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The U.S. Mortgage Market:

The Good, the Bad, and the Ugly

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USAID JORDAN ECONOMIC DEVELOPMENT PROJECT
Preface

Warren Coats, Bethesda, MD, retired from the International Monetary Fund in 2003 as Assistant Director of the Monetary and Financial Systems Department, where he lead technical assistance missions to central banks in over twenty countries. Prior to that he served as visiting economist to the Board of Governors of the Federal Reserve System (1979), and to the World Bank (1988-9), and was Assistant Prof of Economics at UVa from 1970-75. He is currently a director of the Cayman Islands Monetary Authority, Senior Monetary Policy Advisor to the Central Bank of Iraq for BearingPoint, an IMF consultant to both the central bank of Afghanistan, and to the Palestine Monetary Authority, and an Asian Development Bank consultant to the National Bank of Kazakhstans on inflation targeting. In 1989 he coauthored the World Bank’s World Development Report on “Financial Systems and Development.” His most recent book, One Currency for Bosnia: Creating the Central Bank of Bosnia and Herzegovina, was published in November 2007. He has a BA from UC Berkeley and a PhD from the U. of Chicago in Economics.

The author would like to that Moritz Schularick and Sally Hargrove for helpful comments and Glenn Tasky for putting it all together.

Introduction

Home ownership in the United States has flourished in part because of the availability of mortgage loans that can be paid off with relatively low monthly payments over 20 to 30 years. Large amounts of funds are supplied to mortgages because banks and other mortgage originators have been able to package and sell pools of mortgages (securitizations) to a wide range of investors. This has been possible because of the standardization of underwriting standards, and systems of public and private insurance. Securitization into mortgage backed securities (MBS) and similar assets has also distributed the risk of mortgage loans widely and to lenders better able to accept such risks.

The share of families who own their own homes rose from 45% in 1940 to 64% in 1968 and generally remained between 64 to 65% until 1996. Between 1968 and 1996 mortgage loans outstanding for 1-4 family houses rose from 264 billion (of which 32% were government underwritten) to $3.7 trillion (of which 16% were government underwritten).¹

The Community Reinvestment Act of 1977 explicitly encouraged banks to extend mortgages to potential home owners, largely low income and minority borrowers, who do not satisfy the usual standards of credit worthiness. Mortgage loans to riskier borrowers usually carry higher interest rates to cover the extra risk. These so called “subprime” loans have grown rapidly in the last ten years broadening home ownership even further. By 2006 home ownership had reached 69% and mortgages outstanding $10.4 trillion (of which only 5%

¹ Economic Report of the President, Table B-75, page 316
were government underwritten). Although approximately 12% of these mortgages were subprime, over 20% of the new mortgage loans written in 2006 were subprime.

Beginning in 2002 very low interest rates, large inflows of foreign capital, and increasingly lax mortgage lending standards contributed to dramatically inflating housing prices. Similar financial conditions around the world have inflated housing prices in many countries. When this housing bubble started its inevitable and necessary deflation in 2007 in the U.S. following a dramatic slowing in 2006, it exposed the weakened lending standards causing larger than expected losses to lenders and foreclosures on borrowers. At the end of the first quarter of this year 2.5% percent of all mortgages were in foreclosure (50% of which were subprime). By early June announced losses of U.S. banks were $172 billion (with $156 billion new capital raised) and world wide were almost $400 billion (and $300 billion new capital raised). At year end the capital of U.S. banks was on the order of $700 billion or about 7% of their residential mortgage loan book of over $10 trillion. Because of extensive securitization, however, the funding of mortgages is now widely disbursed, presumably to those most able to take the risks of defaults. A significant portion is held abroad.

Additional mortgage losses are almost certain as more adjustable rate mortgages with low introductory teaser rates adjust their rates and monthly payments up over the rest of 2008 to a lesser extent 2009. The key question is whether these additional losses will be larger or smaller than now anticipated.

Several related factors caused these housing market and mortgage loan problems to spill over into credit markets more broadly: a) The upward re-pricing of mortgage loan risks in the market (fall in MBS prices) caused the secondary market in mortgage related securities to slow dramatically. b) When hedge funds and other investors in mortgage backed products found that underwriting standards had been misrepresented (fraud), the originators were generally obligated (or for reputational reasons chose) to take them back, creating the need for additional liquidity to fund them. c) The complex financial instruments by which mortgages are now resold have made it more difficult for banks and other investors to know where the additional losses will occur. These uncertainties and the extensive use of borrowed money by hedge funds and other investors (leverage) and insurance such as credit default swaps caused investors and lenders to pull out of riskier assets (a flight to safety), including a reluctance to maintain unsecured lending to other banks in the interbank deposit market. All of these factors produced a dramatic increase in banking sector demand for liquidity bringing many credit markets to a virtual halt.

World financial markets are highly integrated while housing markets are local. The larger than expected mortgage loan defaults of the past year with more to come, precipitated dramatic financial market adjustments worldwide because American mortgage backed securities were held worldwide and because, like water itself, dollar liquidity worldwide is highly linked tending to common levels everywhere. The quick and to some extent coordinated injections of liquidity by the Federal Reserve, the ECB, the Bank of England and

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2 Bloomberg
others seems, at this point in mid June 2008 to have prevented a more serious disruption of financial markets and is gradually restoring liquidity to these markets, though higher risk premiums remain. This is allowing a more orderly and gradual reduction in the excessive leverage that had become part of the complex secondary market in mortgage related securities.

These are financial market, not housing market, problems. The vicious cycle of falling (mortgage related) asset prices as financial intermediaries were forced to sell them to pay off withdrawing investors has been moderated by large injections of funds (collateralized lending) by the Federal Reserve and other central banks around the world. Such liquidity injections do not bail out those who lent to defaulting borrowers nor does it help defaulting borrowers, who will lose their money and collateral. However, the vigorous application of this traditional, time honored, lender of last resort function of central banks will increase the willingness of financial institutions to take on additional liquidity risk in the future.

This leaves, hopefully, the question of the impact of the housing bubble deflation, devaluation of the dollar, and soaring oil and food prices on the U.S. and World economies. It is too early to know for sure, but the U.S. and European economies are entering this business slowdown in relatively strong condition. The expectation of the Federal Reserve, for example, is that the slowdown will be modest and of relatively short duration. However, the magnitudes of these multiple shocks to the economy are unprecedented and a more serious economic slowdown would generate new and additional losses for banks.

