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Abstract

The US housing finance system mixed private and public goals and ownership in a unique way. These public political interventions through the banking system and primarily Fannie Mae and Freddie Mac never provided much public benefit, and are the cause of the global collapse of the financial system. It is time to set the mortgage market and financial system right by eliminating Fannie and Freddie and restoring the regulatory focus on maintaining safety and soundness, rather than entrench moral hazard with a systemic regulator.

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Summary and Conclusions

That the US financial system crashed and almost collapsed in 2008, causing a globally systemic financial crisis and precipitating a global recession is accepted fact. That US sub-prime lending funded the excess housing demand leading to a bubble in housing prices is also generally accepted. That extremely imprudent risks funded with unprecedented levels of financial leverage caused the failures that precipitated the global systemic crash is a central theme in most explanations. All of the various economic theories of why this happened, from the technicalities of security design (Gorton, 2009) to the failure of capitalism (Stiglitz, 2010) can be reduced to two competing hypotheses: a failure of market discipline or a failure of regulation and politics.

While still sifting through the wreckage and rebuilding the economy in mid July, 2010, the Congress passed the 2,315 page Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 to prevent a reoccurrence of this disaster. The disagreement in the debates regarding the appropriate policy prescription reflected the lack of a consensus on which of these two competing hypotheses to accept. The risk was that, following the precedent established in the Great Depression, politicians will blame markets and use the crisis to implement pre-collapse financial reform agendas and settle other old political scores. By having done just that, this Act worsens future systemic risk.

That there was little or no market discipline is obvious. Contrary to the deregulation myths, regulation and politics had long since replaced market discipline in US home mortgage markets. Regulators didn’t just fail systemically to mitigate excessive risk and leverage, they induced it. This didn’t reflect a lack of regulatory authority or zeal, as politicians openly encouraged it. The politically populist credit allocation goals that promoted risky mortgage lending, whether or not morally justifiable, are fundamentally in conflict with prudential regulation. The system of “pay-to-play” politically powerful government sponsored enterprises (GSEs) was a systemic disaster waiting to happen. The recent advent of the private securitization system built upon a foundation of risk-based capital rules and delegation of risk evaluation to private credit rating agencies and run by politically powerful too-big-to-fail (TBTF) government insured commercial banks and implicitly backed TBTF investment banks was a new disaster ripe to happen. Easy money and liquidity policies by the central bank in the wake of a global savings glut fueled a competition for borrowers between these two systems that populist credit policies steered to increasingly less-qualified home buyers. This combination created a perfect storm that produced a tsunami wave of sub-prime lending, transforming the housing boom of the first half decade to a highly speculative bubble. The bubble burst in mid-2007 and the wave crashed on US shores in the fall of 2008, reverberating throughout global financial markets and leaving economic wreckage in its wake.

By the time the financial system finally collapsed bailouts and fiscal stimulus were likely necessary even as they risked permanently convincing markets that future policy will provide a
safety net for even more risk and more leverage. Given this diagnosis, how to impose market and regulatory discipline before moral hazard behavior develops is the most important and problematic challenge of systemic financial reform.

The public policy prescription is simple and straightforward. Prudential regulation remains necessary so long as government sponsored deposit insurance is maintained, which seems inevitable. Prospectively the traditional regulatory challenge of promoting market competition and discipline while safeguarding safety and soundness remains paramount. But the prudential regulation of commercial banks needs to be de-politicized and re-energized, with greater reliance on market discipline where public regulation is most likely to fail due to inherent incentive conflicts. This means sound credit underwriting and more capital, including closing the off balance sheet loopholes typically employed by big banks and eliminating the incentives for regulatory arbitrage. Universal banking should remain, but divested of hedge fund and proprietary trading activity. In addition, firms that are “too big to fail” (TBTF) are probably too big to be effectively controlled by regulators and should either be broken up or otherwise prevented from engaging in risky financial activities by reducing or eliminating their political activities.

Most importantly, the two main sources of TBTF systemic risk and subsequent direct government bailout cost, Fannie Mae and Freddie Mac, no longer serve any essential market purpose. The excess investor demand for fixed income securities backed by fixed rate mortgages that fueled their early growth is long gone and now easily met by Ginnie Mae and Federal Home Loan Bank securities alone, as fixed nominal life and pension contracts have largely been replaced by performance and indexed plans. Fannie Mae and Freddie Mac should be unambiguously and expeditiously liquidated subsequent to implementing an adequate transition plan for mortgage markets.

Part I. Sub-prime Lending and the Systemic Financial Crisis

*Introduction and Overview: The Root Cause; Deregulation or Regulation and Moral Hazard?*

There are several macroeconomic explanations of why the bubble occurred. Central bankers, e.g. Federal Reserve Board (FRB) Chairmen Bernanke (2007) and Greenspan (2009) prefer to cite the global savings glut as the source of funds, while Taylor (2010, pg 7) argues that it was simply excess money creation keeping interest rates low during the first half of the decade. Ragan (2010) argues that loose money was necessitated by the slow recovery of employment from the 2001 recession. Whatever the central bank’s reasoning, most now agree that it kept interest rates too low for way too long.
Easy money was pulled primarily through the sub-prime mortgage market to inflate the housing boom into a mortgage credit bubble beginning around mid-2004. Some, e.g. Shiller (2005) make the Keynesian argument that excess demand for housing pulled these funds into the mortgage market as buyers became infected with the irrational exuberance of ever rising house prices. But most borrowers bet very little of their own money on housing during the bubble. Moreover, this theory doesn’t explain why lenders would finance such speculative buying. It was lenders who were pulling in millions of un-or under-qualified mortgage borrowers by granting trillions of dollars of questionable mortgage loans during the housing boom and well over a trillion dollars of loans during the sub-prime mortgage bubble from mid-2004 through mid-2007, that at the time of origination should have been viewed as highly likely to default.

Deregulation should be seriously investigated as a potential cause. Its purpose is to liberalize markets while attempting to substitute market discipline for public regulation resulting in smaller more frequent failures that prevent the buildup to a more systemic crisis (Woods, 2009) Liberalization is often a source of greater instability in emerging markets as market discipline has either withered or never been nurtured. Reinhart and Rogoff (2008) examine historical causes of financial crises and conclude that they often follow financial market liberalization that facilitate bubble finance and suggest the US sub-prime mortgage crisis isn’t really different. But the historic housing finance bubbles have most often reflected household pent up demand, whereas US households have arguably been over-supplied with credit for decades.

Many politicians favor the diagnosis that deregulation, lack of regulatory authority and an ideologically motivated lack of regulatory fervor of past administrations was the root cause. According to this political diagnosis, deregulation caused the bubble while unregulated derivatives transmitted the systemic collapse of the US financial system globally. Without waiting for the Report of the Financial Crisis Inquiry Commission (FCIC) chartered by Congress to investigate twenty two specific potential causes, this diagnosis is the underlying premise of the Dodd-Frank Act whose stated goal is to “Reform” Wall Street. The magnitude of the collapse and the ensuing taxpayer bailout makes “Wall Street,” an anachronistic reference to the former address of the nation’s global investment banking firms, hedge funds and some money center commercial banks, an easy scapegoat. Wall Street greed, incomprehensible financial innovations, rating agency incompetence and investor ignorance is cited as evidence of ideologically driven regulatory laxity. There are by now many excellent accounts of the specific events prior to, during and subsequent to the systemic financial crash. That Wall Street is and arguably always has been greedy is a given, but many on Wall Street also lost money in the crash as well. It is true that the Wall Street used many new and seemingly overly complicated and confusing financial instruments in the securitization process, but that’s not new either. It is also true that rating agencies highly over-rated many of these instruments, but they’ve done that before as well. Many professional money managers cited these factors when claiming ignorance of the risk until after the crash, but that’s a weak excuse for
professional money managers who got paid billions of dollars in compensation to invest trillions of dollars in these securities.

Wall Street is an inherently easy political scapegoat. Even when investment banks arrange mutually beneficial trades, a losing party can be identified ex post when not viewed in a broader hedging or portfolio context. When a trader trades for his own or for the firm’s proprietary account and wins, it is easy to presume he is guilty of taking advantage of the other party. Since both sides of the trade use risk management models, they too can always be found to be faulty.

This is not to deny that Wall Street was at the center of the financial crisis. Several hedge funds, investment banks and commercial banks failed and others that should have were bailed out. These failures partly reflect a classic principal-agent problem as firms run by traders benefited themselves with huge annual trading bonuses at undue stockholder risk. But this is an ongoing problem that stockholders were or should have been aware of and should have dealt with, and presumably will in the future. There were many gate-keepers and all obviously failed. But Wall Street was not a gate-keeper before Dodd-Frank “reform,” and won’t be after.

Deregulation encompasses both reduced political legislative authority and reduced administrative regulatory enforcement. While some (e.g. Krugman, 2009 and Stiglitz, 2009) blame Reagan and Bush era deregulation, there are few specific references to either legislation or administrative action. The reduction of bank branching barriers preceded Reagan, as did the decision leading to the eventual complete elimination of Glass-Steagall restrictions in the Gramm-Leach-Bliley Financial Services Modernization Act of 1999 signed by President Clinton. Moreover, this deregulation has not been directly implicated in specific activities that created the crisis, and such diversification has generally made the banks stronger. Others note the failure to adopt new derivative regulations, e.g. Levine (2009), Johnson (2010). But this failure generally reflects the ongoing political turf wars among Congressional Committees (e.g. Agriculture versus Finance) rather than ideology, as demonstrated once again in the Dodd-Frank debates. While derivatives were used to ultimately prick the bubble there is no compelling link between the disputed regulatory proposals and the sub-prime mortgage lending bubble.

Some analysts don’t blame deregulation per se, but rather argue the failure was the result of many factors. The multiple-cause private and public failure theme is perhaps best summarized by IMF Managing Director Dominique Strauss-Khan:

“it is the result of three failures: a regulatory and supervisory failure in advanced economies, a failure in risk management in the private financial institutions, and a failure in market discipline mechanisms.”

Clearly there was neither sufficient public regulation nor any attempt at strengthening market discipline to restrain excessively risky mortgage lending financed with excessive leverage. The multiple-cause theme diffuses responsibility and accountability without explaining anything. The US regulatory system is diffuse, and there are clearly many tales of regulatory miss-steps. Similarly, US housing, mortgage and capital markets are extremely diverse, and the stories of
mistakes, fraud, ignorance and mismanagement are endless. Blaming the lack of market
discipline for those in regulated industries who relied on regulation is all too easy.

Our focus is on why investors funded millions of un-and-under-qualified borrowers sufficient to
cause not only the failure of their own firms but a systemic collapse of the entire financial
system. The answer is that the US mortgage market has been politicized for decades. Prudential
regulation has totally replaced market discipline, and political interventions have totally
undermined regulatory enforcement. Private financial institutions were induced by regulators
to take huge risk because taxpayers were bearing most of the downside loss! This politically
inspired regulatory inducement to risk-taking is called “moral hazard.” Government backing
creates a potential moral hazard by distorting private saver and investor incentives in favor of
excessive risk-taking and leverage. Moral hazard doesn’t (necessarily) guarantee investors
against loss; it just shifts the odds in favor of greater risk-taking.\(^9\)

In theory government regulation of capital levels and asset risk can mitigate moral hazard by
shifting much of the burden of risk assessment from private stockholders and “market
discipline” to government regulators and their political overseers. But replacing market
discipline with public regulation has always been a perilous task. Regulators are often not
competent to regulate financial firms. More kindly, they most often lack the required
information (Hayek, 1988). Regulatory agencies are also easily “captured” by the institutions
they regulate (Stigler, 1971), where many seek subsequent employment. Edward Kane (2009)
has published numerous papers over the last four decades highlighting the potential incentive
conflicts between regulatory agencies and regulators. Again in theory, political oversight of
prudential regulation can safeguard that prudential regulation works appropriately, but this
requires that political incentives be in alignment with the public interest of maintaining safety
and soundness while promoting competition, which is not as obvious as it sounds.

Hendershott and Villani (1983) argued that the three most important determinants of the
design of instruments and institutions in US mortgage markets were the distortions of
monetary, regulatory and tax actions, with market determinants generally ranking a distant
fourth. The Federal Reserve monetary policy (and implicitly, fiscal policy that can drive it) can
lead to credit booms and busts, with inflation/deflation impacting inherently long term
mortgage credit instruments and institutions more than other credit markets. In the heavily
regulated US mortgage markets (law and) regulation and the associated protection has always
substituted for rather than complemented market discipline, leading to increasingly more of the
former and less of the latter while encouraging regulatory avoidance, or “regulatory arbitrage.”
Taxes play a role similar to regulation: the higher are marginal tax rates, the greater is tax
avoidance or “tax arbitrage.

Our analysis demonstrates that the public failure to effectively regulate moral hazard was the
root cause of the initial bubble finance, the ensuing mis-management of the crisis and the
bailout, and that these regulatory failures were politically rather than ideologically motivated.\(^{10}\)
We focus on three political interventions that undermined prudential regulation: 1. public
protection, 2. populist agendas and 3. political tribute. Public protection came in the form of implicit and hence unbudgeted guarantees. Populist agendas use implicit and hence off-budget credit allocation quotas to subsidize politically preferred groups. Political tribute refers to the inherent conflict between the political responsibility for regulatory oversight of prudential regulation and the cash and other benefits provided by the regulated to or on behalf of their political overseers, in other words a form of “pay-to-play.”

Whether and to what extent these funds would have created a financial bubble somewhere else in the US had the mortgage market been closed is a matter of conjecture, but it is not a coincidence that the bubble inflated in the US mortgage market given the moral hazards built into and encouraged by our system – securitization of mortgages funded by GSEs and government insured banks that are TBTF. It was both the growth and the accumulation of political distortions that eventually produced the bubble here.

The most unique aspect of American mortgage markets is the dominance of the GSEs. That Fannie Mae would distort mortgage markets was a concern of opponents from the start in 1938. That the GSEs would result with a virtual monopoly on the mortgage market was also predictable as was their key role during the last systemic collapse of mortgage lending thrifts in the 1980s. That Fannie Mae along with Freddie Mac would again play a key role, this time at the center of the financial crisis, had long been predicted by the central bank as the nation’s de facto systemic regulator (Poole, 2002, Greenspan, 2007).

The second unique aspect, which is often offered as justification of the first, is the continued dominance of the fixed rate prepayable non-recourse mortgage loan. The imbedded prepayment option has always been extremely difficult to evaluate. The pre-payment option has been the root cause of the unbelievably high and generally unproductive turnover of mortgage backed securities. Trading of such securities spawned the complex derivative securities that would give rise to future problems and was the primary force behind the transformation of Wall Street from investment banking partnerships into short-sighted investor-owned proprietary trading companies and hedge funds.

The third equally unique aspect of the US mortgage market and related to the first two is the originate-to-sell model, which became pervasive after the demise of the portfolio lending thrift industry two decades ago. The securitization process with its inherent incentive conflict and moral hazard is the common thread of all the stories referred to above relating to abuses in the private sector securitization industry. Not only was borrower and originator equity negligible, there was very little equity invested anywhere in the securitization structure. The idea that this originate-to-sell model is necessary to maintain the primacy of fixed rate loans—a dubious goal—arguably never had merit. But it has been obsolete for decades in any event since the introduction and explosion of interest rate swaps and other derivative securities markets that enable locally deposit-funded mortgage lenders to manage that risk.

