise issuers about how to earn certain ratings from the individuals who actually do the ratings. But even with forced separation, issuers might nonetheless be able to indirectly involve the agencies in designing their securities by continuously submitting different designs or structures until they receive the rating they want. The agencies may not be telling issuers directly what to do, but still indirectly may be able to provide signals as to how to achieve a given result. Meanwhile, because the agencies can charge issuers each time they submit a structure for review, creating a Chinese Wall may simply make it more expensive for issuers to design new securities, potentially generating even more revenue for the agencies. It is possible, of course, that this would not be outcome: that the higher costs attributed to a Chinese Wall would discourage issuers from shopping their security

designs to get an improved rating, or the agencies from dispensing such advice. If regulators found a way to achieve such an outcome, we would support it. But we have some skepticism that this is possible.

As in other businesses, it would be desirable if there were more competition in the ratings business. But as long as issuers continue to pay for ratings, then more competitors may simply give more room to issuers to "shop" for ratings.

A more fundamental reform that would bring more market discipline to the ratings business would be for the Federal government (and the states) to scale back mandates that require use of ratings in some fashion to guide or mandate private sector behavior. This would remove an artificial stimulus to the use of ratings, and require the agencies to compete more by serving investor needs than by meeting government mandates. Perhaps such a step might lead to a fundamental change in the business model of issuing ratings. But in the meantime, it may be difficult to meaningfully cut back on mandated use of ratings. Moreover, even without mandates, there is still a latent demand for the information provided by independent third parties, such as credit rating agencies. The question is how to structure the policy environment so that the information that is made available is free from the conflicts just described.

What Can Be Changed?

Fortunately, there are some steps that we believe could help, although we caution that none is a panacea. First, we support greater clarity in comparing ratings across asset classes. The Treasury Department has suggested that the agencies be required to issue different grading systems for corporate and municipal securities, on the one hand, and for structured products, on the other. In principle, this reform would address the fact that the agencies already use, but do not transparently explain, different methods for projecting delinquency rates and losses for these different types of securities. Or, to put it another way, an AAA rating for a corporate bond by any of the agencies does not imply the same projected likelihood of default on AAA-rated CDO or other structured security.

While this idea makes sense, it is important not to overstate its potential benefits. Sophisticated investors are already aware of the different meanings of the ratings. The problem revealed by the subprime turmoil is that the agencies lacked sufficient historical

loss experience to assign accurate ratings to the relatively new structured securities. Simply mandating a different reporting or grading system for the different kinds of securities will not solve this problem, although it may increase awareness among investors about the differences in the bases for the ratings. In the process, this may encourage the agencies to apply some kind of "uncertainty" or "data insufficiency" discount to ratings on securities backed by asset categories with a limited track record.

Second, we support ideas for enhancing market discipline over ratings. For example, the SEC has announced that it is looking into ways to require the agencies to publish more information on a regular basis that would enable third parties to assess their track records. In other words, investors would then be able to know whether the AAA ratings for particular kinds of securities (for different cohorts or covering different time periods) issued by, say, S&P, proved to be any more or less accurate than the ratings for comparable securities assigned by Moody's or Fitch.

This reform is a sensible one, but we do not believe its value should be overstated either. Institutional investors and market participants already have sufficient information about the experience of rated securities to compare the accuracy of the different ratings agencies. The problem is that the agencies tend to follow one another in their ratings, so that there are often no meaningful distinctions to be drawn between their ratings. Furthermore, differences in past performance between the agencies may not be reliable indicators of future reliability.

There is an alternative way in the SEC might improve the quality of ratings, however, and that is to enhance disclosures associated with ratings, *especially of newer instruments.* Here we have in mind a requirement that ratings agencies explain to the public generally how they arrive at ratings for specific categories of assets (the precise level of detail in this regard would have to be worked out), together with information about the time periods used to generate any actuarial or statistical estimates that go into those ratings. The SEC might also want to require that securities ratings based on limited time periods – perhaps five years of data or less – be specially designated. Information about both the length of the time period and the months and years they cover – and specifically whether they include both "up" and "down" years – should give investors guidance as to how heavily to rely on the ratings.

Finally, while the idea of greater regulatory supervision may merit some further study, we are frankly skeptical that this particular idea will yield much fruit. In principle, the SEC could be given additional authority to oversee the ratings agencies, perhaps along the model of the recently created Public Company Accounting Oversight Board (PCAOB) that was established to oversee the accounting profession, and primarily the four major auditing firms, after the financial reporting scandals several years ago. The PCAOB does its work primarily by spot checking the audits carried out by the auditing firms. In cases where it finds negligence, or worse, the PCAOB can fine or even suspend specific auditors (and, in a worst case, levy punishments against entire firms). Might the SEC, or perhaps a new agency modeled after the PCAOB, do the same thing for ratings agencies?

There is an important distinction between auditing and providing ratings – apart from the fact that there are many more securities issued and rated each year than public companies that are audited -- that make us skeptical whether the PCAOB model is appropriate for ratings. Whereas audits focus primarily on the accuracy of *existing* accounts and reports (including many estimates) ratings agencies are in the business of projecting the *future.* It clearly would be inappropriate to punish someone for a forecast or projection that later turns out to be wrong since a myriad factors unforeseen at the time of the projection can determine a subsequent outcome. The only legitimate test for assessing the reasonableness of a projection is whether it is appropriate *given the information that is available at the time.* Although a "reasonable man" standard is appropriate in many settings, that standard by definition has an amorphous "you know it when it see it" quality, one that is heavily dependent on context. Analysts and their supervisors clearly would want more guidance – more of a bright line test – to know whether their actions would be punishable by an agency like the SEC. Yet elements of that bright line test may also be proprietary: what is an acceptable method of projecting delinquencies and possible future losses at one agency may not be used or deemed appropriate at another. Any bright line test for assessing the prudence of analysts and their supervisors at rating agencies is therefore likely to discourage innovation in ratings, while inevitably leading government examiners to develop a cookbook or check-the-box mentality that would heavily focus on process rather than judgment. Indeed, the ratings

agencies themselves could be expected to seek such an outcome in order to have some certainty about their susceptibility to sanctions. We are skeptical, to say the least, that the ratings produced in such an environment would be an improvement on what exists now.

Commercial Bank Regulation

The current turmoil has revealed much more fundamental weaknesses in the way we regulate commercial banks to assure their safety and soundness. To put it mildly, the extent to which many banks have suffered major losses in their mortgage-related securities and loans has taken the regulators and policy makers by surprise, since until very recently it was widely assumed that these banks managed their risks in an acceptable, if not cutting-edge, fashion. In effect, a lot of risk that was supposedly dispersed ended up back on the balance sheets of commercial banks, but in less transparent form and less well-capitalized.

So how should our regulators fix our system of regulating the safety and soundness of depository institutions? We recognize the difficulties of regulation in this area and offer a collection of reform ideas. But first we provide some background on bank regulation to to contextualize an assessment of our suggestions.

The Evolution of Bank Regulation in the Past Two Decades

Regulators require banks to back their assets with at least a minimum amount of capital to act as a cushion against loss – typically expressed as a percentage of bank assets – in order to protect bank depositors and other creditors, and also to protect government deposit insurance funds. After the banking problems experienced by many developed country economies in the 1980s, regulators and central banks from 11 of these economies developed a common set of bank capital rules to tackle two problems: to ensure that going forward banks would be better capitalized than they had been in the previous few years, and to do so without giving banks in some countries with more relaxed capital rules a competitive advantage vis-à-vis banks in other countries with more restrictive rules. In principle, a common set of bank capital standards – which, because they are expressed as a percentage of bank assets, determine the maximum asset size of

banks and thus, to a significant degree, their earning power – would "level the playing field."

Initially, the Basel participants established relatively straightforward, but arbitrary standards that assigned different "risk weights" to different categories of assets, and then specified two capital ratios to the sum of the risk-weighted assets. At one extreme, government securities were assigned a risk weight of 0, which mean that banks were not required to back them with any capital at all. At the other extreme, most consumer and commercial loans were given a risk weight of 100 percent, which meant that the capital ratios applied to these assets in full. At the insistence primarily of the German representatives, mortgage assets were given a risk weight of 50 percent. These standards went into effect in 1989. Two years later, the U.S. Congress enacted the FDICIA, which as we noted earlier, mandated a system of prompt corrective action and instructed Federal bank regulators to supplement the Basel standards with a second set of simple *unweighted* capital-to-asset standards, or "leverage ratios."

Although many banks, policy makers and other observers welcomed the Basel standards, which appeared to more finely tune a bank's required capital to the actual risks it was bearing, the Basel standards were criticized by some academic scholars.[86] Among the critiques were that the risk weights were arbitrary, that they did not take account of the correlation between assets in the different categories and thus did not reflect the risks of a bank's entire *portfolio* of assets, and that they did not require capital to back other kinds of risks, such as those arising from the exposure of a bank's asset structure to movements of interest rates at different maturities ("interest rate risk").