2.0 The Good

Following the end of World War II with the help of government programs and tax and other assistance to returning war veterans, home ownership in the United States skyrocketed to above 50% of all families by 1950, from 40% in 1940. The standardization of mortgage products into long-term, fixed rate, level-payment loans of up to 80 percent of the value of the property collateral, lowered the cost of mortgage finance and thus extended home ownership to a larger share of households. By 1960 the ratio had reached 62%, which by 1969 had inched up to 64.3%. The home ownership ratio fluctuated within the range 63.8% to 65.6% over several housing price cycles between 1968 and 1997, after which it climbed to a peak of 69% in 2005. This is virtually identical to the home ownership rate in the U.K. but significantly above the rates in France (55%) and Germany (42%) though below the rates of some countries, such as Spain (85%). The U.S. rate has dropped back from its peak of 69.2% in the fourth quarter of 2004 to 67.8% in the first quarter of this year and is expected to fall further as the collapse of the U.S. housing price bubble works itself out.3

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2.1 Standardization and Securitization

This home ownership achievement reflects primarily rising personal incomes in the U.S., a government policy of promoting home ownership (especially for returning war veterans and tax deductibility of mortgage interest payments for everyone), and improvements in mortgage loan products and their financing. The standard, “conventional” mortgage introduced after World War II offered level monthly payments at a fixed interest rate that covered the declining interest on the declining balance of the loan principal and an increasing amount of principal such that the full loan was paid off over the agreed period of 15 years and later of 20 or 30 years. A first mortgage loan generally required a minimum 20% cash down payment on the house, i.e. the mortgage could finance up to 80% of the assessed value of the home (generally its purchase price).

Mortgage financing was generally provided in limited amounts by commercial banks and in much larger amounts by specialized banks—mortgage banks and savings and loans associations (S&Ls). These institutions developed expertise in evaluating the credit worthiness of mortgage borrowers and in the drafting and execution of mortgage contracts. The standardization of such contracts and the processes of their enforcement introduced efficiencies into what can be an expensive process resulting (because of market competition) in lower costs to borrowers. The process of specialization has more recently led to the “outsourcing” of the home purchase/sale and mortgage “settlement” process to specialized settlement companies, further reducing the costs of buying and selling a home.

As mortgage loans are long-term by design and the source of funds for banks and S&Ls are short term (demand, time and savings deposits), the risks arising from the large
maturity mismatch limits the number of mortgages these institutions can safely hold on their balance sheets. It does not limit the number of mortgages they can originate, however, if they can be sold to other investors. Banks can earn fee income from their expertise in evaluating the credit worthiness of mortgage borrowers without actually providing the funds lent (for more than a few weeks or months).

In the midst of the American Great Depression (1938) the U.S. government established the Federal National Mortgage Association, now known as Fannie Mae, to increase the supply of funds for mortgages. Initially they were only allowed to purchase mortgages issued by the Federal House Administration (FHA) as part of the government’s program of assistance to low income families. But when Fannie Mae was privatized in 1968, it began to buy mortgages issued by a wider range of lenders. It finances its mortgage purchases by issuing a variety of debt securities (short-term discount bills, medium to long-term notes and coupon and zero coupon bonds). As part of its privatization, the Government split off the original FHA and Veterans Administration (VA) related mortgage business by creating the Government National Mortgage Association (Ginnie Mae), making it a wholly-owned government corporation within the U.S. Department of Housing and Urban Development (HUD).

In 1981 Fannie Mae began to finance its activities by issuing securities collateralized by pools of mortgages, so called “mortgage-backed securities” (MBS). Each MBS is remitted to the institution that originated the mortgages in the pool, which may hold it or sell it to other investors. “Fannie Mae guarantees to each MBS trust that it will supplement mortgage loan collections as required to make timely payments of principal and interest on the MBS.”

If an investor buys (finances) an individual mortgage, he expects full and timely payments from the borrower but accepts a small risk of borrower default and the need to foreclose on the property (sell the collateral) in order to be repaid, an expensive process. Losses should be minimal as long as the forced sale price of the house is greater than the unpaid loan balance plus foreclosure costs. Pooling many mortgages into a MBS diversifies this risk. If 1% of all borrowers are expected to default, investing in a pool of mortgages greatly increases the prospects of getting the averaged result rather than the unlikely but possible extreme result. It is a form of insurance. Thus investors will require a somewhat lower return to hold an MBS (mortgage pool) than to hold any of the individual mortgages backing it. Accordingly the advantages of combining an “originate-to-distribute” approach to mortgage lending with MBS financing are that originators limit their own exposure to very long-term credits and the actual investors (buyers of the MBSs) are exposed to less risk of default than when holding individual mortgages.

Other market participants began to compete with Fannie Mae and Freddie Mac and traditional mortgage lenders applying an almost exclusive originate-to-distribute business model and selling so called “private-label MBS.” Credit risks were more widely and appropriately diversified and spread and borrowing costs reduced. This development was

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4 Fannie Mae, “An Introduction to Fannie Mae” page 14
made possible because of the standardization of a limited number of mortgage products and the credible enforcement of minimum underwriting standards and/or insurance.

As the range of mortgage products has expanded, the range of Fannie Mae MBSs has expanded as well from fixed rate MBSs, to Adjustable Rate (ARM MBS), Fannie Majors, Fannie Mae Megas, MBS Structured Transactions such as: Real Estate Mortgage Investment Conduit (REMIC), Benchmark REMICs, and Stripped Mortgage-Backed Securities (SMBS). By tailoring its MBS to market needs while still reflecting the nature of its assets, Fannie Mae has been able to reduce its funding costs with limited portfolio risk. This in turn has contributed to lowering the cost of mortgage loans to home owners and to spreading interest rate and default risks to a wider range of investors. In Fannie Mae’s own words its mortgage funding activities “lowers mortgage rates, increases the liquidity of mortgages, and assures mortgage investors of liquidity, even in uncertain future market conditions.”

As part of the government’s overall strategy to make a private Fannie Mae competitive (given its near monopoly in the securitization of mortgage loans) the U.S. Congress chartered the Federal Home Loan Mortgage Corporation (Freddie Mac) on July 24, 1970. On January 3, 1989, Freddie Mac stock was converted into a class of stock that could be owned and traded by all investors. Unlike Ginnie Mae’s guarantee, which is backed by the full faith and credit of the U.S. government, those of Freddie Mac and Fannie Mae are not.