The fourth unique aspect is the imposition of social goals on mortgage loan underwriting. The US has for several generations gone to the precipice of moral hazard in underwriting, with low
or no down payment loans, teaser interest rates to qualify income, no recourse to the borrower, etc., characteristics that are rare elsewhere. The imposition of binding affordable housing quotas inevitably led to predatory practices to recruit increasingly less qualified borrowers during the bubble, even favoring them over more qualified borrowers. Hence the sub-prime underwriting practices and guidelines and current default, foreclosure and loss rates are also without international comparison. The US arguably relies on private institutions more than any other country for mortgage finance, but then severely distorts the entire financial system to deliver unbudgeted but, relative to their economic and postponed taxpayer cost, very small subsidies to homeowners. The high economic costs of this system are now indisputable.

The last aspect is its shear size and diversity. The US has one of the highest homeownership rates in the world. Low down-payments, moving and cash-out refinancing make it one of the most highly leveraged housing stocks as well, in part due to the costly tax subsidy of mortgage interest deductibility. The stock of mortgages outstanding was $13.5 trillion by year end 2006. Problems in this market will inevitably spill over to other markets.

The government safety net originally came about because fractional reserve banking shares an attribute of a pyramid scheme: it works so long as depositors have confidence that it will work, otherwise it is better to withdraw funds too early than too late. Adoption of deposit insurance was initially intended to give small retail depositors confidence in a bank’s liquidity and capital, while the Federal Reserve Banks (FRBs) provided systemic liquidity support that in combination would instill this confidence. In addition, the government intervention in mortgage markets has since the 1930s promised to make mortgage markets “liquid.”

These seemingly insignificant and very limited Depression era government interventions metastasized and increasingly politicized home mortgage lending. The subsequent regulatory avoidance drove trillions of dollars of risky mortgage related securities into both the regulated commercial banking system and the unregulated “shadow” banking system that lacked direct FDIC insurance and access to FRB liquidity support. Trillions of dollars of short term “near-money” commercial paper certificates and repurchase agreements were backed by these supposedly “liquid” mortgage securities.

The incentives of and hence prices paid by of all the equity investors were severely distorted, mostly by political interventions. In addition, debt prices were all determined by the regulatory status granted to the GSEs and credit ratings agencies rather than an independent assessment of risk. Hence that’s where virtually all the credit risk modeling took place. This inevitably became politicized at the GSEs due to their various affordable housing mandates, and weak underwriting necessary to achieve these quotas became systemic due to their market dominance. In addition, the credit rating agencies, the de facto private label security regulatory gatekeeper, had a huge economic incentive to garner market share from the GSEs by over-rating securities, creating a race to the bottom of the pool of qualified borrowers.
When house prices stopped rising in 2005-2006, households that had invested little or no cash and could afford to pay only a teaser rate couldn’t refinance and defaulted instead. When prices of sub-prime securities started falling, investors in this near-money simply stopped rolling over their commercial paper and repurchase agreements. As there was no alternative investor base for this collateral, this system collapsed with global reverberations. The equity holders who didn’t get out and the creditors who couldn’t get out—mostly innocent taxpayers—were stuck with the losses.

Private investor losses in the 2007 crash followed seven profitable years of betting on the housing boom, and for many the losses paled in comparison to their prior gains and taxpayer losses that are measured in hundreds of billions and potentially trillions of dollars. These taxpayer losses resulted directly from the implicit federal backing of mortgage lending government sponsored enterprises (GSEs) and the commercial bank (and thrift) deposit insurance fund and indirectly from other unprecedented bail-out relief efforts including a massive cash injection by the central bank. Moreover, taxpayer behavior can’t be characterized as irrational, as they had no explicit advance warning that they were backing this system.

Most explanations of this crisis start in the last decade or two and some go back as far as the 1970s. These explanations tend to take at face value the contemporary rationales for political intervention, particularly as they relate to the GSEs. The future of the GSEs was ignored in Dodd-Frank, and political constituencies that benefit from their activities now paint them as innocent victims of the private securitization markets rather than as instigators. New “public missions” are already being discussed. This is nothing new. The origins of this system of public protection and moral hazard trace back to the Great Depression, and the original public intent of these early political interventions has long since given way to subsequent “mission creep” as the lack of any political or market restraint allowed them to metastasize, leading to the contemporary ex post political rationales having no economic merit. These interventions eventually led to systemic collapse of the savings and loan based mortgage system in the 1980s. Rather than address moral hazard due to political interventions as the root cause of that crisis, politicians blamed “greedy operators” and doubled down. The systemic risk posed by the GSEs grows with each repeat of this regulatory/protectionist cycle, as the 2008 crash demonstrated. So we begin by setting the historical record straight.

The approach taken here is to rely heavily upon prior studies for the detailed explanations of specific events while at the same time partially disagreeing with many of the conclusions drawn by other economists, adding the evidence and insights relating to the distorting effects of political interventions. A few analysts, e.g. Wallison (2009), have concluded that the entire crisis reflects a failure of federal policy. Our only quibble is over semantics: it is not so much that “policy” formulated in the broad public interest subsequently “failed” as the public interest all too often didn’t seem to enter into regulatory or political calculations in the first place.
The focus is on the two key attributes of the resulting lack of market discipline caused by these political distortions that brought down the financial system; insufficient risk mitigation and insufficient capital. The rest of the paper is divided into four parts. The first provides the historical context to explain how taxpayers got on the hook for trillions of dollars of private and quasi-private securities with no specific accounting and no political restraint. For simplicity, the discussion of how this occurred is loosely divided into three eras: 1930-1960, 1960-1990 and 1990-2000. The second explains how publicly backed debt financed the bubble. The third explains how it was burst, causing the systemic collapse of the global financial system, and how the ensuing bail-out makes a repeat more likely. We conclude with a discussion of what should and should not be done to avoid a repeat.

The Origins of Public Protection and Moral Hazard

The Depression Era Origins to 1960

The Federal Reserve Act of 1913 created the nation’s third central bank to provide the commercial banking sector with systemic liquidity support to mitigate the likelihood of banking panics. The Fed’s mandate was limited to providing cash against sound marketable collateral to commercial banks, and beyond in emergencies. In addition, there are two related Depression era initiatives that still dominate US mortgage markets today. The first relates to deposit insurance for commercial banks and thrifts (savings and loans (S&Ls) as well as savings banks). The second relates to what has traditionally but somewhat misleadingly been called the secondary (essentially wholesale) mortgage market.

Bank runs were nothing new, nor was the concept of deposit insurance, the lack of which was neither a cause of the bank runs or the Great Depression (Friedman, 2008, pg 166). The FDR Administration and bank regulators opposed public deposit insurance but political proponents used the Depression (“a crisis is a terrible thing to waste”) to push their long standing agenda through (Calomiris and White, pg 146). Congress attempted to mitigate moral hazard by limiting the insurance to small depositors. In addition, it rejected having the US Treasury directly insure deposits in favor of an off-budget federally sponsored self-funding enterprise, the Federal Deposit Insurance Corporation (FDIC). Savings and Loans refused to join because unlike demand deposits of banks their deposits were not callable and they had not been subjected to runs and hence they would be forced to subsidize commercial banks. They got an independent savings and loan counterpart Federal Savings and Loan Insurance Corporation (FSLIC) two years later in the National Housing Act of 1934, thereby avoiding the cross-subsidy.

While conditions in the banking industry were terrible, conditions in the housing industry were arguably worse. Housing production fell by over 80% from 753,000 units in 1928 to 134,000 in 1932. Hence all the Great Depression Era housing programs were focused on new construction, as they had been since the previous century (Congressional Research Service (CRS), 1966, pg A1). The rationale of all mortgage finance related legislation was also to stimulate housing construction, and hence jobs, on the premise that the decline in construction was a
consequence of banking problems. But housing production had boomed in the 1920s, and demand fell much faster than supply due to doubling up, conversion of large to multiple smaller units, etc. so that the vacancy rate rose by over 60% from 8% to 13% during this same period of falling housing starts (Colton, 2002, pg 2)

Commercial banks had access to central bank liquidity during the Depression but they systemically defaulted on their lines of credit to Savings and Loans that had traditionally relied on them for liquidity. The proposal to allow Savings and Loans access to the discount window at the Fed was rejected at the time but was subsequently changed in 1989. Instead, an independent enterprise, the Federal Home Loan Bank (FHLB) System, was sponsored in 1932 to provide liquidity directly to savings and loans by discounting loans, i.e. providing advances against collateral at less than par value (called a “haircut”) and with full recourse to the borrowing institution. This was analogous to central bank discount lending but without the stigma and with a more liberal collateral requirement and significantly longer terms to promote homebuilding. The FHLB System had authority to borrow up to $215 million from the US Treasury in emergencies, but it generally relied on capital market access for funding. The Homeowners Loan Corporation (HOLC) was established under the FHLB System to among other things implement the government’s Depression era forbearance programs by refinancing defaulted borrowers with a long term fully amortizing mortgage.

The National Housing Act was passed in 1934 with the intent of promoting homebuilding and construction jobs. It established the Federal Housing Administration (FHA) as an independent mutual insurance fund authorized to insure one type of mortgage only, the long term (up to 20 years) fully amortizing fixed rate mortgage (frm) being used by HOLC, with a maximum loan to value ratio of 60%. This instrument was no longer being offered by private lenders due to the “liquidity” risk it posed for deposit based lenders that dominated the market, i.e. that depositors would want more cash at book value than they had on hand. Portfolio lenders had no need for the default insurance and no desire to hold these long term FHA mortgages in their portfolio, so activity was sparse.

The National Housing Act Title III gave FHA the authority to establish private national mortgage exchanges to make a market in these FHA mortgages, but all attempts failed as S&Ls could now discount mortgages at the FHLB and there was no market demand to sell (or buy) mortgages on a national exchange. Following President Hoover’s approach of 1930 in soliciting construction industry input, FDR sought input from the National Association of Home Builders, the Mortgage Bankers Association of America, the National Association of Real Estate Boards, and the United States Savings and Loan league among others. In 1935 Congress established the RFC Mortgage Company with $10 in million in capital to provide mortgages for new residential construction only by buying and selling FHA loans. In February 1938 it amended the National Housing Act to have the Federal Housing Administrator (FHA) create the National Mortgage Association of Washington, later changed to the Federal National Mortgage Association (FNMA) or Fannie Mae to replace RFC.
There were numerous subsequent amendments to the Fannie Mae Charter over the next 30 years but the basic approach was not changed. The first key point was that it was legally a wholly owned government corporation administratively managed by various government departments over time. There were three reasons for the corporate form: first, FDR wanted to minimize the stated budget deficit, second, it was intended to be entirely self-funded, including all administrative costs, and third, public ownership was from the beginning intended to be temporary. The second key point is that it had three functions, the “private” secondary market function and the “public” special assistance and management and liquidating functions. The third key point is that the secondary market function was limited to that of a broker/dealer rather than a wholesale housing bank, with dealer inventory funded and backed exclusively by the corporation’s resources. The US Treasury provided the emergency liquidity backstop similar to that of the FHLB System.

The S&L mortgage lending industry opposed this move as well on grounds that it represented the potential encroachment of a government housing bank in their market, more so with the removal of the limitation to new construction. Assuaging this concern was the fact that Fannie Mae explicitly limited by charter from investing only in FHA insured loans that thrifts didn’t want to hold anyway. Moreover all of the charter language referred to selling as well as buying, and in addition the Charter limited debt to ten times capital and even then only with prior Treasury approval.

Unregulated private financial markets in the US had produced regular but small self-correcting financial crises that were blamed—unfairly— for the Great Depression (Friedman, 2008). The Glass-Steagall Act similarly forced the separation of commercial from investment banking activity on the questionable premise that risky investment banking activity was a contributing cause of the financial collapse. In addition to attempting to reduce commercial bank risk by breaking them up, they introduced limited government regulation and protection in a well meaning attempt to mitigate future financial crises. Depression era politicians arguably attempted to limit moral hazard in the additional entities by limiting government protection, sponsoring independent enterprises and imposing strict limitations on their activities. But it remained extremely controversial due to moral hazard concerns.

This system got off to an inauspicious start. The 1913 Federal Reserve Act introduced the first moral hazard, and soon thereafter the Fed was accused of fueling the asset bubble of the 1920s. According to Johnson (2010, pg30):

“Not only did the Federal Reserve’s System encourage excessive risk taking by bankers, the safety net, it turned out, had gaping holes that could not be fixed in the intense pressure of a crisis. The result was the Great Depression.”

A detailed analysis is well beyond the current scope, but moral hazard does appear to have been controlled during this early period. Fannie Mae total debt was about $6 billion by the end of the decade, about two thirds of which was a liability to the Treasury to finance its public mission. The FSLIC was and the FDIC is nominally a sponsored self-funding corporation that did not
require any direct federal bailouts during this period. The same is true for the FHA. But as early as 1933 when FDR reopened the banks, the markets perceived the federal backing of deposit insurance as complete, and in this they were prescient (Silber, 2009, pg20). The banks apparently did as well, as bank capital levels fell steadily from over 16% of assets when deposit insurance was first introduced to only 5.5% by 1945, where it stayed for the next four decades before falling further.

The Modern Era, 1960-1990

The 1960s

Fannie Mae clearly failed in its Depression Era function to stimulate housing production and jobs. But after the war VA loans were added to its mission. After almost three decades, by 1966, the “secondary market” dealer portfolio is estimated at about $2.5 billion reflecting the post war VA as well as the FHA inventory, financed by debt backed only by the corporation and issued only with prior Treasury approval.

Two events of this decade set the stage for the rest of this era. First, President Johnson’s “guns and butter” fiscal deficits caused unprecedented volatility in interest rates, mostly driving them higher. Second, as an FDR protégé, Johnson sponsored a new wave of New Deal legislation. Volatile interest rates created financial instability. The government responded with repression, extending deposit rate control to the thrift industry. Fannie Mae’s public functions were funded with borrowings from the Treasury, which were on budget. It responded to budget deficits by transferring Fannie Mae off the federal budget by liquidating those portfolios.

Fannie Mae was “privatized” in the 1968 Housing Act signed by President Johnson as an accounting gimmick to reduce the stated deficit with little thought of the long term consequences. S&L industry opposition to this Act was subsequently neutralized in 1970 with the offer of their own exclusive (albeit still public) secondary market entity, the Federal Home Loan Mortgage Corporation (FHLMC) or Freddie Mac to deal in conventional mortgages. The Government National Mortgage Association (GNMA) or Ginnie Mae was created to manage the liquidation of the public residual of Fannie Mae’s portfolio. The Act also put FHA in and under the supervision of the newly created Department of Housing and Urban Development (HUD) that also housed Ginnie Mae.

Origins of Securitization

The 1964 Housing Act provided authority for Fannie Mae to issue participation certificates on pools of mortgages held as a consequence of the special assistance and management and liquidating functions to get these assets off the government’s balance sheet and reduce the deficit (CRS, 1966, pg 44). The subsequent so-called “pass-through” (PC) security was pioneered by the Government National Mortgage Association (GNMA) or Ginnie Mae in 1970 to fund pools of FHA /VA mortgages in a similar manner. This represented a dramatic expansion of the “management and liquidating” role originally envisioned in the 1968 Act, after the newly
privatized Fannie Mae rejected the securitization concept. Its name derived from the fact that by law the underlying “grantor trust” passed through all of the cash flow from the mortgages with the lone minor exception, the only one granted by the IRS in the instrument’s design, that it could advance the typically delayed FHA insurance reimbursements in the event of borrower default. The necessity of the IRS exemption stemmed from the long held Treasury position that all revenue to a trust is taxable at the corporate tax rate as income. The “grantor trust” was exempt because this trust was by law passive and all the cash was required to be passed through to the beneficiary. Treasury thus gave Ginnie Mae a written limited waiver based on the insignificance of the modification of the passive cash flow “pass-through”, hence PC certificate.