The Basel Committee made some minor modifications to the initial standards in their early years, but toward the end of the 1990s, after watching bank activities becoming ever more complex, the Committee launched a process in 1998 aimed at providing a more fundamental overhaul of the standards. In particular, Committee members wanted an even more granular risk weighting system and one that was less arbitrary and more reflective of the market's assessments of risk of different asset classes;

[86] One of the authors of this essay (Litan) was among the critics, along with other members of the Shadow Financial Regulatory Committee, an independent group of market-oriented financial sector researchers and experts that regularly assesses Federal financial sector policies. The Committee's criticisms of Basel appear in a number of its statements (which can be found at www.aei.org), and in a comprehensive statement; see Shadow Financial Regulatory Committee (2000).

an option to permit banks under certain circumstances to use their own "internal models" for assessing risk in place of the Basel formulae; capital to back "operational risks" of banks (such as those arising from technological problems); and more emphasis on the importance of disclosure. After numerous drafts and redrafts, the Committee finally agreed on a complicated set of standards set out in more than 400 pages of text, that ironically was adopted in 2007, the year in which the banking system the standards were supposed to govern began to unravel due to excessive risk concentrations in mortgage-related securities.[87]

Recent Problems with Risk Assessment and Management

Despite all this work, the mortgage crisis and its aftermath have revealed several key fundamental weaknesses in the Basel II standards, and indeed in the entire process developed for producing them

One key linchpin of the "basic standards," those applicable to most banks, is the use of credit ratings to assign risk weights to assets in various categories. Critics have long attacked this as outsourcing of risk assessment, and events have clearly proved them right. Had the credit ratings of securities backed by subprime mortgages in particular been anywhere near appropriate, many if not most of the securities never would have been originated, let alone bought by banks and other institutional investors. Yet Basel II endorsed the ratings agencies as having some kind of special competence in performing due diligence on bank assets, a judgment that was seriously in error.

Another key aspect of the Basel II standards was the decision to permit larger banks, under certain conditions, to use their own internal models for assigning risk weights to their assets. This decision proved to be just as mistaken as the one to delegate risk assessment to credit rating agencies. Banks' models for mortgage-related securities failed not only to predict accurately their exposure to loss, but also the extent to which losses on these securities proved to be correlated with losses on other securitized instruments (such as those backed by commercial real estate and commercial loans more broadly). Supporters of the Basel II revisions may counter that governments would not

[87] For a thorough study of the history of the Basel standards, as a well as a thoughtful critique, readers should consult the forthcoming book on the Base standards by Daniel K. Tarullo (forthcoming 2008).

have done any better if they had attempted to impose a one-size-fits-all internal model. But such a response assumes that the standards should be that refined (an assumption we question when we later offer suggestions for improvements in bank capital regulation).

The Basel II regulators outsourced risk assessment to third parties to respond to the criticism that the earlier risk weights were arbitrary and had little or no basis in market realities. But this decision also represented an accurate confession that the regulators themselves were not good judges of the relative risks of different types of bank assets. This should have encouraged them to question the entire exercise of trying to divine the riskiness of different types of assets, and more fundamentally of the wisdom of ignoring that banks more appropriately should be judged by the riskiness of their *entire portfolios* – given the interactions of the cash flows of the different types of assets – rather than trying to sum up of the risks of individual categories of assets without taking account of those interactions.

There is nothing in the hundreds of pages of the Basel II rules about the adequacy of bank liquidity, yet if there is one thing the recent turmoil has demonstrated is that banks have not had the liquidity they thought they had.

Finally, the Basel II standards say nothing about off-balance sheet entities created by banks, and whether and to what extent banks should hold any capital against the liabilities created by these vehicles. Presumably, this matter was omitted from the Basel standards because it was assumed that national (or international) accounting bodies would decide the circumstances under which off-balance sheet entities should be consolidated with the banks themselves. As it turned out, this assumption proved to be misplaced, at least in the United States, where a number of commercial banks used their "Structured Investment Vehicles" to purchase mortgage-backed securities whose values later plummeted, causing significant losses at these SIVs, and subsequently their bank sponsors.

Consider Elimination of Risk Categories

First, just as we earlier urged regulators to require a simple disclosure form for mortgage borrowers, we now also urge regulators to keep bank capital requirements simple by going back to what regulators used to use: a leverage ratio (shareholders'

equity divided by assets, with a qualification to be noted, in lieu of the complicated risk-weighted capital ratio that was the linchpin of the Basel Accord. In retrospect, for all the seemingly mathematical precision of the Basel risk weights and internal model, nothing about those standards prevented or in any way mitigated the subprime mortgage turmoil. To the contrary, from their inception, the Basel standards have *encouraged* banks to hold mortgage-related assets on their portfolios because they are assigned a lower risk weight than other loans.

One of us (Litan) feels strongly that eliminating these risk categories would make sense; the others are unsure of appropriate policy in this area.

If, however, regulators here and elsewhere are reluctant to abandon the risk-based feature of bank capital standards, we urge them to consider including in any future iteration of these standards a higher capital charge on over-the-counter derivatives exposures and asset-backed securities than on financial instruments traded on organized exchanges. Such a differential would encourage the standardization and other steps that will be required to move financial instruments to exchanges (a concept we discuss separately below).

Modifying Prompt Corrective Action Requirements

The recent turmoil poses a difficult problem for regulators, however. A bank's capital depends, in part, on the value of its assets. Under prevailing accounting rules, marketable securities must be "marked to market" rather than continue to be carried at historical cost or their book value. Following this rule, banks have been writing down the values of their CDOs and any other complex securities that may be on their balance sheets, or which they have absorbed when folding their SIVs, even though the "market" for such securities is extremely thin, at best, and there is a reasonable prospect that many of them, if held to maturity, would realize greater value than the values at which they may currently be traded.[88]

[88] This is not to deny that the values of many mortgage-backed securities, especially those backed by subprime mortgages, should be marked down to reflect lower housing prices and expectations that such prices will sink even further. The problem with "fair value" or "mark-to-market accounting" is that when trading volumes are very low, and the spreads between what buyers are willing to pay and what sellers to offer are quite wide, large uncertainties about the underlying value of the securities can cause their current

In our view, if a bank is truly near or at insolvency when for other reasons unrelated to the value of currently illiquid securities, then it is both sound policy and a legal requirement for regulators to obey the PCA provisions of Federal banking law. However, for banks whose capital may be impaired solely or primarily because of mark-to-market accounting for currently illiquid securities – CDOs, mortgage-backed securities and other new instruments that were once marketable but in this environment no longer are – we would counsel greater caution. To be sure, regulators should monitor such institutions closely, suspend their dividends to preserve capital, and work with the banks to prepare contingency plans for raising additional capital if subsequent events demonstrate that such securities are unlikely to realize their full value at maturity or it becomes clear for other reasons that capital is insufficient for reasons unrelated to the current illiquidity of those assets. But we would not obligate regulators to take over a bank in a near-insolvency position solely because of mark-to-market (some might pejoratively say "mark-to-fantasy") accounting.

Implicitly, this is what the Federal Reserve Board and banking regulators did in the 1980s, when each of the major "money center" banks then was threatened with insolvency, or at least severe capital impairment, due to the sizeable volumes of troubled loans then outstanding to governments of less developed countries. It is widely acknowledged that the regulators did not compel these banks to mark these loans anywhere close to market values, for fear of causing a crisis in confidence in the U.S. banking system – and this at a time when the overall economy was expanding, and not contracting as it is now.[89] In essence, all we are suggesting here is that bank regulators today adopt a more transparent method of granting forbearance, coupled with strict supervision aimed at preventing further risk-taking.

Modifying Mark-to-Market Accounting Rules

In the meantime, regulators here should work with the Financial Accounting Standards Board (FASB) urgently to develop clearer accounting guidelines not only for

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"market prices" to be substantially below what the securities may really be worth based on the prevent value of the expected cash flows of the underlying collateral.

[89] See, e.g. Volcker et al. (1997).

banks but for all public companies that hold securities that become temporarily illiquid due to general economic conditions.[90] In March, the SEC's Division of Corporate Finance sent a letter to all public companies attempting to clarify that they need not use market prices from "distressed sales" to value tradable securities. Nonetheless, from conversations we have had with market participants and judging from media reports, the letter has not dissuaded banks or their auditors from taking the conservative course, and thus continuing to use prices in very thinly traded markets to value their asset-backed securities. This has led to what economists call a "fallacy of composition" -- the assumption that just because something is good for an individual, it is good for the economy as a whole. This is not always the case. In the current banking context, for example, while investors in any individual bank may benefit from knowing how assets are valued even by imperfect market prices, when all banks and other financial institutions account for thinly traded securities in this manner, all investors in these and even other companies are hurt, with negative consequences for the entire economy.