To protect their owners’ stakes, Fannie Mae and Freddie Mac have developed monitoring techniques to enforce compliance with rigorous standards of creditworthiness for mortgage borrowers whose mortgages they are willing to purchase and hold. As they guarantee all payments of the MBSs they create and sell, they have an equally strong financial incentive to ensure compliance with the underwriting standards for these mortgages as well. While banks and other mortgage lenders may lend on whatever terms they wish, the potential to sell or securitize such loans to Fannie Mae or Freddie Mac if they comply with their underwriting standards—so called “conforming loans”—lowers the market costs to borrowers of such loans and has profoundly influenced general market standards.

These underwriting standards of creditworthiness have played a very important role in the development of America’s huge mortgage market with historically very low delinquency and default rates. Over the past ten years (through the end of last year), total past due payments on conventional fixed rate mortgages ranged between 2 and 2.5 percent of total payments due while foreclosures resulting from these delinquencies ranged between 0.1 and 0.2 percent.

2.2 Multiple standard products

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5 Ibid, p 6
The capacity of families to buy a home depends on the monthly payment on the mortgage loan in relation to their income. The establishment of long-term, fixed level monthly payments, and fully amortized mortgage loans generally lowered the monthly payments on such loans and broadened the range of people able to afford home ownership. A $100,000 loan at 6% that is paid off in 15 years would require monthly payments of $844. The same amount paid off over 30 years would lower the required payments to $600 per month. It is even possible to finance for 40 years which would require payments of $550 per month. In 2003 the average interest rate on a conventional 30 year residential mortgage dropped to 5.25 percent at which rate the loan payments were $552 per month. But in the second half of 2001 this rate was 7 percent requiring payments of $665 per month. One year earlier the rate peaked at 8.5 percent requiring monthly payments of $770.

The conventional 30 year mortgage became the norm and was a great boon to home ownership in the U.S. However, a variety of other mortgage products emerged to better fit the specific needs of individual home buyers. Homes could be purchased with smaller than the usual 20% down payment in exchange for a somewhat higher interest rate and monthly payments. Instead of fixed payments over the life of the loan, graduated payment loans offered lower payments in the early years and gradually higher payments later. Such loans fit well the expected income profile of young workers or recent college graduates whose incomes are expected to rise making it easier to make higher monthly payments in later years.

A major and still controversial innovation was the introduction of adjustable rate mortgages (ARMs). There are several varieties of ARMs but all shift much of the risk of future inflation and rate increases from the lender to the borrower in exchange for a lower interest rate and thus lower monthly payments (at least initially). These mortgages adjust the interest rate after the first two or three years every year (or sometimes more frequently) to an index rate (often the six month or one year LIBOR). When the index interest rate changes at a scheduled rebasing point, the monthly payments adjust (up or down) as well. When borrowers are able safely to take on the risk of rate increases, they can enjoy lower costs of borrowing and stand to benefit further if rates decline. These innovations further broadened the range of borrowers and further expanded home ownership.

2.3 Structured finance, private-label MBS, and CMOs

The market for mortgage backed securities (MBSs) created by Fannie Mae and Freddie Mac grew rapidly directing additional funds into the home mortgage market. In the 1980s the private sector began to package and market its own MBSs, so called “private-label MBSs.” These private-label securities did not enjoy the guarantees of Fannie Mae and Freddie Mac and thus needed to be constructed carefully in order to gain market acceptance. Private bond insurers were paid premiums to insure private-label MBSs, which allowed them to trade for more (lower interest rates) than the cost of the insurance. As with insurance more generally, the insurers had a financial incentive to monitor compliance with the promised underwriting standards and naturally took on that role. In addition, loan originators issued “representations and warranties” (R&W) that the stated underwriting standards had been adhered to. Such R&Ws were particularly important for Alt-A mortgages—those given to presumably prime borrowers with little or no documentation supporting their ability to pay
(liars loans). The paperwork cost savings to borrowers and lenders of Alt-A mortgages is attractive.

Generally mortgage pools backing MBSs were placed in (sold to) special purpose vehicles (trusts), which were the actual issuers of the MBSs. Marketing teams promoted the modestly higher yields on these insured, mortgage backed securities to pension funds, hedge funds and other large institutional investors and the market grew rapidly.

Also in the 1980s a few investment banks began selling securities that created claims to various parts of the cash flow from mortgage pools—the interest payments, priority claims on the principal, and subordinate claims on the principal, etc. The collateralized mortgage obligations (CMO), or more generally collateralized debt obligations (CDO), sliced ownership of mortgage pools into “tranches” that reflected different risks and thus sold for different prices. This enabled investors to buy that part of the pool that best matched their risk preferences and needs thus reducing the cost to the ultimate borrowers while generating fees for the financial services firms that packaged the CDOs using special purpose vehicles (SPV).

2.4 Subprime borrowers

All of the above loans are available to prime borrowers, i.e. those satisfying normal minimal standards of credit worthiness. However, some borrowers with weaknesses in their credit history, or perhaps lacking a credit history, can successfully manage home ownership and mortgage loan payments. Sorting out the good risks from the bad takes extra effort and cost, and even then default rates are likely to be somewhat higher. But with appropriately higher interest rates to cover the costs and risks, such loans should on average be profitable. Furthermore the Federal Government in the U.S. promoted such lending with the Community Reinvestment Act enacted by Congress in 1977. Even with somewhat higher default rates, the rapid expansion of subprime lending over the past decade contributed very significantly to the increase in home ownership to its 69 percent peak in 2006.

3.0 The Bad

Good things done poorly or to excess become bad things. A limited number of standard mortgage products facilitated the securitization of mortgage loans and a thriving secondary market for mortgages, mortgage pools and mortgage backed securities. This enormously expanded the funding available for mortgage loans while spreading the risks of mortgage defaults more widely and to investors better able to absorb potential losses than are traditional lenders (banks and S&Ls). Several factors conspired to push these positive developments too far.

3.1 The Housing Price Bubble
A glut of world savings, much of which flowed into the U.S. (reflected in the large deficit in the U.S. current account of its international balance of payments) and the easy monetary policy of the Federal Reserve kept interest rates low and thus housing demand high. The overnight Federal funds rate (the Federal Reserve’s policy rate) dropped from 6.51% in Nov 2000 to 1.82% in Dec 2001 and was at are near 1.0% from July 2003 until June 2004 when it began to raise, exceeding 2.0% for the first time in three years in Dec 2004.