Mortgages were being actively sold as whole loan transactions, typically with recourse to the seller or with a seller junior participation, in significant volume both because banks couldn’t branch as people moved across states and regions and because retirement savings grew faster in wholesale institutions than bank (and thrift) deposits in retail institutions. Securities couldn’t be issued nationwide because of numerous state laws and regulations on issuance and trading. S&Ls had previously addressed this by competing for deposits across states and regions primarily by offering higher rates through mail advertising, but deposit rate controls put a stop to this in the 1960s.

Investors initially rejected this PC instrument as they typically did other government designed financial “innovations,” as unnecessarily complex and difficult to administer and analyze, with totally unpredictable cash flows. But its merits were entirely associated with bypassing other politically motivated incentive distortions. Ginnie Mae securities had the advantage of a complete federal pre-emption of all conflicting state and federal laws and regulations. Hence investors eventually bought the securities in spite of its undesirable traits and the specific prohibition against Ginnie Mae guaranteeing the credit risk because these tax and regulatory benefits far out-weighed the instrument’s inherent drawbacks and filled a market void. In essence, Ginnie Mae stamped the securities “exempt” which allowed the securities to be issued and left the rest of the process up to originators and investors, a politically enabled form of regulatory avoidance.

Having a government agency, Ginnie Mae, finance FHA loans was essentially a return to the original RFC approach of 1935 and Fannie Mae approach of 1938. The big difference is that it was no longer limited to new construction or to financing for dealer inventory.

Freddie Mac soon realized that S&Ls had no use for a broker/dealer in conventional loans and closed its AMINET broker dealer. When this system failed to develop a demand among its portfolio lending clientele the then CEO Tom Bomar recommended liquidating the young agency as the prior Chairman Preston Martin had promised the Congress during his testimony regarding the agency’s creation. Instead, they found a new mission and in the mid 1970s they began purchasing loans to finance with participation certificates, also called PCs. Freddie Mac initially purchased senior 95% participations, and loans with a loan-to-value greater than 80% had to have private mortgage insurance down to 75%. Freddie Mac limited its activity to fixed rate
loans to allow S&Ls to reduce interest rate risk by selling these, while keeping adjustable rate loans on which they could still earn a reasonable spread. It then securitized conventional mortgages in essentially the same PC security format used by Ginnie Mae to securitize FHA/VA mortgages. In spite of Freddie Mac’s status as a public (FHLB System sponsored) entity, its disclosures also warned that defaults on the underlying mortgages and securities were not backed by the US Treasury.

**Ginnie Mae and Freddie Mac Public Mission**

Ginnie Mae’s “public mission” to overcome anachronistic laws and regulations was quite clearly a “second best” approach to directly removing the political obstacles to the regional and institutional flow of credit at the time, something that took a while but has since been accomplished. The growth of Ginnie Mae and Freddie Mac securitization in the 1970s largely reflected the regional and institutional mismatch of funds as the population both moved and aged, as evidenced by where most purchases originated and where and to whom most securities were sold. The demographic migrations were huge, as the population of home-buying age grew in the South and West. The institutional mismatch was also huge, as long term retirement savings grew much faster that bank deposits. As inflation had been stable for several decades, most of the retirement contracts were fixed nominal annuities well suited to investing in long term fixed rate mortgages.

Ginnie Mae’s nationwide funding access had the effect of leveling mortgage rates, potentially lowering them in more saving deficit regions while raising them in surplus regions. Some (Penner and Silber, 1974) ascribed an additional “countercyclical” role to GSEs, but that objective potentially conflicted with the Fed’s view of housing as “the handmaiden of monetary policy,” and there was no effective mechanism to alter their inherently pro-cyclical behavior. FHLB advances offered a source of liquidity to offset disintermediation, the outflow of deposits when interest rates rose caused by Reg Q. as did loan sales to Freddie Mac. But Freddie Mac was created only so S&L originators wouldn’t lose market share to mortgage bankers who then owned Fannie Mae, and hence shared the same mission as Ginnie Mae in mitigating the regional and institutional mismatch of funds.

The GSEs have clearly produced some positive externalities as a consequence of their size and scale. They standardized servicing and underwriting agreements before non-mortgage securitizers did the same thing, for example. Forward delivery and hedging instruments have also developed around these instruments and markets. Homogeneity has facilitated trading, while heterogeneity of prepayment expectations fueled turnover. Similar developments have occurred in other markets as well, although the sheer volume of trades is difficult to envision in the absence of GSE standardization. Some investigators found that borrowers received a slightly lower rate resulting from the highly leveraged agency status, while others dispute this. 24

**Risk Exposure of Ginnie Mae and Freddie Mac Securitization**
The public’s exposure to securitization in the 1970s and 1980s was still legally minimal and subject to complete political control. Freddie Mac was off-budget but controlled by political appointees of the Federal Home Loan Bank Board. Ginnie Mae is a government agency, but the securities it guarantees are off budget because it didn’t guarantee the credit risk of FHA/VA mortgages, which were likewise off budget because they were backed only by an independent “sponsored” insurance fund. It was thus exempt from the control of the Federal Financing Bank, the Treasury’s agent for that responsibility, but was subject to annual Congressional approval of guarantee limits as well as ongoing HUD oversight.

By 1980, Ginnie Mae and Freddie Mac had over $100 billion in PC’s outstanding. Ginnie Mae probably increased FHA’s share of the (qualified, by loan limit) mortgage insurance market dramatically, arguably increasing the government’s credit risk exposure as its GSE funding advantage was huge, Freddie Mac’s guarantee arguably didn’t increase the public’s credit risk exposure, as the loans were previously funded by insured deposits in any event and those with an initial loan to value ratio above 80% had private mortgage insurance coverage. In addition, both Ginnie Mae and Freddie Mac passed on all interest rate and pre-payment risk, which was the dominant risk of the time. Hence Freddie Mac and Ginnie Mae (and FHA/VA) were in good shape as credit risk remained extremely low due to soaring house prices and the PC passed the interest rate risk along to the investors.

The originator’s lack of an ongoing ownership interest in the loans inherent in the originate-to-sell model of funding results in a moral hazard risk those originators will not adequately underwrite. FHA and Ginnie Mae minimized this risk in three ways: 1. FHA maintained local underwriting offices, 2. Ginnie Mae required an excessive servicing fee, postponing some of the origination profit to the end of the loan which was lost in the event of default due to foreclosure expense borne by the servicer (see Hendershott and Villani, 1994), and 3. Ginnie Mae cross-collateralized all securitizations, thereby putting a PC originator’s entire capital and profitable loan servicing business at risk for a failure to perform on any individual pool. Freddie Mac was historically more protected against this moral hazard by dealing with better capitalized portfolio lenders rather than mortgage brokers and bankers, where the moral hazard risk of whole loan purchases of conventional loans remained substantial, as well as by relying on private mortgage insurers who also maintained local underwriting review.

In 1978 Ginnie Mae proposed issuing a conventional PC for mortgage bankers to complement the Freddie Mac conventional PC for savings and loans. Their reasoning was that since Ginnie Mae didn’t guarantee the credit risk in any event, there was no additional risk to the government. The idea was opposed and eventually dropped.

Fannie Mae Privatization leads to Technical Insolvency

Fannie Mae was still constrained by charter to FHA/VA mortgages in the early 1970s, now funded by Ginnie Mae, and didn’t really have a purpose once the Ginnie Mae PC got going and took over FHA/VA funding. Had the Ginnie Mae pass-through function been contemplated in 1968, there would have been no rationale to “privatize” the secondary market function rather
than simply liquidate it. The Treasury had funded this function with preferred stock presumably to distance the government from the debt issued by this independent part of the enterprise.

The mortgage bankers owned common stock as a result of a policy to require a nominal share subscription when selling it loans. This was really a fee to access the facility, and the stock was essentially worthless from an economic perspective. But this so-called “privatization” transferring ownership and control to the mortgage bankers also maintained the prior public status with regard to regulatory and tax exemptions. This new privatized entity then sought and obtained a charter change to allow it to purchase conventional loans as well. Hence the failure to liquidate rather than privatize gave rise to the public risk for private profit hybrid entity.

HUD was nominally responsible for Fannie Mae oversight, such as it was. Citing Fannie Mae’s requirement to get prior approval from the HUD Secretary for buying conventional loans and HUDs authority to require loans for low income households and central cities, HUD Secretary Patricia Harris proposed rules requiring 30% for each. The comments were 1217 against and only 16 for, so much weaker non-binding goals were imposed. But these were more for political effect as they had little impact on actual lending patterns at that time, they were weakly enforced and the cost, if any, was easily absorbed by the huge interest margin owing to agency status. Nevertheless, the principal of HUD regulation and imposition of social goals was established.

Conflicts between the private and public role were evident from the very beginning. Nixon fired Fannie’s first CEO Ray Lapin to put a politician and former Congressman Oackley Hunter in charge. He clashed repeatedly with HUD Secretary Harris, who was most concerned with putting women and blacks on the Board of Directors. In 1979 he was replaced by David Maxwell, the CEO in charge of Ticor mortgage insurance when it slipped into bankruptcy. Fannie Mae also became technically insolvent under Maxwell’s watch, and Congress expressed anger at a severance package estimated to be $30 million, huge even by private sector standards at the time.

It wasn’t long before Fannie Mae’s new private shareholders, the mortgage banking industry as a result of the share subscription policy, recognized that uncontrollable growth financed with cheap debt benefited them directly, which was much more important than their indirect risk as shareholders. They also realized that Fannie Mae could offer higher prices for mortgage purchases if it took more risk, e.g. by financing purchases with cheaper short term debt. During the 1970s Fannie Mae operated more like a government housing bank in direct competition with private lenders for conventional loans, just as S&Ls had always feared, but under private control with neither market nor political/regulatory discipline.

By 1980, Fannie Mae’s retained portfolio had exploded to about $100 billion in spite of charter limitations and ostensible Treasury control. Congress could have put a stop to this growth, but didn’t, as political incentives trump the numerous legal and technical limitations. Fannie Mae recognized soon after privatization that their dominant risk was political, as evidenced by the
significantly greater resources it devoted to managing than financial risk management once freed from the government agency prohibition from engaging in political activities. Hence legislative limits were changed in some cases, ignored in others. Interest rates skyrocketed at the end of the 1970s, leaving Fannie Mae deeply insolvent due to its funding mismatch (GAO, 1990). As rates stayed high in the early 1980s, Fannie Mae’s technical insolvency became increasingly obvious to investors (Kane and Foster, 1986). But implicit government backing encouraged investors to continue to finance it, and regulators at HUD with implicit political approval encouraged it to grow out of its problem rather than embarrass politicians with a public declaration of insolvency.

Technical Insolvency and Failure of the Thrift Industry

Like Fannie Mae, the S&Ls also became technically insolvent due to their maturity mismatch. Unlike Fannie Mae, most S&Ls were forced into this mismatch by federal politicians who refused to allow federally chartered S&Ls to invest in anything other than fixed rate mortgages. In addition, the bad debt deduction prevented their industry exit. They facilitated a transition from non-callable deposits to money market demand accounts. But they fixed deposit rates even as deficits drove up market rates, dis-intermediating deposits to money market funds. The resulting financial structure was extremely vulnerable.

With both the savings and loan industry and Fannie Mae technically insolvent by the early 1980s, Congress could only let one or the other grow out of their problem but not both. It chose Fannie Mae, which continued to squeeze spreads on home mortgage loans, contributing to the industry’s subsequent failure.

Freddie Mac introduced the “Guarantor” program that essentially sold thrifts government backing for portfolio mortgages for a small fee so they could get regulatory capital relief by treating their mortgage portfolio as government securities, a form of “regulatory arbitrage” that was a harbinger of things to come. Freddie Mac’s capital relief wasn’t enough to save the S&L industry. Neither was the introduction of the first “derivative” by Salomon brothers, the interest rate swap, for fixed rate loans that were already under water.

The Garn-St Germain Depository Institutions Act passed in 1982 is cited by some, e.g. Johnson (2010, pg.74) as the evidence of Reagan era deregulation causing the thrift industry’s failure. But the industry was already technically insolvent by then and needed to grow out of its problems (like Fannie Mae) or merge with commercial banks as the Act authorized. The ability to grow out of a problem requires publicly granting franchise value, but with the GSEs, particularly the already insolvent Fannie Mae, already using their franchise value to squeeze mortgage spreads that would not work. The Act authorized alternative investments where risk adjusted returns had consistently exceeded those available on residential mortgages. Given their already impaired capital, this was characterized as a politically enabled “go-for-broke” strategy that Fannie Mae had also pursued.
A few chose high yield bonds. Realized losses from bond defaults played no role in the subsequent failures, but regulatory enforcement of mark-to-market accounting for loans held for investment at a time when there were no markets due to regulatory actions did. The US regulatory system forced a nationwide liquidation that predictably forced prices to about half their intrinsic value based both on *ex ante* projections and verified *ex post* cash flows. Anticipating this, the Financial Institutions Regulatory Reform and Enforcement Act (FIRREA) Conference Committee noted that bonds held for investment should be held at book value as then required under generally accepted accounting principles for bonds held for investment purposes. But regulators at the FHLB of San Francisco over-rode this provision, requiring them to be marked down to a level that essentially implied a 100% default rate with normal recoveries from bankruptcy.

Most chose commercial real estate, but this market was way too small relative to the magnitude of the funds S&Ls needed to redeploy. Hence this led to extensive overbuilding. The real estate cycle was amplified by the stimulus provided by the Economic Recovery Tax Act (ERTA) of 1981, subsequently withdrawn by the Tax Reform Act of 1986. Defaults on commercial mortgages did play a significant role in subsequent failures. That these markets couldn’t save the thrift industry *ex post* is not surprising and hardly evidence that deregulation was a root cause of its demise.

The industry failed because of the political distortions to the mortgage system (Barth, Trimbath and Yago, 2004). That political distortion of this industry would eventually but inevitably lead to systemic failure had been widely predicted in numerous congressionally mandated study commissions spanning four decades (Villani and Tucillo, 1978). Politicians nevertheless claimed they didn’t see it coming and blamed greedy thrift owners (in spite of the fact that most thrift institutions were non-profit mutual institutions) and their managers (of which courts subsequently found virtually no evidence). Hence the S&Ls were essentially “reformed” out of existence by the end of the decade.

**Commercial Banks and Mortgage Bankers**

Some of the political populism directed toward the GSEs during this era was also directed at the banks (and thrifts) and independent mortgage bankers. Political complicity in the promotion of loans in low income neighborhoods started in the 1970s in the form of the Community Reinvestment Act (CRA) and the Home Mortgage disclosure Act (HMDA). Superficially it makes sense to expect lenders to lend in the local community and to collect data. The CRA was initially motivated by the concern that FHA had been lending to unqualified borrowers, and the resulting defaults were destabilizing neighborhoods. It was believed that banks would act more responsibly lending only to qualified borrowers.

But the reality of the home mortgage market was quite different. By the end of the 1970s there were literally thousands of potential loan brokers who would profit from originating and selling loans originated in such neighborhoods if they could be underwritten to the standards of the
most liberal investors nationwide. The competition to originate loans, described as “cut-throat” by the head of the Mortgage Bankers Association in 1945 (Hendershott and Villani, 1994), was even more competitive as the originate-to-sell-model began to dominate. Moreover, such loans were easily sold so long as FHA would insure them. Local branch offices of banks were rarely responsible for mortgage lending in any event, so the decision wasn’t made locally. But community based political action groups recognized that regulators now had discretion over a bank’s “franchise value” (issuing insured deposits), in this case the right to branch and merge with or acquire other banks, and this gave them political leverage.  