For one thing, when banks take write-downs, that cuts into their capital, and when this happens either they may be forced to sell new stock – lowering their stock prices – or shrinking their asset bank through asset sales. But the more assets that are sold in distress, the more downward pressure that is placed on already depressed securities. Further, the "marks" based on thin "markets" may be used to force write-downs of other securities, which leads to a similar results. And as bank balance sheets shrink, credit becomes tighter, leading to greater distress elsewhere in the economy. In short, what may be good for investors of individual banks is bad for investors and the economy as a whole.

Some innovative thinking might produce a better outcome, one that can avoid the vicious cycle created by mark-to-market in clearly distressed asset markets. In late April, the House Financial Services Committee accepted an amendment (offered by Cong. Gary Miller) to the mortgage relief bill sponsored by Chairman Barney Frank that would require the Federal Reserve Board to examine the impact of mark-to-market accounting on the financial sector and the economy in times of stress. Given the current distress in both financial markets and the economy, we have a two-part idea that policy makers

[90] EU Internal Market Commissioner Charlie McCreevy called for such action in early March for EU regulators and accounting standard-setters. The current mark-to-market accounting rules for financial assets are set forth in Financial Accounting Standards Board Statement No. 157 (or "FAS 157").

could consider implementing on an interim basis in the meantime, and perhaps permanently.

First, we propose the creation of some mechanism for temporarily suspending the requirement of strict mark-to-market accounting for financial assets traded in "disorderly" or "distressed" markets – those where trading volumes are very light, or the spreads between bid and ask prices are unusually wide. In addition, the "disorderly markets" determination would take into account prevailing macroeconomic conditions. Mark-to-market accounting should not be suspended where trading in particular asset classes is thin, but general economic conditions are reasonably strong. The "disorderly" determination or designation should be reserved for truly dire economic circumstances, such as those characteristic of the current mortgage and housing markets. The Federal Reserve Board would be an ideal authority to make such a determination.[91] Leaving it to the judgment of individual financial institutions or their auditors indeed would permit far too much discretion, and would lead to inconsistent methods of accounting across different institutions. Whichever body issues the disorderly markets determination, however, it should be in force only so long as the appropriate conditions warrant.

Second, we propose that the SEC consider allowing assets in markets designated as disorderly to be valued at prices reflecting their long-term fundamentals – that is, at prices that assume the underlying assets are held to maturity, rather than liquidated under duress.[92] Conceptually this implies estimating their future cash flows, adjusted for expected delinquencies or failures to pay on any underlying credits, and then discounting those cash flows by an appropriate rate of interest. What interest or discount rate should be used? Not the interest rate implied by the prices of currently thinly traded financial instruments: using this rate would simply lead to the same distressed assets prices that we believe are inappropriate for valuation in the first place. A more sensible approach would be to choose the interest rate at which the obligations initially were issued or made.

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[91] On April 24, 2008, the House Committee on Financial Services passed an amendment proposed by Cong. Gary Miller to the mortgage relief bill sponsored by Chairman Barney Frank that would require the Federal Reserve Board to examine the impact of mark-to-market accounting.

[92] As the overseer of FASB, and as the agency charged by Congress for authorizing accounting standards for public companies, the SEC could mandate this accounting treatment without waiting for the ordinarily lengthy standard-setting process at the FASB. Of course, the SEC can and clearly should ask for technical input from the FASB in drafting such a rule.

Critics might object that something like this alternative (and temporary) valuation procedure requires institutions to *estimate* asset values rather than to use supposedly objective prices based on market transactions. But this argument ignores a fundamental fact about financial reporting: that many items on a company's balance sheet and income statement already are estimates. Admittedly, the valuation methods we suggest here may not be exactly right, but they are more likely to reflect the long-run fundamental values of assets in non-functioning markets than prices that reflect distressed sales.[93]

Skepticism about Procyclical Capital Standards

We counsel caution with respect to one other reform of bank capital standards that, at least on first impression, may seem sensible. It is widely recognized that there is an element of "procyclicality" to the current way in which bank standards currently operate. When economic conditions sour, banks with credit and/or market-related losses that cut into their capital bases may be required by a fixed capital standard (expressed as a ratio of capital to assets, whether or not risk-weighted) to sell assets or to raise more capital at precisely the time when asset prices already have fallen or are still falling. Either or both measures can thus aggravate any market price declines, perhaps contributing to further deterioration in the asset values. The apparent solution to this problem is for regulators to reduce capital standards in "bad times," and raise them back in "good times," as Spain reportedly has done with some success.[94]

It is unclear, however, whether our regulators can be counted on to act appropriately. Allowing banks to operate with even greater leverage during economic downturns than is currently the case could encourage them to take even greater risks, especially the larger banks whose managers can reasonably expect the Federal Reserve to protect all creditors (even if they are uninsured) from any deposit run. By the time regulators raise capital standards during any expansions, it may be too late: risky

[93] For a broader critique of "fair value" accounting for illiquid assets, see Benston, et al. (2003) and Benston, et al. (2006).

[94] Sebastian Mallaby, "Double Bubble Trouble?" *The Washington Post*, April 7, 2008, p. A17. See also Mark Gongloff, "To Be Learned: Bear Stearns Consequences," *The Wall Street Journal*, April 7, 2008, p. C1.

mortgages and/or other assets held on the balance sheet already may have experienced significant losses.

Accordingly, in our view, the case for introducing some anti-cyclicality into bank capital standards has not yet been made.

Require Issuance of Uninsured Subordinated Debt

U.S. bank regulators should create additional market discipline to supplement the leverage ratio. Litan, along with others, has argued extensively elsewhere that large banks or banking organizations (holding companies) – whose failure could pose systemic risks – should be required to back a certain minimum percentage (say, 2 percent) of their assets and off-balance sheet liabilities with uninsured subordinated debt.[95] Such debt already is sold voluntarily by many banks; we would simply mandate that large banks sell it on a regular basis. Because "sub debt" cannot be withdrawn (like a deposit) on demand and is uninsured, those who buy it – mostly institutional investors – would have very strong incentives to monitor the banks. Likewise, since banks subject to the requirement would need to sell such debt in order to expand their activities, they would have strong incentives to disclose sufficient information for buyers of the debt to make informed decisions about whether to purchase it and at what price (or interest rate). And regulators could use the "spread" between the interest rate on the sub debt issued by specific banks and the Treasury rate of the same maturity to trigger any one, or all, of the "prompt corrective action" measures mandated by FDICIA (including early takeover of the bank, if necessary).

Although there is much to commend a sub debt requirement, the recent turmoil also illustrates some of its limitations. For one thing, it is likely that banks would want the sub debt they issue to be rated by the rating agencies, since higher ratings reduce the interest rates needed to sell the issues. Yet had the sub debt requirement been in place over the past couple of years when the ratings agencies also were missing the severity of the potential difficulties in the subprime mortgage market, it is likely that the ratings likewise would have failed to signal the depth of problems among a number of the banks that later booked significant write-downs in their subprime mortgage portfolios. Further,

[95] See, e.g. Shadow Financial Regulatory Committee (2000).

had the sub debt requirement been in place after the severity of the mortgage problems had been exposed, and thus during the seizing up of credit markets generally, it is doubtful that many large banks – even banks that have not had significant exposures to subprime mortgage debt – would have been able to sell any sub debt at all, or if so, only at interest rates that may have triggered the early takeover requirements of PCA.

Accordingly, we recommend that U.S. bank regulators implement and enforce a sub debt requirement except under the unusual circumstance when credit markets generally freeze or suffer significant disruption. Such conditions can be defined by a number of measures, including the interest rate spreads on various debt instruments relative to Treasury securities, and the fact and amount of liquidity that the Federal Reserve may provide to the credit markets. During the period when the subordinated debt requirement is suspended, regulators would continue to enforce the basic bank capital standards (the leverage ratio).

We recognize, of course, that the conditions that define a "credit market exception" may also be used by regulators to use more discretion than they are otherwise permitted in strictly enforcing all of the provisions of PCA (especially the early takeover requirement for banks with weak capital ratios, unless as suggested above, the bank's capital level falls below the required minimum, not taking account of thinly traded securities that must otherwise be marked to market). To minimize this risk, we suggest that the "credit market exception" (analogous to the "systemic risk exception" for the protection of uninsured depositors of large banks) be invoked only upon the joint agreement of the Federal Reserve, the Comptroller of the Currency and the Chairman of the FDIC.

Require Additional Liquidity

Clearly, bank regulators should pay greater attention to liquidity, as the Bear Stearns episode dramatically illustrates. As SEC Chairman Christopher Cox has observed, Bear Stearns fell victim to illiquidity in the face of an extraordinary demand by its creditors for their money back, not to a shortage of reported capital.[96] In fairness, U.S.