As is well known when pricing capital assets, a given income stream, when discounted at a lower interest rate has a higher “present” or capital “value”. Thus all by itself, the stream of housing services to a home owner has a higher capital value when mortgage costs are lower. Thus falling mortgage interest and related charges (lower monthly loan payments) tend to increase what potential buyers are willing to pay for the same housing services. Reducing interest rates tends to increase housing prices.

This simple capital asset pricing perspective of housing prices tends to be offset by a market supply response. If housing prices go up, more will be built to satisfy the increased demand thus off setting and moderating the potential price increase. In the U.S. we see very significant differences in the behavior of housing prices in different markets reflecting specific local supply and demand factors. Over the five years from the end of 2000 to the end of 2005 (near the peak of the recent housing price bubble) average home price increases in Los Angeles and Miami were approximately 20% and 18% per year respectively. Over the same period in Dallas and Houston price increases averaged a bit less than 5% per year. This is a dramatic difference. The major difference between these markets was the land use planning regulations that impeded a supply response in LA and Miami but not in Texas. From 1980 to the end of 2006 home prices increased 547% in California, 389% in Florida, but only 119% in Texas (less than the increase in personal income over this same period of 460%). Home prices more than doubled in California and Florida in the five years to the end of 2006 alone. At the end of 2006, the ratio of home prices to income in LA and Miami averaged 11.4 and 7.6 respectively, while in Dallas and Houston it averaged 2.7 and 2.9. These extraordinary prices had become unsustainable in states like California and Florida.

Price behavior in some markets was dominated by falling demand. The 6.1% decline over the last year in the Detroit/Dearborn area of Michigan, for example, was the continuation of a much longer decline in the automobile industry on which this area depends. Over the past five years housing prices declined 4.1% a dramatically different performance than the 80% price increase over the last five years in the Los Angeles area. It is one of only two reported areas in the U.S. to experience a five year drop in values, the other also being in Michigan.

6 Office of Federal Housing Enterprise Oversight, "Decline in Housing Prices Accelerates in First Quarter" News Release, May 22, 2008. The OFHEO House Price Index (HPI) is based on changes in actual sale or assessed price of the same houses over time.

7 Ibid.
The diversity of housing market conditions found in the U.S. is found around the world as well. Britain, Germany and Ireland, which experienced even larger home price increases over the last decade, also had price declines over the last year. However, some countries with very large appreciations over the past decade continued to enjoy price increases over the last year (Australia, Sweden, China, Belgium, New Zealand and especially South Africa). While Spain and Italy also fall into this group home prices may now be on the way down.\textsuperscript{8} Over the five years from 2001 in Kazakhstan residential and commercial property values in major cities increased 900\%\textsuperscript{9}. Real estate prices are now falling rapidly in Kazakhstan. In May 2008 alone primary housing prices fell 1.1\% and 0.8\% in Astana (the capital) and Almaty (the largest city) while secondary sales prices dropped a stunning 12.6\% and 9.6\% respectively in that single month.

3.2 Erosion of Underwriting Standards

In the never ending search for profitable investments by large pension funds, risk tolerant hedge funds, foreign investors, and others, mortgage related securities became more and more complex and undertook larger and larger risks (lower borrower credit worthiness standards). Subprime and Alt-A mortgage pools were increasingly securitized and sliced and diced into CMOs.

The search for better investment returns, the lack of a financial incentive to adhere to traditional mortgage underwriting standard on the part of fee driven agents and brokers and structured investment vehicle packagers, and the mistaken assumption that housing prices would continue to rise forever, resulted in an excessive lowering of underwriting standards and an under estimate of potential losses. These forces were aided and abetted by decisions by the U.S. Department of Housing and Urban Development (HUD) to permit (encourage) Fannie Mae and Freddie Mac to buy large amounts of MBS collateralized by subprime mortgages toward fulfillment of their quotas of support for “affordable” mortgage loans to low-income and minority families.\textsuperscript{10} While investors were prepared and even eager to take on more risk in exchange for higher expected (loss adjusted) returns, the potential losses were under estimated. Many of the newer, more exotic borrowing instruments were untested and had no real track record on which to base expected default assumptions. This is especially true for the default rates on subprime mortgages, which are turning out to be much larger than were assumed on the bases of limited, earlier historical experience.

When loans are made by a bank and held on its own books, the bank suffers the financial consequences of any defaults. The bank thus has a strong incentive to insure that its evaluation of the credit worthiness of the borrower is done well. When mortgage loans are securitized and sold to other investors, these investors must rely on the due diligence of third parties to insure that the underwriting standards claimed have in fact been diligently applied.

\textsuperscript{8} The Economist, “Global housing markets, Structural cracks,” May 24, 2008, p 95.
\textsuperscript{9} By Svetlana Voronina, BISNIS Representative, Astana, Kazakhstan, “HOUSING CONSTRUCTION AND REAL ESTATE MARKET IN ASTANA: TRENDS AND BUSINESS OPPORTUNITIES” January 2006
\textsuperscript{10} Carol D. Leonnig, p 1.
When Fannie Mae issues mortgage backed securities it guarantees payment of principle and interest and takes the responsibility of monitoring compliance with underwriting standards. In order to buy private-label MBS, those originated by specialized or non traditional mortgage lenders and packaged (generally) by investment banks, investors require insurance and other assurances that underwriting standards have been adhered to. Especially in the case of Alt-A mortgages the originating bank provides representations and warranties (R&W) that the claimed underwriting standards have been maintained. These R&Ws were an important reason that many banks later took these loans (and the MBS they collateralized) back onto their balance sheets when defaults began to rise above expected levels. CMO relied heavily on rating agencies to evaluate and rate the underlying risks of a MBS. Investors needing low risks felt particularly comfortable when buying superior AAA rated tranches of such mortgage pools.

The brokers and dealers who actually market mortgage loans have no financial incentive to limit loans only to those who can repay. Their fee based business requires only that they apply the underwriting standards demanded by the lenders. Some stretched these standards to conclude deals and some fraudulently disregarded them and misrepresented borrowers’ qualifications all together. However, the dramatically inflating housing price bubble dulled interest in these fine points for too many investors and others along the “supply chain.” In addition, credit rating agencies (Moody’s, S&P, etc.) were subject to conflicts of interest because they were paid for their ratings by the sellers rather than buyers of structured vehicles. As long as home prices kept rising, even the collateral of a home with no down payment was safe in the event of default. Investors in effect left the judgment about capacity to pay up to the borrowers.