Competition in the mortgage banking industry was cut-throat because little capital was required and hence there was a low barrier to entry. One way to keep costs down was to rely on independent mortgage brokers. Mortgage bankers are distinguished from mortgage brokers in that they service the loans originated by brokers. Hence mortgage brokers are either employed by or more typically sell to mortgage bankers who warehouse the loans until they are permanently funded. The mortgage banking business became extremely risky in a volatile interest rate environment. Borrowers all wanted to “lock” their rate to prevent it from going up if interest rates rose before the loan closed. But if rates went down, they could walk to another broker, or more likely, their current broker would find another buyer. This risk could technically be hedged with a “put” option or the equivalent for each application, but that was often prohibitively expensive (it could be 1%-5% of the loan amount, depending on interest rate volatility) and borrowers wouldn’t pay for that as a non-refundable application fee. Hence most mortgage bankers were at best only partially hedged.

The independent mortgage broker got paid on commissions, so his incentive was most often diametrically opposite that of the mortgage banker. He was generally not concerned with the lenders yield and would shop the loan to the cheapest lender to increase the likelihood of closing the loan. Even before the loan was closed he would keep the borrower by finding another lender if necessary even after the rate had been locked. He had no interest in the long term credit performance of the loan, and he had a huge incentive to completely destroy the value of the servicing contract by continually refinancing the loan.

Mortgage banker accounting allowed them to lose money on every loan closed, but make it up on volume! That’s because they retained an interest in the servicing contract. They would value that contract for reporting profits and capital, but not for tax which allowed them to defer taxes over the 30 year life of the contract. As servicing contracts were most valuable for highly seasoned loans, most of the profits that were “present valued” came later in the life of the servicing contracts. Prepayment and default could turn servicing contracts into a significant liability. But mortgage bankers almost never changed their assumptions regarding the value of new servicing contracts, so each firm potentially became a pyramid scheme. With good luck playing interest rate volatility and ever increasing loan origination volume, they could keep the pyramid building.
When the pyramid collapsed it often left a deep hole. The key to the mortgage banking business was to sell it before that happened. Whereas in the 1970’s most large mortgage bankers were independent, by the early 1980s 17 of the 20 largest were owned by banks or thrifts. Selling to a bank or thrift was easier than going public because the losses on both loan origination pipeline risk and servicing weren’t generally transparent to the parent bank after the acquisition, and if and when it became so later they could spin out the subsidiary and start the cycle over.

One mortgage banker, Angelo Mazolo CEO of countrywide, took a different approach. He maintained his independence while bringing all the loan brokers in house, paying them a salary and bonus instead of commissions.

Money Market Funds
Thrift institutions began offering money market accounts in the 1970s to get around the prohibition of offering demand deposits and the so-called Reg Q prohibition on paying interest as well. Merrill Lynch soon thereafter pioneered the cash management account (CMA), which provided check cashing privileges, extending the payments mechanism further to investment banks. Hence the “shadow banking” system that would later come to rival the regulated banking system had its roots in regulatory avoidance. Money market funds became a big industry as interest rates rose and deposit institutions were “dis-intermediated” by deposit outflows. They were initially invested entirely in liquid US Treasury securities, thereby eliminating the need for systemic liquidity support and confidence building necessary for bank deposits, but they eventually bought highly rate--typically AAA--commercial paper as well on the theory that prices couldn’t change very much based on credit deterioration over the short (typically 30 day) life span of these securities.

The Role of FHA and Private Mortgage Insurance
Private mortgage insurers (PMIs), bankrupted by the Great Depression but reincarnated in the 1950s, have since been the primary risk filter for conventional loans with less than 20% down-payments for the originate-to-sell system of funding, as FHA is for qualifying loans in its market segment. The HUD Report on the future of the FHA written at the tail end of the Ford Administration argued that with the reincarnation of the PMIs this government sponsored fund was no longer needed. That report was never sent to Congress, however, and a new report was written in the early days of the Carter Administration that argued that FHA was the proper tool for addressing under-served markets, should they exist.

The prior 1970s failure of FHA’s special risk insurance fund was enough to convince FHA actuaries that “insurance” was not an appropriate vehicle for delivering subsidies to high risk borrowers in the so-called underserved markets as “adverse selection” will inevitably bankrupt the insurer. Adverse selection refers to the process whereby lenders attempt to accept more risk but adequately price it by charging risky borrowers a higher premium. The first problem is they get more risk that they bargained for, as the best of the more risky borrowers find cheaper loans. The second problem is that charging risky borrowers more is considered discriminatory by
some and generally discouraged by politicians. FHA called this adverse selection “cream skimming.” Ginnie Mae saved the FHA insurance fund by basically giving FHA a monopoly advantage in the qualifying loan market by charging only 6 basis points (.06% of principal) annually for agency status conferred on Ginnie Mae MBS.

FHA and the PMIs both “assure” risks with ex ante risk mitigation measures, and “insure” remaining risks through diversification. The fundamental principle of insurance is that the remaining credit risk can be diversified and actuarially priced based on the uncorrelated nature of default risk among the individual loans in a pool. A lender’s risk is reduced in two ways. First, FHA covered a lenders entire loss, the VA the top 20% and PMI covered the top 25%. These differences were generally insignificant as loans not fraudulently underwritten rarely resulted in losses greater than 20%-25%. Second, both FHA and the PMIs maintained rigorous underwriting guidelines and avoided correlated risks. Third, they both maintained a local underwriting presence. HUD regulated FHA and state insurance regulators monitored the capital of the PMI monoline insurers.

An alternative theory to insurance is that each borrower has a “put option” to default (in finance parlance, “put” the loan back to the lender at par) when house prices fall sufficiently to erode borrower equity. Chet Foster, then Chief Actuary of FHA and Robert Van Order, an economist at Freddie Mac, (1984) are the first to discuss default as a borrower “put option.” The distinction is that “put option” risks are all correlated to falling house prices and hence are uninsurable, i.e. they would bankrupt the insurer if all loans were put back at once. In essence, PMIs could diversify default risk but not political risk, and virtually no amount of private capital could back the presumed “out of the money” put options of a systemic risk likely having political origins such as deflation. Hence no counterparty would accept PMI coverage of such a put option. But they might accept FHA or GSE coverage with their implicit government backing and hence unlimited capital. Private mortgage insurers continued to insure throughout the 1980s in any event as there was little evidence of the “put” option motivating so-called “strategic” defaults when a borrower’s equity became negative.

But credit risk was a concern for the insurers in the 1980s. Just as the deflation that raised the real payment burden combined with systemic unemployment bankrupted the private insurers in the Great Depression, the inflation of the 1970’s bailed them out, as well as FHA. But house prices were relatively stagnant during the 1980s. The PMIs raised premiums numerous times, but in order to prevent what would have otherwise been overwhelming adverse selection they also significantly tightened underwriting guidelines. They completely stopped insuring investor loans, loans with cash out refinancing, loans with deep buy-downs, and loans in regions with a weak economy due to a systemic risk factor, e.g. the oil patch (Hendershott and Waddell, 1992, pg 12). Even these steps didn’t save all the PMIs, but the industry survived the decade.

FHA generally did the opposite. It first lowered prices, and then it allowed borrowers to finance them in the loan amount. Moreover, by 1988-1989 investor loans and loans with an initial loan to value ratio above 95% accounted for more than half of FHA’s business. The combination of
adverse selection and systemic risk arguably left the fund technically insolvent and clearly not actuarially sound, requiring a legislative bailout which came in 1990 with passage of the Cranston–Gonzalez National Affordable Housing Act. 45

The availability of mortgage insurance meant that credit risk was not a big concern of investors during this period. The FHA fund was bailed out, protecting Ginnie Mae. And the investors’ losses due to PMI failure, mostly GSEs, were minimal.

One drawback to private mortgage insurance was that the premium wasn’t deductible, whereas the interest on a second mortgage used for a down-payment was. Second mortgages became even more popular in the 1980s when interest on consumer loans was no longer deductible. The subsequent growth of the market for second mortgages and home equity loans would play a big role in supplanting the PMIs in a later era.

**Wall Street Investment Banking and Trading**

Since at least the time of the Glass-Steagall Act, traditional investment banking consisted of two essential functions with lots of bells and whistles. The investment bankers originated (underwrote) new securities and sold them through their sales force. The traders made a secondary market in these and other securities as a broker (matching buyers and sellers) or as a dealer (maintaining a modest inventory for sale), depending on the type of security and market.

The investment bankers had been trying to address the same problem as Ginnie Mae and Freddie Mac of mortgage access to the capital markets in the 1970s, as the GSEs were essentially providing regulatory forgiveness for an essentially investment banking function. Robert “Bobby” Dall at Solomon Brothers was the first to try without this forbearance by issuing mortgage backed bonds in the 1970s, the first for Bank of America. But in addition to the numerous legal and regulatory obstacles, the treatment of credit rating agencies also discouraged issuance. Collateral had to be posted at market value to support the par value of the bonds, leading to as much as 100% over-collateralization when interest rates rose and prices fell, which happened with increasing frequency in the 1970s and early 1980s. 46

By the early 1980s the GSEs were both the biggest customers of and competitors with the Wall Street investment houses. The Wall Street firms earned lucrative investment banking fees underwriting and distributing GSE securities and subsequently trading them. At the same time, the GSEs had monopoly power like the US Treasury and could negotiate low spreads. In 1983 First Boston purchased a firm with the technology to originate mortgages straight into private mortgage backed securities where the spreads were more lucrative. But all the investment banks were leery of losing a sure thing with the GSEs for the potential of private securitization, and Fannie Mae in particular was known to be quite vindictive regarding potential Wall Street competition.

At about the same time Michael Milken’s firm Drexel Burnham Lambert also pioneered the high yield bond in the 1970s. These bonds were essentially defined as anything that the bond credit rating agencies would not rate as “investment grade,” as here to fore there had been no new
issues so rated. As Drexel was the dominant issuer, they were also the dominant market maker. Investors required a secondary market in these high yield “junk” bonds for the same reason they did for equities, i.e. assessments of risk changed. Hence Drexel found a way to profit both from investment banking issuance and subsequent secondary market trading of debt, adding value to issuers and investors in both cases.

The rest of Wall Street was missing out on high yield (junk) bonds as Drexel maintained a virtual monopoly, but soon learned to love mortgage backed securities (MBS) precisely because, like junk bonds, they were complex and the cash flows of pre-payable-and at the time assumable-fixed rate home mortgages became extremely difficult to predict. Unlike government bonds or highly rated corporate bonds, there was now a reason to trade MBS based on different prepayment and assumption views. As interest rates became more volatile, there were both premium and discount pools to trade. Soon thirty year home mortgages traded on average as much as once a month in securitized form, reflecting the different opinions of investors regarding future interest rates and prepayment.

As security issuance and trading volume skyrocketed in the mid-1970s, it was the lawyers at and advisors to the Wall Street trading firms that made a judgment that such securities would be backed by the government in the event of default, in spite of the specific disclosures to the contrary, because they still maintained their regulatory and tax exemptions of a public entity. It traded them as “government agency” or government sponsored enterprise (GSE) securities on the “government” or “govie” trading desk from then on. As volumes soared, the market itself became “too big to fail” and there was no denying the implicit government backing, removing any pretense of market discipline.

Bullet velocity trading did improve “marketability,” much to the delight of traders and speculators but with little obvious public benefit. The turnover also helped spur the development of the market for repurchase agreements for MBS. A repurchase agreement, or repo, is essentially a very short term loan at a slight discount to the trading or market value, which was generally at or close to par for “agency” securities and highly rated corporate debt.

The financial press has always used the terms “liquidity” –the ability to sell quickly for cash at par value—interchangeably with the term “marketability”—the ability to sell with a low bid-asked spread at whatever investors think the security is worth. Politicians used the term liquidity to refer to marketability going back to the Depression era, and have long promoted the GSEs as providing “liquidity” to the mortgage market, and still do. In fact the only way that the GSEs could provide liquidity was by issuing very short term risk-free debt to fund their mortgage securities. This could be temporarily highly profitable, and hence continually tempted them to “play the yield curve” but it was the cause of Fannie Mae’s insolvency in the early 1980s. The distinction between immutable liquidity and ephemeral marketability would prove to be a continuing source of subsequent financial market failures.

GSE MBS were priced off the treasury yield curve for comparable maturity, or more precisely comparable “duration” securities. Prepayment was projected based on experience, and as FHA
had the largest data base going back the farthest, that became the standard and 100% FHA the unit of measure. Then “put” option models were used to price the likelihood that prepayment would occur earlier than the standard, i.e. when rates declined, and “call” option pricing models were used to price the risk that it would occur later, i.e. that homeowners wouldn’t move when rates rose or if they did the buyer would assume the below market rate loan. Salomon Brothers introduced the concept of “option adjusted” yields on MBS in 1986 which subtracted the imputed option price from the yield.

This prepayment option spurred the early development of derivative securities. An individual MBS could be unbundled and re-packaged in all sorts of ways. Interest only (IO) and principal only (PO) strips became two of the most common derivative securities.

**Traders, Investment Bank Proprietary Trading Accounts and Hedge Funds**

The term “trader” has two meanings in finance. Whereas the historical purpose of an investment bank trader was to make a market in securities to serve clients who wanted either to buy or sell, stock “traders” typically “invested” short term, sometimes only for seconds, either long or short, looking to exploit a market anomaly. Trading in the latter form is motivated by entirely different considerations than those of investors, and they are often in direct conflict as when a trader shorts a stock an investor owns. Moreover, when a market maker begins “trading” for his own account or that of the firm, his interests may conflict with those of his client, e.g. by buying ahead of a client’s order at a lower price.

Trading is a form of gambling, speculating against the “house,” which in this case is the market. This form of trading arguably makes markets more efficient. When the trader is correct, he wins potentially big. When wrong, he can lose everything. Some gamblers seem to win consistently, suggesting unique market insight, whereas most are just occasionally lucky. Ragan (2010) calls the incentive facing investment managers “tail-risk”, i.e. the potential to earn above market returns on average by taking the risk of an unlikely event, which is often then borne by others.

The turnover of MBS had nothing to do with housing or mortgage finance, but rather reflected speculation regarding the highly risky and uncertain imbedded prepayment option. With the advent of the actively traded MBS market, trading now moved from stocks to fixed income, particularly MBS. For small market anomalies in fixed income markets, traders could employ repos to achieve almost infinite leverage. The investment banks all came up with competing strategies as to how to speculate on this option, called by various names such as Salomon Brothers “risk-controlled arbitrage.” These strategies allowed traders to write “out of the money” options using GSE and derivative securities in an opaque way, treating the entire trading revenue in the form of option premium as profit.

Trading mortgage prepayment was particularly popular because the tail was so long. Whether the *ex ante* “option premium” in the quoted yield is sufficient to cover the *ex post* cost of the tail risk is another related issue. The fact that most investors in risk-free securities apparently believed that the higher quoted yield on GSE securities implied a higher realized yield suggests
that \textit{ex post} yields on GSE securities were generally lower than on an otherwise comparable non-callable portfolio of US treasury securities. But the “tails” could be quite long and the perception of higher yields would add fuel the subsequent global demand for GSE securities by otherwise risk adverse investors in a later era.

The perception that agency MBS were “liquid” broadened the potential market to short term and cash account investors who were otherwise limited to investing in short term risk-free government or “agency” securities. Hence providing an \textit{ex post} public mission rationale of providing “liquidity” to the mortgage market invited such holders of short term government bank deposits to speculate indirectly in the GSE options market, which as will be discussed later they subsequently did.