[96] See, e.g. Floyd Norris, "The Regulatory Failure Behind the Bear Stearns Debacle," *The New York Times*, April 4, 2008. Critics may question the meaning or usefulness of reported capital in a supposedly well-

bank regulators have for a long time factored a bank's ability to meet demands for liquidity. In particular, bank examiners develop a "CAMELS" rating for each bank, which consists of a weighted average of several factors, including liquidity.[97] The regulators use these rankings to assign priorities in their examinations and, in the case of the FDIC, to set premiums for deposit insurance (in conjunction with a bank's capital-to-asset ratio).

We admit some uncertainty, however, over what additional steps regulators should take with respect to bank liquidity. A required ratio of liquid assets to total assets can mean very little when creditors "run from the bank." A seemingly better approach may be to limit the maturity mismatch between a bank's assets and liabilities, but even this can be misleading, since a bank's assets may be short-term but in a crisis may not be easily sold. The same is true even for Treasury securities, which are the most liquid of all assets. On certain days during the recent turmoil, even the Treasury market has dried up temporarily, requiring Federal Reserve intervention to keep transactions flowing.

Our inclination, and that is all that it is at this point, is that U.S. bank regulators may want to break out the liquidity standards they now use for bank CAMELS ratings and require banks to meet the highest standards separately, much as they do now for bank capital (which is a factor in the CAMELS rankings but is also a separate standard in its own right). In addition, serious consideration should be given to an idea being developed by Morris Goldstein of the Peterson Institute for International Economics to establishing a liquidity facility at the Federal Reserve, under which large commercial banks and primary dealers could invest at market rates. Having such a facility in place would ease the pressure on the Federal government bond market that would otherwise exist if institutions were permitted to meet any liquidity requirement only by holding a certain portion of their assets in Treasury bonds.

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capitalized such as Bear Stearns, whose saw its liquid assets drop from over $21 billion to just $2 billion over a 10 day period in early March as creditors feared they would not be repaid. But financial institutions may still be "solvent" – that is, have more than enough assets to cover liabilities – if permitted to operate over a normal course, but faced a short-term liquidity problem. Put differently, "capital" is not the same as the value of a company if forced to liquidate overnight, which is the situation that Bear was facing (and which, arguably, any financial institution could face if a significant portion of its creditors suddenly lost confidence in the institution and had the ability to demand repayment immediately).

[97] These factors include: the adequacy of capital (C), asset quality (A), management competence (M), earnings (E), liquidity (L), and sensitivity to market risk and interest rate risk (S).

In the meantime, the Federal Reserve's request of Congress to pay interest on required bank reserves, if implemented, would have some stabilizing impact (In 2006, Congress allowed the Fed to begin paying interest on reserves starting in 2011, but the Fed wants this authority right now). By paying interest on reserves, the Fed would have greater freedom in a credit crunch to buy securities or extend loans without causing the Federal funds rate (the rate at which banks lend to each other overnight) to fall below the Fed's official target, and thus aggravate inflationary pressures (or raise expectations of future inflation). This is because banks would have no incentive to loan out excess funds at rates below the Fed target if they are already earning interest from the Fed on those reserves.

Improve Monitoring of Banks' Risk Management

In the earlier discussion of the origins of the crisis we noted that banks that had good risk management systems in place and that actually adhered to these rules avoided the worst of this financial crisis. There are best practice approaches to risk management that have been revealed by this crisis and they should be used by financial institutions. Bank regulators must review the lessons, nationally and globally, from this crisis. They should require that banks evaluate the record of their risk management procedures over the course of this crisis, review this evaluation with regulators and determine what changes are needed to avoid similar problems in future.

This proposal does not mean imposing a one-size-fits-all approach. The major reason why the Basel Committee allowed large banks meeting certain conditions to use their internal modes for assessing risks rather than proscribing a one-size-fits-all model is that regulators may not have believed they were equipped to second guess the bank models, let alone tell all banks they had to use a single one (or attempt to gain consensus, through public comments, on what such a single model would need to look like). But one thing is clear in retrospect: many of the banks' internal risk assessment models did not "work" because they not only missed the severity of the subprime mortgage problem itself (by not taking full account of the fact that virtually all of the experience with subprime delinquencies and losses was derived during the post 2001 boom), but also the

degree to which the subprime problems were correlated with or led to problems in other segments of the credit market, even including Treasury securities for a time.

The shock of what has transpired almost certainly has driven modelers and risk managers at the large commercial and investment banks to go back to the drawing boards to figure out precisely what went wrong and how to fix their models going forward. Regulators no doubt are going through a similar exercise. Yet we have at least two nagging worries. One is that in "fighting the last war" both the banks and regulators may miss the next one. A second concern is that because credit problems can be correlated, the ordinarily prudent rule in favor of broad asset diversification may provide only limited protection against loss.

Nonetheless, we believe there are two keys to improvement. First, regulators and the banks they supervise should pay close attention to asset categories that are rapidly growing, both within individual banks and in the aggregate. If there is one telling harbinger to future credit problems, it is rapid asset growth. This is not to say that regulators should mindlessly clamp down on such growth, but instead up their surveillance of assets or investments that are increasingly rapidly in size and exposure, as well as the methods the banks are using to monitor those exposures. Where banks cannot satisfactorily demonstrate to regulators that they are managing those exposures in a prudent manner, regulators can at first urge the adoption of improved risk management procedures, and later, if necessary, put a halt to such rapid growth.

Second, regulators can gain useful help from the market to monitor and guard against imprudent risk taking. In particular, if large banks are subject in normal circumstances to a subordinated debt requirement, investors in such instruments will demand more information about the inner workings of the banks that issue the debt. Likewise, banks interested in lowering the interest costs of the debt should be willing to supply this information. Given the substantial attention to banks' risk management failures in the wake of the subprime mortgage problems, it is virtually certain that if a subordinated debt requirement were adopted now, investors would demand more information about banks' practices in this area. While we do not know which types of disclosures in this regard would be most useful, that is why that judgment is better left to the market.

Change Accounting and Capital Requirements for Off-Balance-Sheet Liabilities

Given the well documented problems that the SIVs created, a clear challenge for the accounting rule-setters – the FASB – is to draw new disclosure rules for off-balance sheet entities. The FSAB should be bold, and not restrict itself with tinkering at the margins, such as it did after the Enron collapse. In particular, the FASB should consider whether a broader range of circumstances, beyond significant equity ownership, should trigger consolidated reporting of two entities. In particular, where one entity (such as a bank) is a significant creditor or standby creditor or guarantor of another entity, there is a strong case for consolidation. In the case of the SIVs, for example, the banks that created them routinely provided such actual or backup credit, which is one reason why when the SIVs found themselves unable to roll over their liabilities, the banks took them back on their balance sheets.

In addition, even where it may not be appropriate to consolidate the accounts of two entities, the FASB should require entities that in any way have sponsored or helped create other entities with significant liabilities to disclose somewhere in their financial reports, and ideally not just in the fine print in the footnotes to their financial statements, their role in such sponsorship or assistance, including the names and positions of employees involved in such relationships. Further, it may even be desirable to require firms to disclose the circumstances in which they might "voluntarily" assume the assets and liabilities of these "off-balance sheet" entities, why they would take such action, and how their financial statements would then look if this happened.

None of this will be easy. In particular, the accounting standards-setters may be tempted yet again to try to write new bright-line standards – for example, by upping the amount of independent equity an off-balance sheet entity must have to avoid consolidation. But as the Enron debacle and now the bank SIV problems have demonstrated, the problem with bright line rules is that clever lawyers and financiers will eventually find their away around them, only to generate yet another financial mess somewhere down the road. This time, therefore, the FASB should frame its off-balance entity rules more in terms of principles and objectives than in hard and fast rules.

Financial structures should be judged more by their ultimate purposes than by whether they stick to very specific, often numerical tests.

To be sure, principles-based standard setting will generate some more uncertainty about what is permissible and what is not, but the corresponding benefit is that principles-based standards, at least in this area, will be better able to cope with and guide continuing financial innovation in a constructive fashion than bright line rules. It may take one or more litigated cases to further flesh out the meaning and application of the principles, but once that occurs, financial advisers and lawyers are likely to advise their financial clients to steer clear of the legal edge, and to devise their activities and structures to be more consistent with reality – namely, that in times of stress, "off" balance sheet entities suddenly find their way onto the balance sheet – than has been the case with the bright-line standards used thus far.