Under normal circumstances leaving it up to borrowers to determine their own credit worthiness is not necessarily a bad policy. But it assumes that borrowers who misjudge their own capacity to repay will suffer financially as a result; which would provide the financial incentive and discipline for borrowers to make prudent judgments. In the frenzy of the U.S. housing price bubble, borrowers had become speculators too and they were often speculating with other people’s money.

Underwriting standards had not only fallen too low, but were often misapplied. A borrower might qualify for one type of mortgage product but not for another. A Graduated Payment Mortgage may be appropriate for a young family with a secure job and reasonable promotion prospects but is clearly wrong for a retiree. Controversy has arisen whether brokers mis-sold products (offered inappropriate mortgages) or whether borrowers exploited lenders by taking inappropriate loans. A growing number of borrowers, for example, were speculating on the continued rapid rise in housing prices. Many borrowed with the intention of reselling the house (flipping) and paying off the loan without ever living in it. Thus they felt comfortable in accepting ARMs with very low introductory interest rates, never expecting to have to make the higher monthly payments when rates re-priced. This was becoming an increasingly important source of construction loan finance for high rise condominiums before they were fully built.
The bottom line was that a large number of riskier (subprime) borrowers received loans over the past decade for which there was very limited historical experience with default rates on which to base risk premiums. Fee-based third party players (mortgage brokers/dealers, packagers, and originate-to-distribute lenders) became increasingly important in applying a range of underwriting standards, which were monitored and verified less and less diligently by overly confident investors. Political pressure for Fannie Mae and Freddie Mac to increase their purchases of subprime mortgage-backed MBS weakened their normally diligent monitoring of underwriting standards. Some amount of fraud in the representations of compliance with underwriting standards (by borrowers and brokers) was involved as well. Standards were too low and even those standards were not always met. Home ownership rose but losses are now known to have risen by more than the risk premiums charged for them and home ownership has already retreated some.

4.0 The Ugly

All bubbles burst eventually. The winners are those who ride them up and get out before the fall. The problem with bubbles is that at their peak, i.e. the turning point, the rush to exit can be very disruptive, causing losses and damage well beyond the bubble market itself.

4.1 The Bubble Deflates

My former colleague in the Economics Department of the University of Virginia, Herb Stein, former Chairman of the Council of Economic Advisors to Presidents Nixon and Ford, used to say things like, “when it can’t rise any farther, it won’t,” or “when it has fallen enough, it will stop.” It is not clear what, or what combination of factors caused housing prices to stop rising so fast and then to stop rising at all and to fall, but they can only rise as long as people can and will pay for them. In California and Florida prices rose to the point that people could no longer afford to pay them and when that happened they stopped.

It is also unclear to what extent increasing mortgage defaults and foreclosures caused prices to stop rising or the reverse. Along with speculators (flippers), many first time, subprime borrowers had underestimated the costs of home ownership beyond the mortgage payments. In addition many might not have fully appreciated the impact of interest rate resets for adjustable rate mortgages or had bad luck (lower incomes than expected, lost jobs, lost tenants, etc). Defaults proved significantly above industry expectations. “Data showed that 70 percent more people faced foreclosure in 2005 than the year before.”

As more and more subprime ARMs reset their interest rates and monthly payments after a two or three year introductory period, defaults continued to rise throughout 2006 and losses to investors began to hurt. In February 2007 HSBC announced that it was setting aside

\[\text{11 Goldfarb and Klein, June 16, 2008 p A1}\]
$10.6 billion to cover expected losses. Bears Stearns first bailed out and then closed two of its hedge funds that had invested heavily in subprime mortgage backed securities. “The investment banks that had bought subprime mortgages to pool them were now demanding that lenders… take back the mortgage loans that had gone into default, arguing that misrepresentations had been made about the borrowers.”

Announcements by others followed and a number of mortgage lenders went into bankruptcy and lending standards began to tighten. Throughout 2006 and the first half of 2007 adjustments were orderly, though overdue. The feedback of rising mortgage defaults and tightening lending standards on housing prices, however, finally turned a slowdown in the rise in housing prices into actual declines.

According to OFHEO House Price Index, home prices rose nation wide in the fourth quarter of 2005 from a year earlier by almost 10%, while in the first quarter of 2008 they declined 3.1% from a year earlier. However, in California prices declined 10.1% over the past year. The comparable figures for Florida were 8.1% while home prices in Texas actually rose 4.7% from a year earlier. Using the popular Chase Shiller composite 20 metropolitan areas index, housing prices doubled between January 2000 and their peak in July 2006 since which they have declined 17% through March 2008. This is a huge decline but in fact only returns the index to its level in October 2004, which is still 72% above its January 2000 level. To restore housing prices to the ratio they have historically enjoyed relative to income, prices will need to fall more.
Preceding and accompanying falling prices, home sales slowed and the inventory of unsold homes and condos increased, reaching 4.55 million at the end of April 2008, which represented an 11.2 month supply at the April sales pace. This is the largest inventory of unsold residential property since these records have been available, also suggesting that prices will need to fall further. In 2005, for example, the inventory of unsold houses averaged 4.5 months.\(^{13}\) The price declines that have already occurred mean that many mortgages with no down-payments (or very low down-payments) in the last two year are now under water (have collateral worth less than the loan).

Falling housing prices need not affect the ability of home owners to service their mortgage loans. However, the popping of the real estate bubble threw fuel on the already burning fire of rising mortgage defaults. Borrowers who had counted on avoiding rate hikes on ARMs by refinancing or selling out (flipping) speculative purchases at a higher price and paying off the mortgage where not able to do so. Some whose mortgage loans exceeded the resale value of their homes chose to walk away and surrender their collateral (especially speculators who never intended to live in the house anyway). While delinquencies (one or more missed payments) on subprime loans averaged between 12% to 16% of total subprime loans over the period 2000 to 2004, the rate jumped to almost 19% in the first quarter of 2008.\(^{14}\) Even the delinquency rates for prime loans, which have normally been in the range of 2% to 3%, rose in the first quarter of this year to 3.7%.

\(^{13}\) National Association of Realtors, Existing home sales

Foreclosure rates show a similar story. The normal rate for fixed rate prime borrowers of around 0.2% rose to 0.29% in the first quarter of this year while the rate for adjustable rate prime borrowers rose from around 0.4% to 1.55%. The worst performance is for adjustable rate subprime borrowers whose foreclosure rates jumped from 2.0% to 3.0% on average to 6.35%. Clearly adjustable rate mortgages and especially those to subprime borrowers are in the most trouble. In fact 62% of all foreclosures currently involve adjustable rate mortgages. To maintain perspective, only 21% of all mortgages have adjustable rates and only 6% are to subprime borrowers. Combining fix and ARM loans, all subprime mortgages constitute only 12% of all mortgages (but 50% of all foreclosures).