Proprietary trading is just trading with the firm’s money, while keeping a share of the winnings. The moral hazard of taking tail risk is obvious and huge. This began at investment banks when they were all partnerships and the partners could arguably mitigate it. There were some losses considered huge at the time, such as those of Howie Rubin at Merrill Lynch, but these were generally viewed as aberrations. By the 1980s proprietary trading to execute “risk-controlled arbitrage” strategies were marketed mostly to stockholder owned and mutual thrifts as part of their “go for broke” survival strategy, often camouflaged as “hedging,” i.e. using instruments and strategies to reduce portfolio risk.

Salomon Brothers had always been the premier fixed income trading house. When the partners cashed out by selling the firm to a commodities firm Phibro in 1979, the lesson was not lost on the partners of other firms. Virtually all the Wall Street firms had sold out or converted to stock by the end of the decade. Whereas investment banking partners had waited a lifetime to enjoy the fruits of their greed, traders received annual bonuses. As all the firms were now owned by shareholders and many an investment bank CEO now rose from the trading ranks, limiting or deferring bonuses wasn’t seen as a competitive strategy. Wall Street had become greedier, and mortgage securities had become even more complex, both as an outgrowth of trading GSE securities backed by fixed rate pre-payable mortgages. At the same time traders were doing what they had always done: there was a buyer for every seller, and if traders convinced one or the other they were wrong there would be nothing to trade. Complexity was the traders’ friend.

The more apt name for a hedge fund is a proprietary trading fund outside of an investment bank. Speculators wanting to bet along side a trader they view as having unique market insights contribute equity to the fund. The trader is also expected to contribute his own personal funds to mitigate moral hazard somewhat, but generally keeps 20% to 25% of the return over a risk free benchmark as a management bonus, with no downside risk other than his own investment. Hence the incentives are heavily skewed towards risk-taking. As the risk tails can be exceedingly long, even a long term track record is not necessarily evidence of market insight for a proprietary trader or hedge fund manager who receives his bonus annually. Most proprietary traders are arguably motivated entirely by tail risk.
The “Nationally Recognized” Bond Credit Ratings Agencies

Two of the bond ratings agencies had been around since the nineteenth century and began rating bonds in the early part of the last century, Moody's in 1909 and Standard and Poor's predecessor in 1919. Fitch was a relative upstart founded in 1924. Historically they were publishing companies that sold their opinions to investors. Moody's was bought by the publisher Dun & Bradstreet in 1962 and McGraw Hill bought S&P in 1966.

They only rated corporate bonds. Investors could generally check up on them by reviewing a simple transparent balance sheet of a big company. So investors concluded that the ratings of investment grade corporate bonds were fairly reliable. Occasionally companies would fall below investment grade, a so-called “fallen angel”, but this process could take decades. But they didn't rate weak companies or those without a sufficient track record as “below investment grade” and as a result such companies relied on banks for funding.

In spite of their early beginnings, by 1970 after more than half a century of selling opinions only about ten percent of corporate bonds were publicly registered and rated. The rest were privately placed, mostly with life insurance companies. Two things changed in the 1970s that would give a big boost to the rating business. First, beginning in 1975 with the SEC adoption of Nationally Recognized Statistical Rating Organizations (NRSROs) the risk regulators began moving away from what was “prudent” to greater reliance on risk based ratings as measured by the ratings given basically by these three credit ratings agencies the only ones so recognized at the time. Second, starting in the late 1970s Michael Milken at Drexel Burnham Lambert started issuing bonds that were rated junk at the time when they were issued, replacing bank loans with bond financing. This created a two-tiered market of investment grade and junk while converting published opinions into a regulatory sanctioned approval.

In recognition of the value of the franchise regulators had given them the rating agencies began charging issuers after that, Regulators became increasingly reliant on this approach, embedding it in Basel I risk based capital rules. Even the government enterprises had gotten into the act, buying investment grade sub-prime securities, and their regulators were ok with it as well.

By the end of this era investors all investment grade investors eventually depended on how the ratings agencies rated securities for several reasons. First, they had historically proven reliable. Second, they were recognized in regulatory risk-based capital rules. Third, the homogeneity of the rating facilitated trading. Those rated less than investment grade “junk” in the investment community lingo, were different. Investors knew these were riskier bonds, and did their own credit evaluations of these firms regardless of the rating.

Innovation in Securitization

Private and public securitizers continuously sought ways to get around the inefficiency of the “grantor trust” limitations driven by tax law. Working with Larry Fink at First Boston, Freddie Mac, which was still tax exempt in 1983, found a regulatory exemption for itself that allowed
pre-payment tranching. It issued the first collateralized mortgage obligation (CMO), as a consequence of which all investors no longer had to accept the uncertain cash flows for the entire 30 year life of the mortgage pool as some were paid off earlier than others. The CMO left a residual, or “equity tranche, held by Freddie Mac. Changes in the laws governing securitization came in 1986 with REMICs (mortgages) and the early 1990s with FASITs (non-mortgage assets) that essentially ended grantor trust prohibitions on managing cash flows so long as they all got passed through. The intent was to foster private securitization by facilitating management of the underlying credit risk particularly to allow credit “tranching”, i.e. into more senior and correspondingly subordinate securities.\footnote{50}

Numerous variations ensued. Most of the MBS and derivative securities used decades later were incubated during this period of experimentation. These innovations mitigated some of the most extreme drawbacks of securitization but still didn’t address the inherent issues of originator moral hazard or uncertain monthly cash flow.

The Prelude Era 1990-2000

The incentive distortions of the previous era eventually came to dominate the housing finance system by the 1990s. Major changes took place at the GSEs, the commercial banks and the investment banks as well as in private securitization, all of which were both customers of and competitors with one another. Most importantly, the virtual demise of the thrift industry in the 1980s paved the way for continued growth and dominance of the GSEs in the 1990s. The socially motivated credit allocation quotas were also ratcheted up significantly. As a result of their prior SEC designation, the credit rating agencies became the gatekeepers for private securitization. This set the stage for the sub-prime bubble and financial crisis of the next decade.

GSEs Fannie Mae and Freddie Mac

The term government sponsored enterprises initially incorporated the FHLB System and Ginnie Mae as well as Fannie Mae and Freddie Mac. But as the quasi-private status changed the role of the latter two many began to refer only to them as GSEs, a convention adopted from this point on in this paper as well.

By the 1990s all pretense of their public mission to foster the efficient flow of funds to capital markets by bypassing or overcoming legal and regulatory hurdles was gone, as the barriers had long since come down and changes in securities laws facilitated a national market. Commercial banks had been growing in size and scope as a result of the deregulation of interstate banking begun in the 1970s and the acquisition of the remnants of the thrift industry after their virtual collapse in the 1980s, eliminating the prior regional mismatch. Also, retirement savings continued to swell institutional investor accounts, but by now after a severe bout of inflation in the 1970s only about 10% of long term savings contracts had fixed nominal terms, and investors now well understood that mortgages were fixed in only one direction, the wrong one from their perspective. To the extent any demographic or institutional limitations remained, these could
easily be addressed by FHA and Ginnie Mae securities alone or in combination with FHLB advances funded by debt.

But Freddie Mac learned numerous lessons in the 1980s in direct competition with the “privatized” Fannie Mae. First, Fannie Mae was politically TBTF no matter how insolvent it became. Second, the more risk—interest rate as well as credit— it took, the more shareholders would benefit as long as the rewards were commensurate with the risk. Third, management could reap rewards from risk-taking that occasionally even made Wall Street blush. Fourth, effective regulation to limit leverage is easily averted by kicking back part of the earnings as tribute, “pay-to-play” politics. Fifth, mortgage bankers were a better political constituency and customer base than S&Ls in spite of the greater risk because they had to sell conventional loans. Sixth, going “private” didn’t mean giving up state and local tax exemptions, the myriad securities regulatory exemptions, accounting exemptions or the free franchise to issue government agency debt. So by 1989, Freddie Mac was also “privatized” in a similar manner and with the same distorted public risk for private profit motivation as Fannie Mae.

Another way to characterize the GSE franchise value is that with 100-1 leverage stockholders were accepting only the first one percent of the tail risk of a potential failure, with the “option premium” of this unlikely event distributed as current earnings. This incentive structure explains why the portfolio came to look more and more like that of a highly leveraged hedge fund. During the 1990s this incentive was manifest in the dramatic growth in total size as well as the switch to portfolio lending, the same thing that had been instrumental in the demise of the thrift industry several years prior. By the year 2000, MBS securities outstanding were $2.5 trillion and the fixed rate debt of Fannie and Freddie had ballooned to almost $2 trillion (although the combined liability is less than the sum of the two numbers as they sometimes used debt to buy back MBS).

This exploitation of the “franchise value” to issue government debt should have been a loud wake up call to regulators and the politicians that oversee them for restraint, but instead they did the opposite. By the end of the century the GSEs were a dominant source of direct campaign contributions and other indirect political favors, spending over $200 million between 1998 and 2008. Politicians claim this does not distort their oversight incentives but the facts suggest otherwise. The by now oft-repeated “public mission” to “promote home ownership” was losing credibility, as home ownership rates that rose in the pre-GSE era from 40% in 1940 to 60% by 1960 and 65% by 1976 didn’t change after that. A more populist credit allocation “public mission” was needed as political cover for this explosive risky growth producing private profit with public risk.

But the ironically named Financial Housing Enterprises Financial Safety and Soundness Act (FHEFSSA) of 1992 simultaneously established a safety and soundness regulator (at the time the Office of Federal Housing Enterprise Oversight or OFHEO) within HUD while imposing quotas for “affordable housing” to be enforced by HUD. Congress and HUD subsequently began seriously ratcheting up the GSE portfolio allocation goals in the 1990s while protecting them from costly
capital requirements (Wallison, 2008) and the Clinton Administration set the mandate for low income housing of 50% for the year 2000. How to meet those goals was left up to the GSEs. In addition, the home ownership goal was now made seriously binding. In 1995 President Clinton directed HUD to boost the homeownership rate to an “all time high by the end of the century” which HUD Secretary Cisneros articulated to be 70% in the National Homeownership strategy. When combined with his mandate to increase the affordable housing low-income lending requirement to 50%, this meant underwriting guidelines would need to be relaxed. Politicians may note that it was not their “intent” that these strategies result in losses. But losses were inevitable. Charging weaker borrowers enough to cover the additional credit risk was discouraged, and they likely couldn’t have charged enough in any rate. The more they charged, the riskier the loans they approved. The stockholder strategy of portfolio lending that increased interest rate risk and credit risk where profitable combined with the political strategy of increasing credit risk in a way that would inevitably be unprofitable called for a dramatic rise in the capital requirement. But the Department of Housing and Urban Development is an agency with a social policy agenda. Putting the prudential regulator under HUD control along side the enforcement of their social mission virtually assured that the latter would dominate when conflicts arose. Republicans have generally favored significantly raising capital requirements, leaving the “economic rents” flowing from franchise value just sufficient to fund political activities as well as stockholder and management rent-seeking, but the higher cost of capital could impinge on financing the affordable housing goals. Democrats generally favored keeping capital requirements low. They stayed low.

**Commercial Banks and Mortgage Bankers**

By the end of the century most commercial banks and thrifts owned large mortgage banking subsidiaries, and the large previously independent mortgage bankers (e.g. Countrywide) owned banks or thrifts, by now indistinguishable. Most of these large mortgage bankers operated nationwide and together with mortgage banking subsidiaries of builders made up the bulk of the mortgage lending business. The small independents were mostly conduits to Ginnie Mae for FHA loans and to the GSEs for conventional loans. Local loan brokers supplied many of the loans to all these types of mortgage banks. By the end of the decade even Angelo Mazolo at Countrywide had gone back to the loan broker model. The independence of even those originators owned by banks was such that even loans “retained” for portfolio were most often treated as “sold” to the parent bank. This trend to shareholder and bank owned mortgage banks exacerbated the moral hazard of loan origination. Unlike the owner-operators of the past, shareholders didn't always understand the risks and had little direct control over mortgage banking management. Meanwhile populist pressure for credit allocation was growing. The CRA amendment passed in 1989 to publicize an institution’s rating and performance evaluation seemed to invite political extortion just as branching laws were being repealed and banks had little or no control over
loans originated in the area of their branches. The Clinton Administration also ratcheted up CRA lending pressure with the threat of fines and other enforcement actions.\(^{58}\)

By the mid-1990s the political pressure for credit allocation to minorities had also been ratcheted up significantly, partially in response to the study published in 1992 by the Boston FRB arguing that discrimination persisted, a study subsequently shown to be fatally flawed.\(^{59}\) (The offending mortgage banker was a black man who actively recruited black borrowers with weak credit, leading to his higher rejection rate.) As one example, Deval Patrick, as Assistant AG in the Clinton Administration (and later Governor of Massachusetts), took the position that racial differences in the percentage of approved loans as well as differences in pricing were assumed to be evidence of discrimination regardless of the borrower’s credit worthiness.

An article by Joanne Pierson “Navigating the Shoals between Alan and Deval” captures the essential conflict between prudential regulation and credit allocation. As Federal Reserve Board Chairman, Alan Greenspan argued that banks should discriminate on the basis of risks and price accordingly. As Deputy Attorney General of the Justice Department, Deval Patrick argued that whenever the final result produced racial disparities (the only kind of disparity he was interested in) that represented a violation of Federal law unless the lender could prove otherwise. Such proof is problematic as the result itself is considered proof of racial prejudice not subject to analysis, and the cost of a legal defense is generally crippling. The alternative to litigation is to err on the side of leniency and sign DOJ quota agreements when required to do so. This was called “confiscation by consent decree” at the time and later in a related context “extortion by consent decree.”\(^{60}\)

In this context, it is difficult for regulators to restrain lenders from “voluntarily” entering into a quota agreement with the DOJ or liberalizing their underwriting guidelines to implement these quotas. These quotas covered a lender’s entire origination network and hence were likely more binding than those previously applied just to commercial banks in certain neighborhoods.

The political pressure to lend to these borrowers didn’t start in 2003. It had been picking up steam for some time. But what was different was that by early 2004 everybody in the development, real estate and mortgage lending related industries needed them to keep the housing boom and mortgage financing bubble going.

**Wall Street Investment Banks**

The business of underwriting and distributing securities backed by all sorts of assets, e.g. cars, equipment leases, fast food franchises and even golf courses really took off during this decade. The investment banks also underwrote and distributed an increasing diversity of mortgage securities, including securities backed by non-owner occupied housing and commercial real estate. Wall Street could essentially securitize anything except home mortgages that the GSEs out-bid for based on their agency status.
Beginning in the 1980s with the mortgage securitization power-houses, proprietary trading now dominated traditional investment banking and many firms put their capital at risk by trading for the firm’s own proprietary account. Proprietary trading required capital and those firms that were actively engaged had converted to publicly traded firms. With the lone exception of Goldman Sachs which was still a partnership with two external investors until 1999 when it sold 12% to the public in an IPO, that capital now belonged to shareholders, many of whom were off-shore. Trading difficult-to-comprehend securities, which began with Ginnie Mae pass-through securities in the 1970s, reached new levels. In addition, they operated a lucrative MBS and derivative collateralized debt obligation (CDO) issuing franchise by retaining the equity (below investment grade) portions of security issuance. This was treated as “dealer inventory” and often held by the proprietary trading desks. In effect, the big mortgage oriented investment banks were also becoming huge hedge funds with portfolios of hundreds of billions of dollars in MBS and derivative securities highly leveraged with bank repos and short term commercial paper. Some of it was held for speculation, and some was considered toxic waste of the securitization process that nevertheless provided a short-term earnings kick reflecting the high assumed yields.

When many of their less sophisticated thrift customers engaged in “risk-controlled arbitrage” disappeared in the late 1980s as a result of FIRREA, they naturally turned to municipal money managers to employ these strategies.