Any required leverage ratio should take account of off-balance sheet liabilities, including not only those that are acknowledged (such as standby commitments to provide credit or guarantees of various sorts) but also those that the bank may assume by virtue of its financial relationships with other entities (such as the SIVs many of the banks created to hold and finance subprime mortgage securities). There are various ways to count off-balance sheet liabilities as part of the denominator used to calculate the capital ratio, and admittedly all of them are arbitrary. But even the risk-weighted Basel standards from their inception have assigned some weight to off-balance commitments for purposes of calculating their capital ratios. We recommend that our regulators either use the arbitrary weights provided under Basel or that the regulators develop new ones of their own. The precise weight (or discount from the stated value) is not as important to us as the fact that the denominator of the leverage ratio take account of the possibility that banks may have to take back on their balance sheets assets and liabilities of supposedly independent entities. As we suggested earlier in connection with revision of the FASB rules for off-balance sheet entities, we prefer a holistic, judgmental test to a bright line standard for determining whether the assets or liabilities of the independent entities should be counted. In our view, the key question is: are there any circumstances under which the bank would assume the assets and liabilities of this particular entity? If the answer to this question is "yes", then the assets of such "independent" entities ought to be discounted by some

admittedly arbitrary factor and then added to the assets already on a bank's balance sheet to arrive at the total assets in the denominator of the capital ratio.

It may be said that the inclusion of any off-balance sheet assets or liabilities in the calculation of the minimum required leverage ratio will be arbitrary. Our response to that is the capital standard itself: better to have a second best solution that is arbitrary than to not require banks to back any of their off-balance sheet activities with capital. Certainly, recent events have validated this proposition.

Seek, but Do Not Wait for, International Cooperation

Given the length of time and the political compromises that are necessary to produce a consensus, it should be abundantly clear that U.S. regulators should reform bank capital regulation without waiting for other countries to agree.[98] If, at a later point, other countries want to mimic our reforms, or if our regulators are persuaded that reforms adopted by other countries seem appropriate for our banks, then our regulators can and should update the revised standards they set. In the meantime, we see no harm in having our regulators continue to attend international meetings of bank regulators to exchange information and experiences, as well as to maintain the regular dialogue and information flow they have now established when supervising individual banks. But when it comes to setting the standards themselves, the United States should do so on its own.

We come to this conclusion somewhat reluctantly, since financial safety is a matter for global and not just national concern. Financial contagion is like pollution: it can and often does easily cross national borders. And unlike pollution, financial contagion can generate harm much more quickly.

But just because a problem has transnational features and impacts does not necessarily mean that all solutions must be *exclusively* global. Nations can agree that a transnational problem exists and even agree on a broad goal, whether numeric or

[98] Indeed, even the general manager of the Bank for International Settlements (which coordinates the Basel Committee), Malcolm Knight, has dismissed the notion that the Basel countries should harmonize standards for bank liquidity. While his view may be influenced by the substantive difficulties in setting these particular standards (which we highlight later in the text), Knight's hesitancy is also consistent with our view that the Basel member nations should not wait for consensus among the group to take what they believe are appropriate steps to set capital standards for banks doing business within their borders. See Joellen Perry, "Global Revamp Urged for the Regulation of Markets," *The Wall Street Journal*, April 7, 2008, p. A6.

qualitative. But the transnational nature of the problem does not in all cases actually require a detailed transnational solution. In technical economic jargon, the Basel bank capital experience amply demonstrates that there can be significant transactions costs associated with negotiating rules among countries. Furthermore, because it is necessary to gain consensus on any final rules, the multinational standard may be sub-optimal from the vantage of any individual country. This is precisely what has happened with bank capital regulation under the Basel process.[99]

Investment Bank Regulation

The Fed's rescue of the creditors of Bear Stearns predictably has led to calls for closer Federal supervision of investment banks that are also primary dealers of Federal securities – and thus eligible for the Fed's new lending facility. As former Federal Reserve Chairman Paul Volcker has pungently asked: "We're going to lend them [the primary dealers or investment banks] and protect them, why shouldn't they be regulated?"[100] Secretary Paulson answered that question in the affirmative in late March, indicating that the Administration would support monitoring of the financial health of investment banks backed by the Fed.

That some degree of monitoring is appropriate should be self-evident. The Fed has a long-standing policy of lending only to institutions that are solvent, but temporarily need liquidity. How can the Fed know if a potential borrower is solvent if it does not make at least some effort to examine its finances? If the Fed will lend to them directly, then why shouldn't they be supervised by the Fed.

But as with many policy issues, the devil is in the details: How intensively and frequently should this monitoring be? Should the Fed examine investment banks in the same way that regulators examine the safety and soundness of large commercial banks – by essentially stationing a team of examiners permanently on site at the institution? Or should the Fed infrequently and perhaps without warning "spot check" the primary

[99] Others have made similar claims for the Kyoto process for reducing greenhouse emissions: that the mistake of that process was in attempting to specify a global system of carbon trading, when in fact, national approaches for capping or reducing emissions, whether through a system of tradable permits or taxes, are likely to be far more politically feasible and more practical to implement. See, e.g. McKibbin, and Wilcoxen (2002).

[100] Quoted from an appearance on the Charlie Rose show, and reprinted in Damian Paletta and Kara Scannell, "Washington Revisits Financial Regulation," *The Wall Street Journal*, March 21, 2008, p. A8.

dealers? And regardless of the frequency or method of examination, should some Federal regulator have the same ability to close an investment bank short of insolvency as Federal banking regulators now have for banks under FDICIA?

The answers to these questions, in our view, must take account of a key difference between investment and commercial banks. Investment banks must mark their assets to market daily, unlike commercial banks, which are permitted to record all of the non-marketable assets (and even marketable securities outside a trading account) at historical cost. To be sure, as we have said, mark-to-market accounting may generate unduly conservative valuations in times of financial turmoil, but even this circumstance underscores the fact that markets provide a more powerful source of discipline for investment banks than for commercial banks. For the latter, there is no market valuation for much of banks' balance sheets, hence the need for the independent, third-party valuation that is provided by bank examiners. Where assets are valued by the market, there is less need for such third-party examination. And where, as in the case of Bear Stearns, a significant share of a banks' assets are invested in securities that are temporarily difficult to value, then no amount of advance examination will help value the firm at the time when the Fed may be considering extending a loan.

By the same reasoning, giving some regulator –whether the SEC or the Treasury's new prudential financial regulator – early closure authority for investment banks may not be of much use, since as the Bear Stearns episode illustrated so clearly, creditors can mount a "run" by refusing to roll over their extensions of credit even if the investment bank is solvent under mark-to-market conventions.

A better option would be to give the Fed the equivalent of the "bridge bank" authority bank regulators now have.[101] Under this approach, the Fed could place a troubled investment bank – like Bear Stearns – in a new legal entity, and guarantee its liabilities for a given period (say two or three years, with possible extensions), so that the Fed and other parties have some time to develop a least cost resolution to the situation. Perhaps the best approach will be a sale to another institution, as was the case with Bear being sold to J.P. Morgan. But with a bridge bank in place, the parties would not be under

[101] This idea was recently suggested by the Shadow Financial Regulatory Committee (2008). One of the authors of this report (Litan) is a member of this Committee, but did not participate in the deliberations that led to this particular recommendation by the Committee.

the enormous time pressure that drove that particular deal. Alternatively, the creation of a bridge bank would allow policy makers to consider other options, such as piecemeal sale of parts of the troubled entity.

We also suggest that the Fed focus its monitoring efforts on the adequacy of a primary dealer's *risk management* methods, including the extent to which the dealer may be increasing its asset concentration in risky or difficult-to-value assets. Admittedly, an important caution here is that bank regulators were supposed to have done precisely this for commercial banks, yet they failed. Why should policy makers believe that the Fed regulator would do a better job for investment banks, whose activities are far more fluid and often more innovative than commercial banks?

One answer to this question might be that bank regulators, including the Fed, have now learned their lesson, and could do a much better job overseeing risk management – asset concentrations and the degree of interest rate risk in particular – for both commercial and investment banks in the future. Furthermore, some may argue that the innovativeness of the investment banks was a source of the problem in the recent turmoil. If regular government oversight of their activities would slow down innovation somewhat, that might be a good thing.

It is difficult, at this point, to ascertain the validity of any of these claims. We suspect that the Fed will have to inch its way toward what kind of supervision it wants to extend to primary dealers, and what, if any, closure rule or bridge bank authority it might want from Congress. Ideally, the Fed should want just enough information to be alert to potential financial difficulties at primary dealers in time to avert the need for lender-of-last resort assistance without second-guessing their business strategies. What is likely to concern the investment banks most is the possibility that the Fed may want actually to approve their offerings of new securities or products, much as the FDA now clears drugs for their safety and efficacy before pharmaceutical companies can market them. That is also an outcome we would urge the Fed to do its best to avoid.

This is especially true since the Fed's lending facility for primary dealers has been explicitly designed to be temporary, unlike the Fed's discount window, which is permanently available to commercial banks. To be sure, the Fed could extend or reestablish this facility at a later time, having set the precedent this time for doing it. But

the temporary nature of the facility, in our view, argues for more limited monitoring of the primary dealers' activities rather than the more intensive and frequent examinations characteristic of commercial bank regulation.