4.2 Financial Markets Respond

These losses are significantly greater than had been expected and are expected to get worse. In the summer of 2007 Moody’s, Standard & Poor’s and Fitch, shocked the market by downgrading many subprime backed MBS and CMOs. What had been an orderly, though deepening retrenchment of the subprime market until August, 2007 became a rout when in early August banks largely stopped lending to each other and started hording cash. Banks had lost confidence in each other and in the ability to liquidate assets in the market should they need to.
The immediate question for mortgage investors (those holding subprime and Alt-A mortgages directly or indirectly through MBS) was how wrong were their earlier assumptions about default rates (how high would they actually go)? It was clear that underwriting standards had often been set too low, but had even these underwriting standards actually been satisfied? The next question was how good was their insurance against losses (monoline bond insurance, representations and warranties, Credit Default Swaps, etc). There was considerable uncertainty about the answers to these questions, especially in the early months of the crisis. These questions were almost impossible to sort out quickly because of the enormous complexity of the financial vehicles that had developed. Many MBS were actually financed by Collateralized Debt Obligations (CDOs) in so called “two-layer” securitizations. The ultimate investor (whether a bank, pension fund, corporation, hedge fund, or individual) held a CDO that was collateralized by MBSs, which in turn were collateralized by mortgages. The likely losses to investors in tranches of mortgage pools were even more difficult to evaluate and price and were subject to further downgrading by the rating agencies. The investor’s exposures to losses depended both on the magnitude of ultimate mortgage defaults and on the integrity of all of the intermediate collateral, insurance, and guarantee arrangements designed to limit losses. There was enormous uncertainty about all of these elements.

Generally those holding these instruments should be able to absorb modestly larger than originally expected losses. However, highly leveraged hedge funds could lose more than investors had put up and thus be unable to repay their creditors. Many banks were exposed to hedge funds that had leveraged their purchases of MBSs, and CDOs with funds borrowed from banks, effectively reexposing banks to mortgages they had sold, though problems have not generally come from hedge funds. Questions arose about the thinly capitalized monoline bond insurers’ ability to withstand large insurance claims from investors in MBS. Holders of what should be and probably are perfectly sound prime MBS suddenly wanted to unload them in a market where few others where willing to buy them except at a discount. A wide part of the market was rushing to quality, attempting to unload riskier assets for safer ones and deleveraging was underway in a big way.

As a result, the secondary markets for these instruments froze up. Banks began to build up their own cash positions and to reduce interbank lending to other banks. Interbank rates (an uncollateralized market) jumped dramatically above the overnight Federal funds rate targeted by the Federal Reserve. The rapid spillover effects of this sudden liquidity crisis are illustrated by one of its first victims, Northern Rock, a building society headquartered in North East England. Over a very short period of time Northern Rock grew to be one of England’s five largest mortgage lender, originating mortgages well in excess of its deposit base. Its additional funding, about 75% of its total funding, came from short-term, largely interbank lending markets. With the outbreak of the subprime crisis in the U.S., Northern Rock was unable to refinance maturing money market borrowing (at “reasonable” interest rates) and borrowed from the Bank of England on September 12, 2007. The financial world was shocked by pictures on September 14 of long lines of Northern Rock customers seeking to withdraw their deposits. The option of selling some of its mortgage assets to pay for deposit withdrawals was difficult and unattractive because the secondary market had dried up or required very steep discounts on the face value of what may well have been sound
mortgages. Northern Rock has since been nationalized by the British government to facilitate its resale to private owners.\footnote{This approach was required to avoid excessive prices for existing shares demanded by Northern Rock’s owners because of weaknesses in British bank bankruptcy laws.}

The problem is further illustrated by the dramatic collapse in March of this year of Bear Stearns, an American investment bank. Bear Stearns held assets, many of them mortgage backed securities and mortgages being pooled for sale as MBSs, that it financed by borrowing from private investors and the interbank market. When large numbers of Bear Stearns’ investors reduced or withdrew (failed to reinvest) their investments in Bear Stearns, it faced an urgent need to borrow elsewhere in order to pay off its existing investors. But such funds were no longer available at interest rates it could afford to pay. The only other option was for Bear Stearns to liquidate enough of its assets to pay off its withdrawing investors. But the market’s newly found distrust of the value of MBSs, especially those backed by subprime and Alt-A mortgages would have entailed selling assets at steep discounts that could well prove to be below their ultimate value.

Financial market leverage (investing with borrowed funds) and the difficulty in valuing assets that are not trading in the market, multiplied the Bear Stearns problem across a broad spectrum of the market. Banks have increased the price and/or reduced the amount of lending to other banks, hedge funds, dealers, investment banks and others out of uncertainty and concern about the health of these borrowers and an increase in demand for liquidity of their own. In response, the market is now deleveraging and as a result banks need more reserves (central bank money) to sustain the same rate of lending. A fall in bank lending to the ultimate spenders (investment spending by firms and consumption by households) will reduce aggregate demand and aggravate any business slowdown, which could further weaken banks, setting off a vicious cycle.

Fortunately, banks and most enterprises entered this period of financial adjustment with relatively strong capital positions. In others words, they are in a relatively good position to absorb additional losses if the losses are not too large. To date, banks have raise almost three quarters as much new capital as they have written off of the old capital ($300 billion and $393 billion respectively). However, additional market losses not related to the defaults of ultimate mortgage borrowers are resulting from the sudden reduction of market liquidity associated with uncertainty, reduced risk preferences, and deleveraging. These market losses could be many times the size of the defaults of ultimate mortgage borrowers.

### 5.0 Monetary Policy Responses

Having contributed to the housing price bubble in the first place with excessively low interest rates in 2001 to 2003, the Federal Reserve is now moving quickly to soften the impact of it’s deflation. Monetary policy reactions have two dimensions. The Federal Reserve has responded to the market’s sudden demand for liquidity with a number of...
innovative facilities, such as its new Term Auction Facility and Term Securities Lending Facility for providing the missing liquidity to the market. Similar actions to inject liquidity into the market were also taken by the European Central Bank (belatedly by) the Bank of England and many other central banks around the world. In addition, and with a quite different purpose, the Fed has lowered its interest rate target (the overnight interbank lending rate or so called “federal funds rate”) in order to soften the economic slow down (recession) that is expected to accompany the macro economic adjustments now under way (deflation of the housing bubble and reduction of the external trade deficits).