Proprietary Trading and Hedge Funds: Bad Precedents

Orange County

Prepayment dominated trading strategies from the 1970s at least through the end of the 1990s. In 1994, Orange County, one of the richest in history, was forced to declared bankruptcy. Its investment manager, Robert Citron, had collected all the cash accounts that numerous local governments held in their local bank accounts to meet the public payroll and deposited them at Merrill Lynch. He then leveraged them with repos, and invested them directly in supposedly “liquid” risk-free GSE securities but in fact derivative securities that were employed in “risk-controlled arbitrage” strategies largely designed by Merrill Lynch. He was considered a hero for years as the higher earnings from this speculation allowed local politicians to keep taxes down. But he was essentially “playing the yield curve” by investing in long term securities as well as speculating by earning excess “quoted yield” that reflected not higher expected returns but rather the “option premium” for prepayment risk and other derivative trading strategies, a for of tail risk. When GSE MBS prices subsequently plummeted as interest rates rose, past gains were wiped out, bankrupting Orange County and severely wounding San Diego County finances. Orange County blamed its demise on Wall Street greed. Citron and other cash managers obviously had no business turning taxpayer cash accounts into a proprietary trading hedge fund managed to ignore the tail risk. Whose responsibility was it to stop them? The answer in this case was that politicians who provided oversight took responsibility when the bets paid off and
Wall Street investment banks took the blame when they didn’t, a political lesson that didn’t go unnoticed.

**Long Term Capital Management**

Long Term Capital Management (LTCM) was a hedge fund established by former Salomon Brothers proprietary trader John Meriwether to take advantage of what it perceived to be small anomalies in prices of fixed income securities. To do this, it employed massive leverage, exceeding 1000 to 1, mostly with bank funded repos. While known for having two Nobel Prize winners in Finance on its board and massive modeling capacity, it turns out to have been doing no more than playing the tail risk, and failed spectacularly.

Timothy Geitner, the CEO of the New York FRB organized a bailout by arm-twisting the TBTF banks and investment banks to socialize the loss by committing $300 million each of their firms’ capital to the bailout. Lehman, the weak sister at the time, was only asked to pony up $100 million, and Bear Stearns, which was not exposed, notably refused. The CEOs may have been conflicted as some of them had personally invested significant sums in LTCM, but they all agreed to contribute their stockholder’s capital.

In the wake of the LTCM crisis, banks significantly raised haircuts and stopped financing much of their repo activity. This forced a widespread de-leveraging by hedge funds that depressed asset prices and slowed asset backed securitization until significant de-leveraging had occurred. The Fed’s role in the aftermath was to flood the market with liquidity and keep interest rates extremely low.

The LTCM bailout and subsequent comments about the Fed’s role in the aftermath of a bubble created in investors minds the perception of a “Greenspan put”, a bailout in the event of trouble that many believe exacerbated subsequent moral hazard (Ragan, 2010). Essentially the Fed’s thinking was that an immediate hit to the banking system’s capital was better than the prolonged uncertainty of a bankruptcy proceeding. The trade-off is the long term economic cost of subsequent moral hazard behavior engendered by a short term bailout. The bailout of LTCM in 1998 arguably (it is hard to know for sure) prevented a more systemic problem to avoid the economic consequences of the aftermath, but whether the precedent was worth the risk is another question.

**Universal Banks**

Although Glass-Steagall wasn’t fully repealed until 1999 the Fed had been making exceptions for decades. San Francisco based Bank of America bought Charles Schwab in the mid-1970s, only to miss-manage it and sell it back to Schwab a decade later for less than it paid him. In anticipation of the eventual repeal of Glass-Steagall, the Fed approved the acquisition of a San Francisco based investment banking partnership Robertson Stephens in 1997, but sold it back to a group led by the same partners in 1998. B of A also acquired another San Francisco investment banker Montgomery securities in 1997 which became B of A Securities. It is likely that B of A had to write off much of its acquisition price of Robertson Stephens after acquiring Montgomery
Securities, and eventually wrote off the Montgomery Securities $1.2 billion acquisition price as well after the top investment bank partners cashed out with payouts in the $10-$100 million range.

Meanwhile Sandy Weil was busy putting together his financial conglomerate that would eventually be called Citicorp. By 1998 when Citicorp acquired Travelers, it merged the old well known and well established Wall Street investment banking firms of Smith Barney, Shearson Lehman and Salomon Brothers into its own securities division. While the first two were primarily retail investment banks, Salomon Brothers had been the premier proprietary trading firm of the 1980s.

Credit Rating Agencies
Perhaps no business in the financial services sector changed more than the credit rating agencies. They were essentially a GSE conferring regulatory status on private label securities, but in this case without the implied Treasury backstop and they responded in much the same way to the public risk for private profit motivation. By 2000 Moodys had been spun off as a public company, and Fitch, having gone through several mergers and acquisitions was owned by FIMALAC, a publicly traded French company.

The big profit center in the 1990s was rating asset backed securities, especially MBS. Mortgage securities are not like corporate bonds. The analysis is all statistical, and ratings agencies are in a better position than investors to do that as there were scale economies to the type of statistical analysis necessary to evaluate the risk of the new types of private mortgage securities being issued. Rating private label mostly sub-prime MBS issued by finance companies provided the bulk of the business. Some of these securities have “pool” insurance from firms like AAA rated MBIA. The privately issued mortgage securities that funded sub prime mortgages were all senior/subordinate structures. The investment banks that structured these securities negotiated exclusively with the three NRSRO qualified ratings agencies (and some times the pool insurers) to promote competition, picking the two (the minimum required by the SEC) that would approve the structure that investors would pay the most for.

Private Pool Insurance
Private label securitizers started obtaining private pool insurance over and above the insurance on the underlying mortgages during this decade. Many securitizers turned to pool insurance to enhance the rating and increase the value of the securities. They were almost all monoline insurers, with the exception of AIG discussed later. These monoline insurers acted as guarantors of pools in much the same way as Ginnie Mae did for FHA insured pools and Fannie Mae and Freddie Mac did for conventional Pools. Administratively, they were more like Ginnie Mae than Fannie Mae and Freddie Mac, doing nothing other than providing the pool with an insurance rider.
Much of the pool insurance was provided by Municipal Bond Insurance of America (MBIA), a firm that got its start rating municipal bonds after the default of Washington Power in 1990. So it started as a strongly capitalized firm with low risk, and earned an AAA rating by the monoline insurance rating agencies. Unlike Fannie Mae and Freddie Mac, which had numerous economists modeling credit risk for decades, most pool insurers had previously only insured municipal defaults, which were rare, and relied instead on the insurance provided by private mortgage insurers.

**Tax and Regulatory “Arbitrage”**

By the 1990s most mortgage loan originators had a bank or thrift with a fairly elastic supply of deposits (branch, mail, internet, brokered, etc.) as well as access to FHLB advances. Hence the daily or weekly decision was whether to fund in the bank and if so with deposits or advances, to sell to the agencies (if the loans were qualified, who would subsequently securitize them) or to private parties and if so as whole loans with or without recourse or as participations, or to privately securitize within the tax and regulatory rules.

The distinction between these various alternatives is how much risk remains with the originator and how much capital is required to fund investments, participations, recourse or retained securities. Buyers are making the same determination as mortgage loan originators, investing based on the risk-adjusted return on equity. Both the allowable risk levels and capital requirements and hence risk-adjusted return on equity for all of these choices are determined entirely by regulation rather than market incentives and discipline.\(^6^4\) Whereas markets would tend to standardize the amount of leverage allowed for a given amount of risk, the regulatory standards are incredibly diverse and generally well below market levels. Buyers of whole loans only need to consider their own most likely regulated capital requirements, e.g. for banks or thrifts. The price facing buyers of MBS securities will also reflect the capital requirements of regulated intermediaries, i.e. PMIs and pool insurers, either private or GSE.

Since the substitution of risk-based ratings for prudent investor underwriting in the 1970s the capital requirements of final investors have been based on the credit rating of the multiple classes of those securities rated “investment grade.” The presumption implicit in risk-based capital is that ratings agencies will require a comparable amount of capital for comparable risk. When the Basel I risk based capital rules were introduced in the US in 1991 for commercial banks, full capital was 8%, mortgages were half that at 4%, GSE securities were 20% of capital or 1.6% of assets and for private MBS the requirement was between that of whole loans and GSE securities, depending on the investment grade rating.

Selling qualified fixed rate loans to the GSEs (in this case Ginnie, Fannie and Freddie) was generally more profitable due to the low capital requirements imposed by GSE regulators for their securitizations and portfolio investments relative to those required of banks as well as their lower capital requirements imposed on investors. Fannie and Freddie securities had a 1.6% risk based capital requirement, Ginnie Mae none. Fannie and Freddie were in turn only required to hold .45% capital for MBS and 2.5% for debt, and again Ginnie Mae held no capital but
charged six basis points. But Fannie and Freddie were allowed to raise half their “capital” in the form of preferred stock, which banks could buy with only 20% of the normal capital requirement, i.e. the same 1.6% as for MBS. So the total capital requirement for Fannie Mae and Freddie Mac MBS was only .5commonx.45+.5preferredx.45x.016= .23% and for their debt was only .5commonx2.5+.5preferredx2.5x1.6=1.27%. Hence the government’s combined leverage was almost twice the stated book GSE leverage (400 to 1 for securities and 80 to 1 for debt, and GSE capital requirements were less than a third that of banks, even with their 50% risk-based capital weighting. Hence the government’s combined leverage was almost twice the stated book GSE leverage (400 to 1 for securities and 80 to 1 for debt, and GSE capital requirements were less than a third that of banks, even with their 50% risk-based capital weighting. Hence the GSEs got offered for sale all the loans that qualified.

It might also make sense sell loans to the GSEs and to buy the GSE securities back as investments with 1.6% capital, depending on the yield. But fixed rate loans were also generally sold to the GSEs because they were considered to have better access to cheaper longer term debt than banks owing to their agency status, as deposit maturity didn’t exceed five years. For adjustable rate mortgages funding with deposits or FHLB advances was generally cheaper than on balance sheet securitization, which was rare. With the sub-prime exception noted in the section below, banks mostly funded adjustable rate loans internally during this period.

For the remaining loans, the question was whether to retain or securitize and sell. If the latter, as with the original Ginnie Mae grantor trust, avoiding tax at the pool level was still sine qua non. The remaining goal was to obtain the lowest cost of funds, or alternatively the highest risk-adjusted return on retained invested equity unless sold without recourse, in which case the goal was to maximize the return on the minimal equity needed for the origination business.

The investment grade MBS would generally be sold. The credit rating agencies also rate several classes of debt below investment grade. There was generally a small residual, sometimes called a pure equity strip or first loss piece involved in securitization that was not rated (nr). This nr equity strip is virtually never sold and hence is usually made as small as possible to allow the securitizer to consider the security sold for accounting purposes. But “equity” for MBS may fairly be considered anything below the lowest BBB- investment grade tranches. Securities other that first loss pieces not retained by the issuer are generally purchased by hedge funds. They in turn generally finance these purchases with commercial bank leverage, the amount of which also reflects the rating.

The price investors pay for the “investment grade” tranches generally reflects only the credit rating. The big price break comes at the threshold of those rated above investment grade because these investments can be leveraged much more, again reflecting risk-based capital rules. This exogenous pricing drives the securitization process.

As a consequence, the goal of securitizers is to fund more risk with less capital. Hence the goal of issuers is generally to get as much as possible into the more highly rated investment grade classes. Securitizers put all the eligible loans into securitized pools, and fund the rejects that for whatever reason don’t meet pool requirements in the bank without a capital penalty. Securities backed by risky mortgages are then “tranched” into different ratings classes. Securitizers would generally shop the pool to the three NRSRO firms, Moody's S&P and Fitch,
and chose the two that gave them the most profitable securitization structure. The variety of tranches is virtually limitless. In theory, the safer the mortgages the more the credit rating agencies will allow in higher rated tranches.

Financial firms are required to keep at least two sets of books: one that follows generally accepted accounting principles (GAAP), one for tax and, if they are diligent, one that reflects the underlying economics of risk and return which is not reflected in the previous two. Banks and thrifts are required to keep a third set that follows regulatory accounting principles (RAP) which was combined with GAAP by FIRREA in 1989, with subsequent exceptions. The accounting rules are relatively malleable when it comes to securitization. So, for example, when securitizing recently originated loans, you would want to get “sales” treatment for GAAP and RAP to free up capital and book the gain, while a “financing” for tax defers the tax on the profit. When securitizing a portfolio of underwater loans, you would want to do the opposite to avoid reporting a loss publicly while reducing current taxes. Consistency was generally not required.

The total equity of a securitization depended not only on how the sold tranches were leveraged, but how the retained interests were leveraged as well. RAP determines the amount of equity needed to fund residual interests for loans originated in a bank or thrift. After RAP converged to GAAP in 1989 this allowed banks that securitized to consider the assets as sold for both GAAP and RAP.

The case of Superior Bank of Illinois owned by the Pritzger and Dworman families, owner of the Hyatt hotels and NY real estate developers, respectively, best illustrates the potential for regulatory arbitrage provided by bank securitization that “asset sales” accounting treatment produced. In 1993 they purchased a sub-prime lender Alliance Funding. The sub prime loans were originated in the bank and securitized, which was treated as a sale according to GAAP. RAP followed the GAAP sales treatment, in spite of the presence of a small but still significant residual interest. Hence these risky residual equity interests were funded almost entirely with insured deposits according to risk-based capital rules for normal loans. Residuals that reflect the 100 to 1 leveraging were funded by a bank already leveraged 15 to 1, providing total potential leverage of 1500 to 1, or alternatively a capital requirement of only .07% for the first loss on the underlying mortgage loans.

The rules for RAP were subsequently changed to prevent such obvious abuse, so that securitization of loans originated in a bank were considered a financing for capital treatment, or a regulatory capital requirement of 100% of the retained portion was imposed if the residual interest was less than the required capital on the entire pool. At that point, it was only marginally preferable to originate adjustable loans in a bank than in the mortgage banking subsidiary with warehouse lending provided by the bank. But “purchased” interests had a lower capital requirement than “retained” interests, inviting temporary “parking” of retained interests with an unrecorded repurchase agreement to get the lower capital requirement for a purchased interest.
Pricing MBS

We noted above that investors in investment grade rated private MBS haven’t price the credit risk of the underlying mortgages since the SEC outsourced risk monitoring to the NRSROs, and that this drives the securitization process. While this may appear to be obvious, the misperception that investors model and price credit risk is the source of much subsequent misunderstanding.

As noted earlier, GSE securities are priced off the Treasury yield curve, with investors pricing the imbedded options risk of fixed rate loans—the option premium pricing generally doesn’t apply to adjustable rate loans—and arguably the political risk that the GSEs do not have an explicit full faith and credit guarantee. So the GSEs price only pool insurance risk, which is a residue of default risk left over after the PMIs price credit risk. That explains why the “guarantor fee” for Ginnie Mae is only 6 basis points, and was only about 18 basis points for Freddie Mac’s conventional Guarantor program in the 1980s. (Of course, since going private, Freddie Mac has generally kept all the spread between its securities and net mortgage yields.)

Investors in private label MBS price in a similar manner, only in this case they price off the yield curve for the relevant investment grade, i.e. AAA, AA etc. This is true for two reasons. First, private label MBS credit risk was generally insured by regulated PMIs. Second, the yield wouldn’t justify the additional expense if investors had to underwrite and price credit risks of the underlying mortgages for all investment grade securities. The premise underlying the granting of legal status and risk based capital requirements for a credit rating is that allowable leverage reflects the risk of the assets being leveraged, and that risk is homogenous across a given rating class. That is the premise underlying the Basel I risk-based capital rules and the SEC designation of NRSROs. Hence the pricing models for pricing credit risk were at the two GSE pool insurers as well as the PMIs and some securitizers, but were not typically employed by investors in investment grade MBS.