However the Federal Reserve ultimately decides to monitor primary dealers, it is highly likely that the dealers themselves will seek in the months ahead to reduce the risk of illiquidity that forced the sale of Bear Stearns. Bear was not alone in having what events revealed to be a highly risky business model: funding a large volume of ostensibly liquid securities with very short-term, even overnight, money. This model works fine in normal economic circumstances, but clearly can be quite hazardous when investors lose confidence in the values of a bank's underlying assets, as they did very quickly in the assets held by Bear Stearns. We would expect, therefore, that investment banks now have stronger incentives than they did previously to find ways of lengthening the maturity of their liabilities. Indeed, some banks already have done this.[102] But we also suspect that investment banks will give even more attention to this matter over time. We hope that any efforts the Fed now may take to supervise investment banks will not chill the potentially useful innovation that may result from these efforts.

Derivatives Trading: Over-the-Counter or Exchanges?

Much has been made of the fact that the securities and some of the complex derivatives, such as credit default swaps, associated with the recent financial turmoil have been traded over the counter – between dealers or the parties directly – rather than on organized exchanges, such as stocks and standardized futures contracts. When financial instruments are traded this way, the counterparties must look to each other to follow through on the transaction. If one can't pay, the other is inevitably hurt. This is the major reason why the Fed felt compelled to provide credit to Bear Stearns and its major creditor, J.P. Morgan Chase: Bear Stearns was too heavily committed to too many counterparties for the Fed to take the risk that Bear couldn't make good on those transactions.

[102] In the immediate aftermath of Bear Stearns' demise, the two largest investment banks – Morgan Stanley and Goldman Sachs – significantly reduced their reliance on repo financing. "Wall Street's Crisis," *The Economist*, March 22, 2008, p. 82.

One suggested solution to this problem – the need for Fed rescues of creditors of large financial institutions with extensive financial commitments -- is to encourage the movement of financial instruments that are now traded over-the-counter to organized exchanges or clearinghouses.[103] When that happens, the exchange is on the other side of the transaction, or at least guarantees it. While this removes the counter-party risk, it concentrates the risk of non-payment onto the exchange itself. In the future, the potential failure of a large financial institution like Bear Stearns may thus still require lending by the Federal Reserve directly to an exchange, although not necessarily to the financial institution itself.

In fact, the SEC reportedly has already approached NYSE Euronext about the latter becoming a clearinghouse for information on complex derivative products, perhaps as a prelude to hosting the trading of such products on the exchange.[104] More recently, a group of investment banks, brokerage firms and futures exchanges have been working actually to create a clearinghouse that would guarantee payment on credit default swaps.[105] To protect itself against financial failure, the clearinghouse would require participating dealers to provide initial capital, and for buyers to post margin on their trades.

An independent exchange not owned by the dealers is preferable in our view to a dealer-organized and operated market. The former is less likely to be subject to price manipulation or conflicts of interest than is a body that is owned by the dealers themselves. The SEC and the CFTC should explore ways in which such an independent exchange – or trading of currently OTC-traded derivatives and asset-backed securities – might handle these instruments.

One key to exchange trading is that the instruments must be standardized. To date, securities backed by subprime mortgages, CDOs and related securities, credit default swaps and other complex financial products have been customized and thus ill-suited to exchange trading. One of the silver linings of the recent turmoil, however, is that it will provide incentives for financial participants in the future to redesign their

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[103] See Sebastian Mallaby, "Double Bubble Trouble?" *The Washington Post*, April 7, 2008, p. A17.
[104] See Joellen Perry, "Global Revamp Urged for the Regulation of Markets," *The Wall Street Journal*, April 7, 2008, p. A6).
[105] Serena Ng and Aaron Lucchetti, "Street Seeks Credit-Default Safety Net," *The Wall Street Journal*, April 24, 2008.

instruments so that they are less complex, more transparent and thus potentially suitable for exchange trading.

While the movement toward the trading of more financial instruments on organized exchanges thus should be a desirable goal, it will not be a panacea to the "thin trading" problem that has contributed to the illiquidity and pricing difficulties recently associated with mortgage securities backed by subprime markets. Even financial products traded on exchanges can be victims of thin markets. In particular, when no one wants to buy, markets either don't clear, or will do so only at rock bottom prices. If those prices are then used as a basis for mark-to-market valuations, they can then contribute to the vicious downward cycle of pricing and valuation. As we discussed earlier, policy makers may then still want to suspend or supplement mark-to-market accounting in some fashion and for some limited period.

Regulation of Bond Insurers

The large increase in outstanding subprime mortgage debt would not have been possible without the involvement of insurance companies that have guaranteed mortgage securities backed by these mortgages, typically through the sale of "credit default swaps" (CDS). A CDS is a contract in which the insurer agrees to cover the losses of the holder of a loan (or security) – such as a commercial or investment bank – should the borrower (or the issuer) default. The main insurers involved are relatively new to the mortgage insurance business, which helps explain why several have found themselves in so much trouble as delinquency rates on subprime mortgages have soared.

Clearly, some improvement in bond insurance regulation is called for. But again, to better understand what measures may be most useful, it is appropriate to begin with a brief description of some relevant background.

Recent History

Historically, "monoline" insurers concentrated on insuring municipal bonds and certain other financial instruments. Indeed, in 1989, the state which serves as their principle regulator – New York – adopted a model act *requiring* that financial guaranty insurance be provided only by the monolines, and not as part of a larger insurance operation. The municipal bond insurance market has been an important niche market for

the monolines. Currently, $2.3 trillion of municipal securities (about half of all "municipals" outstanding) are insured. The risks of municipal defaults have been low: according to the American Insurance Association's website, only 41 since 1970.

Nonetheless, presumably in search for more business, the monolines began to branch out in the 1980s into insuring new types of financial instruments, including securities backed by mortgages, and various types of structured securities, such as CDOs. Within the past decade, the monolines have reached further, extending their guarantees to securities backed by subprime mortgages.

It was one reach too far. The monolines had no more years of market experience with subprime mortgages than did the ratings agencies. And they, too, thus made the same mistake in underestimating the likelihood and severity of future subprime losses, with one big difference: *unlike the ratings agencies that earned their revenue by collecting a fee, the insurers had their own money at risk since they guaranteed a result.*

There has been much uncertainty about the sufficiency of the reserves monolines have on hand to cover mortgage related losses – a disclosure related problem we discuss shortly when considering long-run fixes. Ironically, however, the ratings agencies – without whom the subprime mortgage mess probably never would have occurred – have had no such doubts. Early this year, fearing that future losses on subprime-related securities would cut deeply into the capital of the monolines, the ratings agencies began to require the insurers to raise more capital to preserve the AAA ratings on their debt. As of this writing, the major monolines had either raised more capital or were in the process of doing so, but still there were questions about whether these efforts would be enough.

It is not just the insurers' necks who have been on the line. If the insurers' ratings are downgraded, so are the bonds they have insured. While ratings downgrades may have no effect on the ultimate ability of the insurers to honor their commitments, they do have important market implications. As the ratings on bonds and credit default swaps are lowered, so too are the market values of those financial instruments – a circumstance that certain holders of these insured instruments (commercial and investment banks in particular) must reflect in their financial statements. As a result, unless the ratings agencies are satisfied that the monolines are capitalized at AAA levels, holders of their insured bonds and counterparties to their credit default swaps face tens of billions of

dollars in additional asset write-downs, on top of the losses they may have initially recognized when the severity of the subprime mortgage mess was first apparent. One estimate, by Oppenheimer & Co, suggested earlier this year that the 20 commercial and investment banks alone could be forced to record another $70 billion in losses if the bond insurers fail, following the $146 billion in subprime related losses they have collectively suffered so far.[106]

Moreover, municipalities that rely on the insurers also face ratings downgrades on the bonds they issue if the monoline insurers themselves are downgraded. As the ratings on municipal bonds fall, municipalities must pay higher interest rates to attract buyers. Likewise, investors in "auction-rate securities" -- a relatively new type of long-term municipal bond in which interest rates are reset by auction roughly every month – have been scared away from bidding, most likely because they fear that these securities too could be downgraded if the bond insurers themselves are downgraded. In effect, then, the mortgage problems of the bond insurers have been transmitted to the municipal bond market, which the same insurers also insure.

Forced Restructuring?

When the bond insurer crisis first broke in early 2008, there was much interest, initially from the State of New York, in forcing the insurers to split their traditional municipal insurance business, which historically has proved to be low risk, from the more recent, and now clearly riskier, insurance on structured products, including mortgage-related securities. This plan had a short life, in part because certain insurers raised additional capital, and in part because of the legal risks such a plan would pose for the insurers' *existing book of business*; specifically, policy holders or counterparties of the newer products almost certainly would claim a breach of contract if some of the assets of the insurers were hived off into a separate, apparently safer entity without the riskier liabilities of the non-municipal business.