The Fed’s actions to supply liquidity to the market do not and are not meant to bail out those who have lent money that cannot be repaid. Anyone owning an asset that defaults will lose some or all of his investment. Rather, the Fed’s actions are meant to supply the additional liquidity demanded by the market before banks and other financial intermediaries will be willing to continue or to resume normal lending. The Fed’s supply of liquidity, which to date has amounted to around $435 billion, has taken the form of collateralized loans, though it has extended the terms (from overnight to 28 days) and broadened the assets acceptable as collateral. In a dramatic step, the Fed recently launched the Term Securities Lending Facility under which it lends Treasury securities against collateral that includes AAA/Aaa-rated Private-Label Residential Mortgage Backed Securities, thus easing the secondary market in these securities. The Fed is not buying bank loans or other assets (e.g., MBS) but is accepting them (with significant safety margins) as collateral for its loans to banks. The Fed is at risk of loss only if the bank it has lent to goes bankrupt before repaying its borrowing from the Fed AND the collateral has declined in value below the value of the loan.

Even the Fed’s role in facilitating Bear Stearns absorption into JPMorgan Chase is not really a bailout of the overly risky behavior of Bear Stearns. The Fed’s large loan to Bear Stearns through JPMorgan Chase allowed the time needed for Bear Stearns purchase without putting it into bankruptcy with its attendant lengthy liquidation requirements. If a reasonable assessment of the value of Bear Stearns assets indicate that it is insolvent (value of assets less...
than liabilities, i.e., negative capital), its shareholders should have received nothing for their shares. It is not clear that this is the case and we cannot know for sure for a few years. As it was, the price of owners’ shares fell from $171.50 in January 2007 to the $10.00 per share paid by JPMorgan Chase in March 2008. Capping the risk to Morgan of further declines in the value of Bear Stearns assets by shifting any such losses to the Fed is standard practice by the FDIC to facilitate the rapid purchase and assumption of failed banks by healthy ones. The Fed’s actions, in effect, facilitated an orderly liquidation of Bear Stearns similar to the liquidations of hundreds of banks by the FDIC via sales to other banks (purchase and assumption transitions).

The Fed could have allowed Bear Stearns to default and gradually sold off its assets under a bankruptcy liquidation. This would have sharply increased market discipline of liquidity risk-taking by commercial and investment banks. It is not obvious that such an approach would have precipitated wide spread runs, but the Fed did not wish to take the modest risk of possibly catastrophic reactions in the market. If something like the bank resolution tools available to the FDIC could be extended to investment banks, Bear Stearns could have been “liquidated” (assumed by Morgan at its assessed net worth) without interruption to its operations and thus without risk of wider financial market disruptions. In that case, Bear Stearns shareholders would more likely have received zero for their shares rather than the $10 per share they actually received and the moral hazard of the “rescue” would be completely avoided. An issue was the uncertainty of what a failure of Bear Stearns meant for its counterparties in the complex web of transactions related to the MBSs, CDOs, credit default swaps, and other entanglements—so called “systemic” risk.

Beyond the Fed intervention with Bear Stearns, it has opened its lending windows to investment banks like Bear Stern for the first time since the Great Depression. In exchange for extending its lender of last resort facilities to these securities firms, it may be expected to increase its regulation of their capital and risk taking.

Thus the Fed’s injection of liquidity does not prevent those who made bad loans from losing money from their business decisions and it provides no incentive to make overly risky loans in the future. It does, however, underwrite the liquidity of the market as a whole. As a result financial intermediaries are likely to take on more liquidity risk (the risk of not being able to sell an asset quickly at a reasonable price) in the future than otherwise. This will lower the cost of borrowing and lending in the market but could make it more vulnerable to the kind of liquidity shock it is experiencing today. In addition, the Fed must be willing to reabsorb these reserves now building up on banks’ books and other financial intermediaries as quickly as they supplied them the moment the bottom is reached and optimism returns or this cash will be lent and invested and new bubbles started.

16 Bear Stearns is not a deposit taking bank enjoying the deposit insurance provided by the Federal Deposit Insurance Corporation. America’s efficient bankruptcy tools are available only to commercial banks and are administered by the FDIC. The bankruptcy of Bear Stearns or other investment banks would suffer from some of the same weaknesses of British law that impeded the resolution of Northern Rock.

The second aspect of the Federal Reserve’s response to the current situation has been to lower its short-term interest rate policy target (the federal funds interbank lending rate). This is being done for an entirely different reason. The Fed adjusts its fed funds rate target in light of its legal mandate “to promote effectively the goals of maximum employment, [and] stable prices…” In the face of mounting evidence of an impending economic slow down and to soften the real economy impact of the housing price and external trade balance adjustments, the Fed rapidly reduced its target for the fed funds rate from 5.25% in August 2007 to 2.0% on April 30 2008. Longer-term market rates followed suit.

The housing market adjustment started with slowing sales and rising inventories of unsold houses that people could no longer afford. Price increases slowed, then stopped, then began to fall, and construction of new houses slowed as well. The construction slow down itself reduces economic activity but declining household wealth as the value of houses fall reduces household consumption, which further slows economic activity.

However, the Fed’s “other” mandate, and in fact the only one it can really control in the long run, is price stability (low inflation). The rate of increase in the consumer price index (CPI) from a year earlier increased from 2.4% in February 2007 to 4.2% in May 2008. While there is as yet little indication of an increase in market inflation expectations, the Fed is in a difficult position to balance its employment (business cycle) and price stability mandates. An increase in inflationary expectations will be costly to reverse and would have negative consequences for employment. Furthermore, the rapid reductions in interest rates without the coordinated cooperation of the European Central Bank and other key central banks, has reduced U.S. rates relative to key foreign rates and may have devalued the dollar’s exchange rate more than needed to restore external balance.
6.0 Policy Objectives and Issues

The development of the subprime mortgage and the broadening of mortgage financing via securitization have greatly benefited homeowners, especially lower income families, by lowering the cost of mortgage financing and broadening the number of people able to enjoy it. It has also exposed some weaknesses in the current system. The policy challenge is to reduce the weaknesses without reducing the benefits.