Private Sub-Prime Securitization

The first big sub-prime mortgage lending boom and bust occurred in the mid 1990s. Private mortgage originators found that they could book much higher profits by privately securitizing sub-prime loans than by selling qualified loans to the GSEs and the rest to banks or thrifts. These loans were provided to people with generally bad credit but substantial down-payments, initially of at least 20% to 30%. They typically were not eligible for sale to the GSEs as a result of the borrowers low credit scores. Originators chose private securitization over internal bank funding because the rating agencies dramatically under-estimated the default risk. This allowed excessive amounts to be financed in the investment grade tranches with only a small retained equity strip and no cost for the additional risk. In addition, following “present value” GAAP accounting rules dictated by the SEC, these firms booked large current profits based on projected lifetime revenue of the residual interests discounted at a relatively risk-free rate, again specified by the SEC.
So banks spun out their mortgage banking divisions as finance companies, or free standing mortgage banks went public based on these reported profits, combining retained interests with servicing contracts. These reported profits allowed lenders to raise both equity and debt in the high yield (junk) bond market relatively cheaply to fund residual interests of only 1%-2% of the pool, thereby achieving about 100-1 leverage or more. Some of these lenders converted to REIT status to avoid paying taxes on the investment earnings of these retained strips (and potentially on the operating profits as well).69

The failure of LTCM and the Russian default temporarily froze securitization markets. But the real underlying problem was that the profits based on projections extending out 30 years turned out to be mostly fictitious as borrower defaults soared and the high down-payment equity of the underlying mortgages proved insufficient to cover all losses.70 It took investors several years to catch on, but by the end of the decade virtually all the independent publicly traded sub-prime lenders filed for bankruptcy. The managers all made huge sums starting companies and taking them public,

and many investors, particularly those who never believed in the business model made a lot of money as stock prices ran up in reaction to the high reported profits. Only those investors that got in late and holders of high yield bonds lost out. These lending operations largely migrated back to large insured deposit institutions (banks and thrifts, no longer distinguishable and hereafter banks) or their subsidiaries and later to the TBTF investment banks as well.

A Perfect Storm Silently Brewing

The distinctions between GSEs, commercial banks and investment banks were blurred during this era. Freddie Mac, for instance, had established its own broker dealer operations in the 1980s that allowed it to function as a primary dealer. The biggest among the commercial banks became universal banks as the Federal Reserve Board granted regulatory leeway during the 1990s until the complete legislative reversal of the Glass-Steagall prohibition in 1999. The large investment banks generally found it more profitable to securitize private mortgage securities, as issuing and trading the GSE securities had long ago become a low margin commodity business. In addition, all three industries were now dominated by highly leveraged TBTF firms.

By the end of the last century the US mortgage market, while promoted globally by Fannie Mae and USAID as a miraculous “private” model, was grossly distorted.71 The federal government implicitly backstopped a fundamentally flawed originate-to-sell securitization system of mortgage funding. The public risk for private profit moral hazard incentive structure at the GSEs was fairly well exposed. The lesson of LTCM that this also applied to banks and investment banks that leveraged hedge funds and other proprietary trading activity was not as well understood. Neither was the lesson that the so-called investment banks were now also giant hedge funds with a huge proprietary trading portfolio speculating on tale risk. Reversing Glass-Steagall not only allowed traditional investment banking functions to be combined with commercial banks into a universal bank, but commercial banks could now directly fund with
deposits hedge fund/proprietary trading activities as well as retain as “dealer inventory” the toxic interests of securitization underwriting.

This system was primed to fund the sub-prime lending debacle that was about to commence as the consequence of quotas imposed on both GSEs and banks that required risky lending. As it had in the past, regulatory and tax arbitrage in both public and private securitization would trump public and market discipline in the next boom. Unlike the prelude to the previous systemic collapse of the thrift industry in the 1980s, however, economists generally were relatively silent about the impending disaster, and politicians have since used them as a shield arguing that the interventions had good intentions and the distortions were unintended, so “nobody saw this coming.”

Why wasn’t the economics profession more vocal about the obvious potential for disaster as they had been for decades before the thrift collapse? Paul Krugman (2009) poses that question, concluding that the dominance of “Chicago School” economists had caused the profession to drop their guard in the search for “market failure,” consistent with his diagnosis of ideologically motivated regulatory laxity causing the financial crisis. This seems unlikely, as economists have never been shy about searching for “market failures,” defining them as anything less than perfection. That’s been the focus since the classicists implicitly assumed that government intervention always works perfectly in the public interest. Hence economists have generally followed politicians in focusing on the incentive conflicts between loan originators and securitizers, i.e. the “market failures” while virtually ignoring the dominant and inherent conflict between political incentives and regulatory supervision.

But they may also have faced a more direct conflict. It is noteworthy that the vast majority of economists are employed at public institutions and many were directly or indirectly employed by the GSEs or public regulators. In addition, the GSEs, particularly Fannie Mae, were proactive in sponsoring numerous activities from which no economists in the housing finance field would want to be excluded. Joseph Stiglitz, whose life’s work has focused on market failures and who would later write numerous books and articles blaming the subsequent crisis on “fundamental flaws in the capitalist system” earlier in a paper commissioned and published by Fannie Mae with future OMB Director Peter Orszag and his brother Joseph as coauthors (Stiglitz Orszag and Orszag, 2002, pg. 2) argued that the exposure to a severe macro-economic shock of ten year duration would only cost the government only $2 million for every trillion in GSE assets with the current regulatory capital requirements. It is thus not surprising that most of the criticism of this system of massive government intervention came from independent and generally conservative think tanks.

The Sub-prime Lending Boom from 2000 and Bubble Inflation from 2004 to 2007

The first half of the last decade, 2000-2004, represented the “good times”, a boom in house prices and housing construction. Had the housing bust come in mid-2004, there would have
been the normal aftermath of a boom but there would not have been a systemic financial system collapse and the recessionary consequences would have been somewhat mitigated. But the sub-prime mortgage bubble from mid-2004 through mid-2007 caused the subsequent crash. An unprecedented percentage of these loans subsequently defaulted generating unusually high losses and in retrospect these loans should never have been made. That they were made reflects the systemic weakening of underwriting resulting from politically imposed quotas leading to lax risk management. That they were funded is entirely due to moral hazard of government backed debt and regulatory arbitrage leading to excessive leverage. That the bubble inflated for so long is due to the Fed’s failure to mitigate systemic risk.

Extremely low interest rates in the wake of the dot-com stock market collapse combined with the populist homeownership and “affordability” quotas to produce a surge in housing demand. House prices rose, inducing a boom in construction. This production/price boom lasted for approximately five years, 2000 through 2004. Rapidly rising house prices masked the excessive credit risk of loans originated during this period, and lenders would normally have cut way back as house prices started falling. But the originate-to-sell sub-prime origination machine now resembled the subway train in the movie *The Taking of Pelham 123*: all the gates had been opened and instead of stopping or slowing down it went full speed ahead, but in this case without the happy movie ending of avoiding the crash at the end of the line.

The traditional gatekeepers were, from beginning to end, the borrowers, the lenders, the mortgage insurers, the guarantors and pool insurers, the credit rating agencies and the investors bearing the ultimate risk, anyone of which could have put on the brakes. Three things are noteworthy about this list. First, investment bankers aren’t on it, as they are risk-takers and have never been considered gatekeepers. Second, all of the gatekeepers are subject to regulation with political oversight. Third, private mortgage insurers are all regulated by state insurance regulators. Politically inspired incentive distortions opened the regulated gates at the federal level, while state regulated mortgage insurers were essentially by-passed. Hubris and incentive conflict locked them open and increasingly weaker borrowers jumped on for the ride as moral hazard accelerated the train through them.

**Gatekeepers Open the Gates**

The sub-prime lending boom started almost immediately after the bankruptcy of the independent sub-prime lenders in the late 1990s. These loans were even riskier than in the prior decade, as borrowers put up little or no cash and often couldn’t afford the full amortizing monthly payment, especially during the bubble years mid 2004 through mid 2007. Not all loans qualified to meet political quotas, as the underwriting filter had to be made porous, allowing lots of other junk to filter through as well.

**The Borrowers**

While politicians may think that anyone who is offered a mortgage should own a home, homebuyers have always been the first and most important gatekeeper. The reason is simple.
For most households, saving for years or even decades for a down-payment out of earned income, then making what is still a highly leveraged investment will dominate their wealth position for their lifetime.

In normal times borrowers chose between renting and owning. Owning has many benefits, not the least of which is the deductibility of home mortgage interest, property taxes and insurance for buyers making enough to itemize their deductions. The upside is that the borrower gets to keep all capital gains from rising house prices. The primary downside risk is the loss of the required down-payment in the event of default. There is generally no recourse for losses beyond that in the event of foreclosure, and default is removed from the borrower’s credit rating after seven years.

Economists calculate the complex user cost of capital that households presumably use to determine whether to buy a home rather than rent and if so when to buy. While few economists, never mind households, fully understand the complexities of user cost, it appears that households generally make rational decisions with an implicit understanding of the economic consequences of ownership. It is also the case that some houses are purchased by investors making a similarly rational calculation based on prospective rents and capital gains.

The question we address here is why did millions of borrowers take out mortgage loans that they subsequently couldn’t repay? While there is a personal story behind every default, the question we address is whether there is evidence of more irrational economic household behavior than normal, or they were just rationally responding to distorted incentives?

A prolonged period of rapidly rising house prices as during the boom should have discouraged some first time homebuyers and investors to wait until production caught up with demand. The decision is different for those selling homes to move up, as they are re-investing prior speculative housing gains and often taking cash out in the process. So the focus is on whether first time buyers and investors should buy or wait. First time buyers may be less aware of past house price bubbles, and arguably more prone to “irrational exuberance,” but this is not true for investors that were about a third of the market, so assume for the moment that they both understand house price dynamics. What could induce such households to buy say three years into the price boom in 2003-2004?

Extremely low interest rates both reduced the return to down-payment savings and the cost of mortgage borrowing. Now suppose the down-payment is reduced to only 10%, with no additional borrower recourse in the event of default. That shifts the odds significantly in favor of buying. As the price bubble progresses, suppose the down-payment constraint continues to fall to 5%, then 3%, then 0 or even becomes negative. In addition, suppose mortgage payments are based on teaser interest rates resulting in monthly payments significantly less than the cost of renting. These teaser rates may last only for two years, but suppose the loan is refinanced before the payment adjusts upward promising a continually low payment. The odds are still skewed in favor of buying no matter how deep into the housing price boom. It’s as if Bernie Madoff offered investors 99% financing at 3% to invest in his fund at 13%. He could likely have
kept the pyramid scheme going at lot longer even though the participants knew it was a pyramid scheme and that the last in could lose, as they would be mostly losing the lender’s money.

By 2006-2007 house prices were flat to falling, so most buyers would have realized that short term capital gains weren’t likely. The deal would have to be even better. Nothing down, low monthly payments, and if/when the lender forecloses, potentially living risk free for up to two years or more until the lender evicts. While it appears that fraud rose during the end of the bubble, it also appears that most of those preyed upon by predatory lenders came out financially ahead of renting even with foreclosure.

Clearly some buyers lost money, but the overwhelming evidence suggests that at the time they purchased buying was likely rational based on the distorted incentives facing them. Most of the money subsequently lost due to negative equity and borrower default was put up by the lenders. How and why lenders did this is explained below.

**The Lenders**

Loan performance for loans originated during the boom suggests that these loans were significantly riskier than had historically been the case, with rising house prices masking the risk early in this period. The house price inflation that mitigated default losses earlier in the housing boom was inevitably reversed as housing production caught up to demand. Most of the loans originated during the bubble of mid 2004 through mid-2007 were considered highly likely to subsequently default at the time they were originated. Falling house prices were only part of the problem, as they were already falling for much of this period. The bigger problem is that loans were made to increasingly less credit worthy borrowers.

Borrowers consider their “lender” to be their loan officer, the vast majority of whom worked for an independent third party or in some cases in house loan brokers. The loan officer then had to satisfy their “investor,” either a portfolio lender or a secondary market securitizer, and if the latter, for conventional loans that meant either Fannie Mae or Freddie Mac or private label MBS. In all cases they needed to underwrite the borrower and the house. In the case of secondary market investors, they historically also needed to get approval of a PMI unless the borrower put 20% or more down, which became increasingly rare.

**Loan Brokers:** External brokers at their peak accounted for more than two thirds of loan originations during the boom. Loan brokers are the opposite of gate-keepers, paid on volume pushed through the gate. While fraud was at abnormally high levels and many investors, mostly not the original buyers, now allege that these loan brokers or the mortgage banks for which they originated violated their underwriting guidelines, this appears to be of only marginal significance relative to the magnitude of defaults and loss.

Low down-payment loans that were soundly underwritten and insured by FHA or PMI had worked relatively well in periods of rising house prices, but not very well in periods such as the 1980s of stable house prices. High down-payment loans that were weakly underwritten to borrowers with a poor credit history performed badly in the 1990s. During the boom years of
2000-2004 lenders were simultaneously weakening underwriting and reducing down-payments, a recipe for a disaster that was postponed by rapidly rising house prices. During the bubble years lenders dropped down-payments altogether while maintaining every weakening underwriting guidelines, producing loans that had little if any chance of repayment.

**Investors/Speculators:** A change in the tax law in 1998 extended the one time homeowner capital gains allowance to allow multiple gains so long as the taxpayer lived in the property for six months. This spawned a new industry of building or buying and remodeling one property at a time and selling after six months as an owner occupier, avoiding the normal business income tax that would apply to the income. Speculators could buy housing with the intent to occupy for six months and subsequently flip the property at a higher price without adding any value. Some speculators bought multiple properties during the house price boom. This did not allow total tax avoidance, but any gains were still only subject to the 15% capital gains tax rate. Luxury condominiums provided a perfect vehicle. Low or no down payment loans made this a lucrative undertaking for all but those holding property when the bubble burst, and even then the speculator’s loss was generally minimal. Speculators also apparently often used low income buyers as a front to qualify for a sub-prime owner-occupied loan.

There was tremendous variation of loan products, and many detailed data sources for the data such as Mayer, Pence and Sherlund (2009) summarized briefly here. The data are collected mostly for two categories. Sub-prime loans refer to borrowers with low credit scores as well as low down-payments. Alt-A refer to loans that some call almost prime and others call alternative to prime, which seems to be a more accurate low documentation label. There were almost 10 million loans originated between 2003 and mid-year 2007 that fell into one of these two categories. About 25% of Alt-A and 10% of sub-prime loans knowingly went to non-owner occupied investors and likely many more unknowingly.

**Borrower Credit-worthiness**

The standard for measuring borrower credit-worthiness is the FICO score, with 720 being the median during this period. From 2003-2007 the median FICO score of both sub-prime and Alt-A remained stable at about 616 and 705 respectively. But the extent to which borrower income and credit was documented trended down from 2003 to 2007 from about 70% to 60% for sub-prime and from about 35% to less than 20% for Alt-A.

**Teaser Qualifications:** Conventional loan originations continued at extraordinary high levels until the bubble burst, with an increasing percentage adjustable during the bubble. Adjustable loans allow originators to qualify borrowers at a much lower rate and payment than the contract interest rate. Hence virtually all of the sub-prime loans were initially adjustable, with numerous variants. More than three quarters of sub-prime borrowers took out loans underwritten at a low initial teaser rate that they planned on refinancing before the payment
adjusted upward to the full contract rate two years hence. As these loans typically had little or no borrower equity, this refinancing worked until house prices stabilized and began falling. Borrowers also increasingly relied on interest only loans and loans with 40 year amortization to reduce monthly payments.