Nonetheless, the notion of separating the different kinds of insurance business *going forward* may appeal to some as an attractive way of serving two very distinct

[106] Mark Pittman and Christine Richard, "Bond Insurer Split Threatens $580 Billion of Notes", *Bloomberg.com*, February 19, 2008.

customer classes. In particular, might it not serve municipalities better if in the future one type of monoline were restricted to insuring only municipal bonds so that municipalities need not worry that insurer's ability to pay might be compromised by unusually large liabilities for losses on other types of insurance?

Aside from the practical difficulties of requiring the monolines to launch entirely new, separately capitalized insurers if they want to serve either or both of the municipal and non-municipal businesses, there are other objections to such a future-oriented mandated separation. For one thing, such a forced separation would deny the ability of monolines to achieve benefits of diversification. To be sure, the risks of insuring different lines of business are different, and this justifies different premiums. The insurers' recent experiences with subprime mortgage related guarantees, for example, no doubt will lead to permanent changes in the way such insurance or guarantees are priced.

But to deny monolines the ability to seek out other kinds of related financial guaranty business would lead to a second potential difficulty for forced separation: confined to only one kind of insurance or guarantees, the insurers would be more likely to channel their competitive instincts into the kind of cyclical rate cutting and then pulling back that is already characteristic of the property-casualty business, rather than in expanding lines of business and attempt to diversify risk.

Better Supervision

Of course, if the monolines are to continue to be permitted to underwrite various types of financial risks, oversight of their activities must be improved. The failure of the credit rating agencies to police the subprime mortgage market suggests to us that one cannot count on those agencies to assure the insurers' safety and soundness, even though, for reasons earlier discussed, the insurers' have strong incentives to seek AAA ratings from the agencies, while the agencies themselves have tightened their standards in an effort to convince the market that they will do a better job in the future. Investors and policy makers will have more comfort going forward if the regulators provide a better backstop to the credit rating agencies, rather than continuing to effectively outsource to them the job of assuring the insurers' safety and soundness.

This does not mean that regulators should try to second guess all that the agencies do in assigning ratings to the insurers. We do not believe that either Federal or state regulators have the expertise to do that. We offer instead three different suggestions for the New York state insurance department in particular, which currently regulates all monolines.

First, the New York department should consider requiring bond insurers to provide additional disclosures, not only to regulators but to the public (and thus not only their investors but investors in the financial instruments they guarantee or insure). Such disclosures should include breakdowns of premiums, loss reserves, historical losses, and methods for projecting future losses for the different lines of business or types of financial instruments they insure.

Second, the New York department should undertake more intensive reviews of the monolines' underwriting procedures for the guarantee or insurance of all new financial instruments/products for which there is limited historical experience. Such reviews should include all such products that have been introduced within the past decade (or perhaps earlier), on the presumption that sufficient time has not elapsed for these instruments for the insurers to have acquired loss experience that covers more than cycle of economic activity. We recognize that regulators necessarily will have limited experience and expertise in undertaking these reviews. Nonetheless, an independent set of "eyes" would be useful to check the insurers' assumptions regarding expected future losses and the methods for projecting them.

Third, and perhaps most important, if monolines are permitted to offer multiple lines of insurance or guarantees, including instruments for which limited historical experience is available, then regulators should consider increasing their required capital ratios. If one could trust the ratings agencies, and thus the market, to set appropriate capital ratios for the insurers, we would be inclined to say that the regulatory standards are redundant. But given the recent events, regulators would be advised to add a margin of safety to whatever capital ratios the ratings agencies believe would merit an AAA rating.

That other parties have been harmed by the monolines' misfortunes does not, by itself, justify government intervention to keep them from failing, however. If the existing

monolines are financially weakened or even forced into insolvency, new insurers not burdened with the legacy costs of subprime securities are likely to enter the market, and thus offer AAA-rated insurance to municipalities in the future. Indeed, this is often what happens in reinsurance markets after major natural catastrophes: new reinsurance entities are formed and succeed in raising capital. In mid-February, Berkshire Hathaway – the conglomerate headed by Warren Buffett – announced a variation of this approach, offering to reinsure the monolines, if only they would pay Berkshire 1.5 times the premiums the monolines received from their current insurance contracts. Given the sizeable premium Berkshire requested, it is understandable why no monoline responded affirmatively.

Interest in the idea of splitting the bond insurers' existing business, meanwhile, seems to have faded. One likely reason is that insurers realized that if they took this step – on their own or at the behest of the New York Insurance Department – they could face years of litigation from their non-municipal insurers or counterparties, who could be expected to argue that having their claims hived off into a separate entity would effectively amount to a breach of contract.

What if losses on insured mortgage-related securities or other financial instruments continue to mount, which could trigger calls by the rating agencies for still additional capital injections into the bond insurers to preserve their AAA ratings? And what if the banks and other parties that invested in them most recently have insufficient capital or refuse to provide another round of financing?

We do not believe that governments – state or Federal – should seek their rescue. One attractive feature of market economies is that where there is a demand for a product or service, someone or some entity will find a way to supply it, provided they can earn a profit commensurate with the risk. The financial guaranty business clearly was a profitable one before the subprime mortgage crisis, and clearly can and will be after this episode has passed. If none of the current monolines is thus able to provide AAA-rated guarantees to municipalities and other securities issuers, new strongly capitalized entrants can be counted on to try.

In fact, Berkshire itself launched a new municipal bond insurance business in early 2008, and in the first quarter alone attracted over $400 million in premiums.

Berkshire had the capital and the AAA rating to attract this business. Further, in late March, the California State Treasurer announced that he was looking into using the state pension fund to capitalize a new entrant into the bond insurance business. Neither of these steps would have been taken, or at least they would be far less likely, if the Federal government had come to the rescue of any of the existing insurers. If there are concerns that the downgradings or failures of existing insurers would impair the value of the mortgage securities they back, that is a problem of accounting that we suggest ought to be addressed directly through the accounting rule changes we have already outlined, rather than by bailing out the insurers directly.

Improving the Organization of Regulatory Supervision

The current turmoil – and lapses of regulators – have prompted calls for fundamental reform of the way in which the Federal government oversees financial institutions and markets generally. The current system is a patchwork that has developed in no rational way over time, and thus there is much to criticize. Indeed, even before the subprime problems surfaced, the Treasury Department had announced that it was preparing to issue a report before the current Administration leaves office on how to restructure financial regulation. Treasury accelerated this timetable on account of the recent financial and economic difficulties. On March 31, Secretary Paulson announced a sweeping, long-run plan for changing the financial regulatory structure.

Some major restructuring appears appropriate. Reforms in this area have been proposed before, and have bogged down due to turf wars among regulators their overseers in Congress, but hopefully the crisis will make it possible to achieve greater reforms this time around. One warning note is in order: policy makers should not be deluded into thinking that changing the regulatory "boxes" by itself will prevent future crises. It is what goes on inside those boxes – the people and the rules they operate under – that will continue to matter most.

Current Patchwork

There are few who would defend the existing oversight structure for financial institutions and markets. The system is complicated, redundant and hardly a model of order or rationality:

--We have both Federal and state regulation of banks, coupled with three different Federal bank regulators – the Comptroller (for national banks), the Federal Reserve (for state-chartered banks belonging to the Federal Reserve System), and the FDIC (for state-chartered members not members of the Fed).

--Likewise, we have Federal and state regulation of thrift institutions, though only one Federal regulator for thrifts (the Office of Thrift Supervision).

--Separate Federal agencies regulate securities (SEC) and futures (CFTC) markets, even though the distinctions between securities and various kinds of derivative instruments continue to blur. The fact that two different Congressional committee oversee the two agencies – Banking or Financial Services for the SEC, and Agriculture for the CFTC – has made it all but impossible thus far to consider a merger of these agencies.

--As with banks, securities firms and their activities are regulated at both the Federal and state levels.

--Insurance companies, operating under a specific Congressional exemption (the 1946 McCarran-Ferguson Act), are regulated only by the states, even though the insurance business is national in scope. There are proposals before Congress to give most insurance companies an option whether to operate under a Federal or a state charter (and thus to choose a Federal or state regulator), as is now the case with banks. But Congress has yet to take action.

--The Federal Reserve regulates some, but not all, of the activities of financial conglomerates that also have at least one bank. The SEC attempts to provide "consolidated oversight" over financial conglomerates which do not have a bank.