Financial markets promote the allocation of savings to its most productive uses, and thus our high standard of living, when lenders bear the gains or losses of their decisions and when borrowers have an incentive to honor their repayment commitments. Successful financial markets build on self-interest (the profit motive), accountability, good information (transparency), and the efficiency with which contracts are enforced. The marketplace has become more transparent in recent years, which has improved the capacity of borrowers and lenders to make sound, informed decisions. Prompt mark-to-market disclosures of the value of bank assets reduce the uncertainty over the impact of evolving market developments.

More accurate (such as mark-to-market) accounting and disclosure should reduce risk premiums and help markets clear (and thus function again) more quickly. It is apparent and objective when a mortgage is in default, but much less apparent and subjective what its recoverable value will be and whether performing loans might deteriorate in the future. When complex structured assets are not trading in well functioning markets, their valuation can only be guessed at or “marked-to-model”. It may well be that banks are now being overly conservative in their valuations and write downs. If so, some assets will turn out to be worth more than now reported.
But in some important respects financial intermediaries have become less accountable and less transparent. Though securitization has many benefits to borrowers, it has weakened the link between the decision to lend and the resulting gain or loss to the actual lender. In a large number of cases, mortgage lenders have outsourced the responsibility for determining the qualifications of a borrower to brokers and agents, who have no financial stake in the long-run viability of the deal. They earn their commissions for approving the loan whether it goes sour or not. Careful thought needs to be given to how to strengthen accountability for monitoring underwriting standards (normally with bond insurers or R&Ws) without undermining the benefits of modern financial instruments and techniques. There is a strong financial incentive for owners (though less so for managers) to find solutions for these weakness, and no reason to think that government regulators can do a better job. But where the government has socialized risks, regulation of risk-taking will need to be appropriate as well.

Beyond the social safety net provided by the government for those in distress for whatever reasons, there may be steps that could lessen unnecessary costs of the current housing market adjustments. However, measures to soften the pain to homeowners at risk of losing their homes, if not carefully designed, can worsen conditions in the market now and in the future. Measures that encourage mortgage borrowers to default in order to enjoy government assistance will increase the losses that must be absorbed (by investors or taxpayers). This could worsen uncertainties and conditions in financial markets now. Any government assistance should be a second best to those able to meet their existing mortgage obligations, but would need to be better than default. Measures that bail out imprudent or unlucky investors or borrowers will encourage more of such behavior in the future (moral hazard) resulting in a replay of what we see today.

Moral hazard exists as well when central banks provide financial markets with liquidity that the market has unexpectedly stopped providing or is only providing at sharply higher interest rates. Historically this has been accepted as a proper function of central banks. While individual banks or firms should not be rescued from liquidity problems that result from their own imprudent behavior, the ability and willingness of central banks to offset systemic liquidity shocks has permitted the development of a more efficient financial system and has thus promoted economic growth. By lowering the risk of the financial sector’s intermediation of the mismatched maturity preference of borrowers and lenders, it has, however, allowed the development of a somewhat more fragile system.

7.0 Lessons Learned

It is early to set out the lessons learned from the subprime and related problems as the cycle has not yet run its course. None the less, the areas of weakness are now obvious and some preliminary lessons can be listed.

The standardization and securitization of mortgage loans has helped expand home ownership in the U.S. while spreading the risks to a broader range of lenders. This will
continue to be the case even after the current adjustments to excesses and weaknesses have been corrected.

Unusually low interest rates contributed to the housing price bubble even while inflation remained low. While central banks may not be able to do much to contain excessive “market exuberance” they can do a lot to avoid contributing to it. Today’s market turmoil would have been less had the Fed not keep interest rates so low for so long a few years ago.

Mortgage underwriting standards dropped too low for many subprime loans and the enforcement of those standards became weak. Too many borrowers and lenders speculated on the assumption that housing prices would continue to rise for ever. The role of brokers and agents in originating mortgages weakened the financial incentive to carefully apply and/or monitor underwriting standards. The role of those providing insurance and guarantees may need to be reconsidered and strengthened to ensure that they provide monitoring of the application of underwriting standards that lenders believe they are buying. The industry and its regulators need to review and strengthen these arrangements. The risk weights of some of these assets may need to be strengthened in determining bank capital standards. Another interesting suggestion is that “investors should demand that either the arranger or originator – or even both – retain the first-loss or equity tranche of every securitization, and disclose all hedges of this position.”

Mortgage backed and related securities became very complex and overly reliant on rating agencies to evaluate and monitor. The assignment of a credit rating to a piece of a mortgage pool (tranche of a CMO) tended to substitute for more careful monitoring of underwriting standards. Because they are paid for their ratings by the mortgage securities sellers, the rating agencies have a conflict of interest. Investors were not always getting what was being claimed. “The [originate-to-distribute] model works best when the resulting credit instruments are less complex and opaque, as analysts and investors can evaluate the underlying risks with greater certainty.” “Greater transparency and less complexity in credit instruments will help to promote broader scrutiny of credit risk.” Mark-to-market accounting reduces uncertainty and should be strengthened.

Fannie Mae and Freddie Mac have played a mixed role. Supervision authority by OFHEO needs to be modernized to impose risk-based capital requirements. Regulatory reforms for dealing with some of these issues have been passed by the U.S. House of Representatives but are stalled in the Senate.

The follow-on financial market disruptions reflect a flight to safety, sudden doubts about interbank counterparty soundness, and inadequate liquidity arrangements. In some cases liquidity management was not adequately integrated with a bank’s overall risk

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18 Ashcraft and Schuermann, p 12
19 Kroszner June 6, 2008
20 Ibid.
management. Risk models often did not take into account the impact on risks (especially liquidity-related risks) of the systemic impacts of deteriorating mortgage related assets or the correlation of market and credit risks. “Those institutions fairing better during the recent turmoil generally placed relatively more emphasis on validation, independent review, and other controls for models and similar quantitative techniques.”

The financial markets have become over-leveraged. Lax monetary policy (low interest rates) has encouraged excessive leverage.

Increasing capital leverage in good times and having to build up capital during downturns aggravates the credit cycle. “An important issue for supervisory agencies is how to create incentives for institutions to behave in a less pro-cyclical manner without interfering with their ability to earn reasonable returns on capital.” A strong capital base facilitates a more counter cyclical role for banks and for Fannie Mae and Freddie Mac.

The bank resolution tools available in the U.S. through the FDIC have reestablished considerable market discipline of banks by making the liquidation of insolvent banks efficient and non-disruptive. Similar tools should be considered for investment banks if they are to enjoy access to the lender of last resort facilities of the central bank.

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21 Don Kohn testimony to the U.S. Senate June 5, 2008
22 Lockhart P 9
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