No one would design such a complex regulatory system from scratch. Instead, the current regulatory structure is the product of a series of historical accidents and forces of inertia. Once an agency is created, it develops constituencies in legislatures and among the regulated entities themselves. It is no wonder, therefore, that despite repeated

efforts over the years to reform the streamline the regulatory system – simply to bring some rationality to it – nothing has really changed.[107]

The Treasury Proposals

We discussed earlier in this report the proposal to consolidate federal bank supervision under a single "prudential regulator." We see the case for such a regulator, but the devil is in the details, however. There is no point having federal bank regulators, federal mortgage regulators and state financial regulators all tripping over each other as they examine bank origination practices (the rooms full of regulators that we referred to in Section 1). We see merit in the plan to merge the SEC and CFTC, as part of a new "conduct of [financial] business" regulator; and also see the potential value of an optional Federal charter for insurance companies. These proposals are not central to resolving the financial crisis, however, so we provide no further discussion here.

Institutional reforms should be accompanied, in our view, with a review of the budgets of the supervisory agencies to make sure they have the resources they need. They should be allowed to pay a level of salaries such that they can attract the talented people they need. The thrust of policy towards deregulation has encouraged disdain for regulators and reluctance to provide them with enough money. That is absurd. Incompetent regulators with little experience or knowledge of the industries they regulate are sure to fail. Where we have regulators, we need good regulators. The budgetary costs of regulation are trivial compared to the problems created by bad regulation, whether these problems come in the form of a financial crisis or in the form of excessively tight rules that reduce innovation.

Role of the Federal Reserve

The Treasury has suggested a fundamental restructuring of the role of the Federal Reserve in the financial system. Specifically, the Treasury proposes to take the Fed out

[107] Indeed, we can recall only one Federal financial body actually going out of existence in our collective lifetimes – the Resolution Trust Corporation, which was created in the aftermath of the savings and loan debacle of the 1980s to dispose of the assets of insolvent thrifts, and after its job was complete, was allowed to fade away in the mid-1990s. This exception proves the rule: the RTC was created for a single, time-limited purpose and it was not charged with ongoing regulatory responsibilities.

of the daily supervision of the relatively few state-chartered banks (about 1,000), financial holding companies, and bank holding companies it currently oversees, and instead to give it vague, but sweeping responsibilities to "evaluate the capital, liquidity and margin practices across the entire financial system" in an effort to assure overall financial stability.[108] The Fed also would have the authority to join in examinations with the prudent and business conduct regulators.

The first comment on this proposal is that it is not specific enough to be seen as a concrete policy change as yet. The Treasury envisions the Fed, as some have put it, as playing the role of a "free safety" regulator. In theory, different Fed Chairmen and boards could vary the Fed's role, some making it more expansive, others less so. In practice, however, the Federal Reserve in the past has been guided strongly by precedent, and its regulatory steps have been taken incrementally. We expect much the same would happen if the Treasury view of the Fed's regulatory role were to become law.

At one level, what the Treasury has in mind for the Fed – as a market stability authority – already exists, although implicitly. When the Fed rescued the creditors of Bears Stearns, for example, it was acting to ensure market stability. If and when the Fed imposes some kind of regulation or supervision on investment banks, now that it has given them temporary access to the discount window, the Fed again will be regulating presumably with a view to ensuring market stability by offsetting any moral hazard such discount window access might create (and minimizing taxpayers' exposure to loss from such lending). So all that the Treasury proposal would do is formalize powers the Fed already believes it has (and most likely will continue to exercise unless and until told to stop or change by the Congress).

At another level, however, the Treasury proposal is quite explicit on what it would *take away* from the Fed: its current supervisory authority and responsibility over state-chartered member banks and financial and bank holding companies. Over the years, a large literature has developed over the pros and cons of having the central bank engaged directly in some sort of bank/financial supervision. We will not reprise those

[108] Paulson (2008).

arguments here.[109] Instead, we will note that even this explicit removal of the Fed's supervision may not be absolute. If the Fed were to decide that the only way it could fulfill its broad responsibility to assure market stability, for example, would be to assume regular oversight of the nation's largest bank and financial holding companies, and also perhaps the nation's largest state-chartered banks (and even nationally-chartered banks), there is nothing in the Treasury proposal that would prevent that outcome. Indeed, the Fed could view its supervisory role even more expansively – to include oversight of securities firms, mutual funds, and insurance companies – all in the name of ensuring market or financial stability.

To be sure, we are not saying that the Fed would decide to interpret its role in this fashion, only that the Treasury's open-ended authority for the Fed would permit it to do so. In our minds, this creates two problems. The first is that the vague "free safety" authority for the Fed is a recipe for future regulatory turf wars. The President's Financial Working Group, if institutionalized, may help minimize this problem, but perhaps cannot prevent it, especially if at the end of the day, the Fed presumably would able to "trump" the other regulators with the language indicating its responsibility to assure overall financial stability. The second problem is more political: with the Fed's authority so broad and yet so ill-defined, many in Congress may want more specificity and limits up front.

The Treasury's proposal for the Fed differs from other models that have been proposed for the agency. Thus, for example, earlier restructuring proposals have suggested that the Federal Reserve assume front-line responsibility for overseeing the financial soundness of some number of the nation's largest financial institutions – presumably on the theory that those are the entities whose creditors the Fed would rescue in a crisis. Others have suggested that the United States follow the financial supervisory

[109] Advocates of having the central bank actively engaged in some sort of regular bank and financial supervision suggest that this improves information flow, which can help the setting of monetary policy and the central bank when acting as a lender of last resort. In addition, it is possible that bank supervisory policies may help supplement monetary policy as a means of stabilizing the economy (but probably only if the bank is willing to make capital requirements counter-cyclical). Critics of central bank involvement in bank and financial supervision assert that this adds to moral hazard (by giving customers and counter-parties potentially false comfort in the soundness of the institutions), imperils the central bank's credibility if and when institutions fail, and distracts central bank officials from their main mission: to ensure macroeconomic stability. This argument is likely to be long continued and probably never fully resolved.

model adopted by the United Kingdom (and a few other countries): consolidating all regulatory authority (for both safety and soundness and market conduct) in a single, all-powerful agency. This "Financial Supervisory Authority" could have divisions, along traditional product lines (banks, securities firms, and the like) and/or along functional lines (such as safety and soundness, and market conduct). The Fed could become this all-powerful regulatory body, or the FSA could be a free-standing independent agency, as in the United Kingdom.

Like the Treasury, we do not have a fully articulated plan for the role of the Fed in financial supervision and regulation. But there are two important principles that we believe should be followed going forward. First, it is essential that the Fed play an active role in guiding the evolving structure of bank regulation. It has the stature and the quality of staff that can influence other regulators and assure the global economy of the soundness of US based financial institutions. Second, since the Fed is the lender of last resort, it must be involved in the supervision of the major banking institutions. The separation of the Bank of England and the FSA contributed to a poor policy decision. Had the Bank of England been willing to provide liquidity to Northern Rock, that bank mostly likely would not have failed. Since it had had no role in bank supervision, the Bank of England was understandably reluctant to suddenly "bail out" the failing bank.

Since the Fed is charged with providing liquidity to the banking system, and indeed has expanded that role with its resolution of the Bear Stearns case, it must be involved, directly or indirectly, in the monitoring of the large institutions. Since the Fed is charged with responding to the consequences of a financial crisis, it should also be involved in helping prevent one. The Treasury proposal clearly endorses that view, but describes the Fed's role, essentially, as cruising over the economy at the 30,000 feet level keeping an eye on things. We think that is unrealistic. The Fed needs some hands-on participation in monitoring major financial institutions and it needs a close cooperative relationship with other bank regulators.

Conclusion

This report has provided a lengthy exposition of the origins of the financial crisis. At a high level, the crisis resulted because people severely underestimated the probability

of a broad downturn in the housing sector with declining home prices. This misperception had generated over borrowing by households and excessive risk taking by investors and financial institutions. Regulators and bank supervisors did not take the steps that would have been needed to prevent the crisis.

Generally, the response of policymakers to the crisis has been good. The Fed has increased liquidity in the system, lowered interest rates to sustain economic growth and acted to broker a deal for Bear Stearns that prevented the contagion of financial collapse from spreading. The housing market is still falling and the number of mortgage delinquencies is rising. We suggest some measures to facilitate the workout of delinquencies. Fannie and Freddie issued subprime mortgages and are taking large losses. The restrictions on their loan portfolios have been lifted to allow them to keep borrowing. If they are in danger of bankruptcy, we propose that the federal government provide a capital infusion that would be repaid as they return to solvency.

Financial crises are probably always with us, but there are policy and regulatory changes that could reduce the chances of a similar crisis in the future. Based on our analysis of what happened, our proposals fall into three buckets. First, financial institutions and instruments must become more transparent. Second, financial institutions must become less leveraged and more liquid. Third, such institutions must be supervised more effectively. We lay out specific proposals in each area. We note, however, that much of what we propose can be accomplished under existing law. Some new legislation may be needed, but a massive financial reform plan from Congress is not needed. Congress and the Treasury should be leaders, however, in making sure the necessary changes are made.

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