Borrower Down-payments
Down-payments on sub-prime loans fell from a reported 10% in 2003 to zero, that is, from 2005 through 2007 the median loan to value was 100% for new sub-prime originations, many of which could negatively amortize after closing. Reported down-payments on Alt-A pools declined from 10% to 5% during same time period. This also includes so-called 3/2 down-payments where borrowers report that a gift will appear at closing for the 3% share, most often an unrecorded loan or recorded after the credit check was complete.

The Primary Mortgage Insurers
Mortgage insurers are regulated by state commissions whose duty to actuarial soundness is not distorted by any social mission. Mortgage insurers were historically the first line of defense for wholesale investors for loans with less than 20% borrower equity. Insurers are more likely to decline insurance than try to price it as adverse selection is always present. Mortgage credit risk during the bubble years was characterized by incredible adverse selection as well as highly correlated systemic risk. So having been previously burned in the 1930s and 1980s, why did the mortgage insurers continue to insure it during this bubble?

They didn’t! FHA’s market share, about 90% of which were fixed rate loans, stayed in the 10% to 15% range of total originations from 1985 through 2001. FHA loan originations set records during the housing boom through mid 2004, but tailed off rapidly during the bubble, cut in half from the boom years 2003-2004 to the bubble years 2005-2006. As a consequence Ginnie Mae’s share of total securitizations fell from 42% in 1985 to only 4% by 2006. The PMIs largely did the same. Hence FHA and the PMIs, bruised by the worst mortgage defaults since the Great Depression, are still “the last men standing.”

Piggyback Seconds
Neither the FHA nor PMIs like to turn down business. But in this case there was no actuarially sound price at which these risks could be insured, so they had no choice. Low down-payment first mortgages were largely replaced by qualified (80% l-t-v) firsts with piggy-backed seconds financing some and often all of the down-payment. This activity doubled from 2002 to 2004 and accelerated thereafter. The first and second mortgages were then financed by the GSEs and private label securitizations.

Mayer, Pence and Sherlund (2009, pg 32) report that about 28% of sub-prime and 42% of alt A loans had piggyback seconds in 2006 that were reported to the first lien holder. Bypassing cash down payment constraints and PMIs with so-called “silent seconds” recorded after the first
mortgage closed was openly tolerated by sub-prime lenders. Including “silent” seconds could double these percentages. First liens with seconds have both a higher frequency of loss and a greater severity than similarly insured loans with the same total l-t-v for several reasons. First, PMI covered the investor down to 75%. Second, the PMI’s maintained rigorous underwriting guidelines that attempted to avoid correlated risks. Third, PMI is transparent to the investor, whereas the second is often opaque and silent, implying borrower cash in the transaction. The PMIs also had much tighter underwriting guidelines for investor loans, which they stopped insuring altogether during the 1980s speculation. The most logical explanation is that originators bypassed the PMIs because they would not have insured such loans due to insufficient underwriting, the resulting adverse selection and the highly correlated nature of the risks.

**Appraisers**

Lenders delegate the gatekeeper role of “assuring” housing equity to appraisers, mostly independent contractors. Their primary role is to corroborate total house value. So the question arises as to how a trillion dollars of appraised housing value could have evaporated so swiftly?

One explanation is that almost all appraisers are independent contractors to commissioned loan brokers who only get paid for closing loans. Hence only appraisers that corroborate the purchase price get chosen. Regulators chose this explanation and attempted to mitigate conflicts of interest with broad new industry regulations implemented in 2008.

Another explanation is that appraisals aren’t intended to look forward. This is only partly true. The income approach should detect a house price bubble, as ownership costs get out of line with rental costs, but that approach is not generally applied to owner occupied housing. The replacement cost approach should also detect a bubble, but this is difficult to do for new developments when the hard construction costs may only be half the total cost. The comparable approach doesn’t really work when prices are endogenous, i.e. the comps are all other luxury condos or town homes in the same or similar developments and markets.

Another explanation relates to the lack of significant and in many cases any borrower equity. Appraising house value, which is essentially the price rational investors will pay, is comparable to rating bonds. This is much easier to do when stockholders put in 20% capital ahead of bondholders than when there is little or no stockholder equity. Similarly, when the borrower is putting down 20% in cash equity the appraiser is certifying the rationality of the borrower’s investment. When the borrower puts little or nothing down, or has motivations not aligned with the value of the property as in the case of the Epic mortgages securities scandal of the 1980s, the appraiser’s job is orders of magnitude more difficult.

**Mortgage Bankers:** The virtually complete lack of qualified borrowers by the mid-2004 relative peak of the housing boom led to the active recruitment of unqualified buyers with the de facto suspension of underwriting. The lenders like Countrywide obviously knew that they weren’t
seriously underwriting and that most of these borrowers couldn’t repay. But they either put them in a bank portfolio, maybe even one they owned, or securitized and sold the loans either to the GSEs, or through private securitization networks, so it was left up to others not to fund them. They did have a long term stake in the servicing contracts, but the voice of brokers easily drowns out that of loan servicers during a boom. Mortgage banking has always been a boom/bust business, with little capital left behind by owner/operators such as Angel Mazolo, CEO of Countrywide to fund recourse repurchases when the bust came. Assuming they accurately valued their servicing contracts, the mark to market rules implemented in 2000 for these contracts would make it more so.

**Portfolio Lenders**

By 2008 the banks owned over 3 million of junk mortgage loans, so the question is why would they put themselves at risk? There are several illustrative answers.

**Indymac**: Indymac bank was a spin-off of Countrywide. It started as a REIT and converted late as a bank, but quickly grew to over $32 billion in assets by the time it was seized in July 2008. It mostly purchased sub-prime originations from loan brokers. It then funded about one third with FHLB advances and one sixth with brokered CDs. It also offered the highest insured CD rate in the country at the time it was seized, taking mail in deposits. This was a form of regulatory arbitrage as none of its creditors with taxpayer backing penalized it for the poor quality of its assets. Indymac’s mistake was believing that with cheap financing the returns of these loans justified the risk.

**Golden West**: Herb and Marion Sandler, co-CEOs of Golden West Financial and World Savings S&L subsidiary are either the smartest S&L operators, the luckiest, or both. In 2006 they sold their S&L with approximately $125 billion in assets to Wachovia for $25.5 Billion, personally making the Sandlers multi-billionaires. Most of the World Savings portfolio was invested in pay-option arms, with some analysts arguing the name referred to the fact that they essentially had optional down-payments and partially optional monthly payments. In the aftermath, Wachovia’s market cap fell from almost $100 billion at the time of the merger until the were threatened with extinction two years later and forced by regulators into a sale to Wells Fargo on December 31, 2008. Much of the decline was attributed to the “deal from hell.”

**CRA**: In 2008 commercial banks held 2.7 million in “junk” mortgage loans that qualified under the CRA lending requirements. They qualified for the 50% risk weighting for risk-based capital as well. While the loans originated and held at banks receiving CRA credit performed better than similar sold loans, it is also the case that banks had to modify their underwriting guidelines across the board in their mortgage lending subsidiaries to receive these credits, rather than just waiving them for CRA qualified loans, and competitors had to follow.
Fannie Mae and Freddie Mac as Pool Insurers and Investors

The sheer magnitude of junk loans at the GSEs argue that they played the bigger role in inflating the bubble, whereas the private securities were more directly responsible for triggering the systemic collapse of the financial system as discussed below. Moreover, the GSEs didn’t just compete for loans with private securitizers; they funded them with cheap agency debt as well. The purchase of AAA sub-prime securities not only counted toward their affordable housing goals, but also had a lower capital requirement. Hence the debate as to who led and who followed or which behaved most badly is largely irrelevant, so we start with the role of the GSEs.

Jaffee and Quigley (2008, pg 6) estimated that by 2003 the annual subsidy to Fannie Mae and Freddie Mac due to their agency status was about $25 billion. A large share of their loans underwritten with sound underwriting would qualify under the affordability quotas in any event, as they had historically for FHA. This would leave behind this entire subsidy to be shared by stockholders, managers and politicians. The only way to distribute some of it to households was to dramatically expand the quotas which could then be met only with weakened underwriting guidelines while lending at market rates, i.e. to spend some of the subsidy on credit default losses. This is difficult to do with any precision.

The GSEs still have many defenders who want to reinstate them, so the arguments about their culpability will likely persist for decades. Hence the place to start is with the GAO (2009) estimate of approximately $400 billion in eventual federal bailout cost relating to the book of business prior to conservatorship that needs to be explained. The explanation is straightforward: the loans were excessively risky as was the leverage that funded them.

Weak Underwriting Guidelines

By 2003 fifty percent of new loan purchases had to be for low and moderate income families, over thirty percent had to be in “underserved areas”, and twenty percent had to serve other “special needs”, although these categories could over-lap. While estimates vary and definitions are disputed, the GSEs funded approximately $2 trillion in risky loans during the housing boom of the first half decade (Wallison, 2008), apparently in response to HUD upping the affordable housing goal in October of 2000.

Private lenders historically looked to the GSEs for leadership to tighten underwriting guidelines, and possibly they would have tightened lending in mid 2004 after an obvious housing boom. But in the wake of shocking accounting scandals politicians took the unprecedented step of having new politically beholden CEOs installed at both Freddie Mac and Fannie Mae. Both new CEOs have since testified that they suppressed safety and soundness concerns in favor of meeting their affordable housing goals during their tenure. The risk managers at both left or were fired protesting the risk and the implied predatory nature of the borrower recruiting used to meet the quotas. The result was more than an additional trillion dollars of Fannie Mae and Freddie Mac GSE sub-prime funding during the mid-2004 to 2007 mortgage bubble, and they kept on
going. By the time the GSEs were put in conservatorship, they held 10 million “junk” mortgage loans purchased to meet their affordable housing goals.97

**Excessive Leverage**

The many attempts to impose commercial bank capital requirements on the GSEs never gained traction. The GSEs leverage ratios were 100-1 or higher (reaching an average of 200 by 2008 after the asset mark-downs). Also recall from the previous section that half their leverage was provided by preferred stock issued to banks at preferential capital weights, almost doubling the government’s leverage relative to that of GSE book capital. Fannie and Freddie historically argued that such low capital levels were acceptable because the private mortgage insurers were bearing almost all the default risk, with the GSEs suffering a loss only when the loss on the underlying mortgage exceeds 25% (in which case fraud is a likely cause) or in the event of a PMI failure, which was also extremely unlikely as they are highly regulated and generally well capitalized.

GSE Investors were led to believe that private mortgage insurance was required on all loans with less than a 20% down-payment, a belief backed by historical practice. But beginning in 1997 Fannie Mae offered as 3% down-payment loan, and by 2003 they offered loans with no down-payments at all (Wallison, 2009, pg3). As the PMIs generally didn’t insure such loans, they used other means to by-pass them, such as loans with the down-payment financed with a second mortgage.98 Both Fannie Mae and Freddie Mac had programs for buying first liens with piggy-back seconds, and Fannie Mae had a program to buy both loans as part of a package. This had the added benefit of counting one household twice towards their affordable housing goals, as each loan counted separately. Moreover, their capital requirements were the same for these “equity” down-payment seconds as the firsts, which as noted above was about 1.27% (Calhoun, 2005 pg 8). It is hard to reconcile buying both an 80% first lien and a 20% second lien on the same house as being in the spirit of having 20% borrower equity protecting Fannie Mae against credit risk as the pool insurer, and impossible to explain why regulators would write regulations specifically encouraging it with double counting.

Put in the lingo of finance, Fannie Mae and Freddie Mac were writing the “put” options for mortgage default that they had been modeling and writing about for decades for which there is no up front *ex ante* option price or credit risk interest rate premium to cover the highly correlated loss. These uninsured loans financing the peak of the bubble in house prices will likely account for much of their net loss.

Fannie Mae had been private for four decades, and Freddie Mac two by the time of conservatorship, and there was no perception of market discipline during that time, so capital was purely politically determined. Investors in GSE securities accurately presumed that they were backed by the US treasury. The “privatization” of Fannie Mae and Freddie Mac probably mitigated efficiency concerns somewhat, as national housing banks are notoriously inefficient and risky (although losses are rarely transparent).99 The real advantage of this unique status was that the GSEs, unlike government agencies, are not subject to the government agency
prohibition on campaign funding, and they broke all records, spending hundreds of millions of dollars on campaign donations and other political activity, as well as providing benefits such as ribbon cutting for particular targeted lending programs. This bought them protection from binding safety and soundness regulation.

There is no proof of causality that will assuage the supporters of a populist political agenda, but funding this agenda with extreme leverage was an inherently dangerous strategy from the start and there was no way to isolate the weak underwriting guidelines needed to implement them. The only regulatory defense to moral hazard is sufficiently high capital requirements, keeping the franchise value to a minimum. In essence it was politicians that were betting on ever rising house prices necessary to make this highly leveraged credit allocation strategy work, which never had a chance.

**Private Label Securitization Investors**

The credit rating agencies rated Fannie Mae securities in two ways, with and without government backing. Investors generally put faith in the implicit guarantee and traded them at prices off the “risk free” Treasury benchmark i.e. with government backing. Private label securities traded in the same manner but without the agency status, i.e. at or close to the “private” GSE yield. Investors didn’t act as gatekeepers because there were virtually no traditional investors making independent assessments of risk and return, as politically inspired regulatory incentive distortions were pervasive. That wasn’t new. What was new was that the rating agencies by-passed the PMI gatekeepers in what was a new and profitable exploitation of their SEC-granted franchise, substituting evaluating and rating for pricing and insuring.

The GSE regulatory capital advantage gave it a prohibitive advantage in the conforming loan market. In order to compete, private label securitizers would either have to find ways to further exploit regulatory arbitrage to increase leverage, or push through more risk and commensurate promised yield for a given leverage ratio. They did both. Banks used old ways to skirt risk-based regulatory leverage limitations with some adaptation. Excessive leverage at the TBTF investment banks that ran the sub-prime securitization schemes also contributed. This regulatory arbitrage was inadvertently enabled by state and local as well as federal taxpayers. The credit rating agencies assisted in the same way it had in the 1990s by seriously under-estimated the risk of the underlying mortgage loans. Had the *ex ante* yield justified the risk, this would have just redistributed the yield to the below investment grade tranches. But because there was no *ante* insurance premium that would have compensated for the credit risk, this enabled loans that would otherwise not have been financed.

All the gates at both GSEs and private label securitization were now wide open. The largest commercial banks bought or started sub-prime mortgage banks to feed a securitization machine, and the largest investment banks soon followed suit. The largest mortgage banks bought smaller banks, and also fed the securitization machines at the big banks and investment
banks as well as the GSEs. Private mortgage originators played the GSEs against the private securitization alternative, neither willing to lose market share.  

**The Ratings Agencies and Pool Insurers**

**Risky Loans and Vastly Over Rated MBS Securities**

The credit rating agencies aren’t like other gate keepers and in fact still claim to be just publishers in spite of their SEC granted franchise (Partnoy, 2006). But the value of their rating was virtually the same as if they were guaranteeing the level of risk and capitalizing the insurance. This made selling ratings hugely profitable for rating agency stockholders and managers.

The credit rating agencies have taken the brunt of the blame for not stopping the bubble in private securitization, and most of the specific criticisms ring true (White, 2010). The fateful step was going from rating pools of mortgages insured by PMI to rating uninsured pools, replacing PMI judgment and capital with rating agency judgment and reputation. They made three broad mistakes when evaluating credit risk.

First, they didn’t sufficiently investigate the underwriting of the individual mortgage loans to learn the extent to which they were sub-prime (and Alt-A, hereafter included in sub-prime), as evidenced by subsequent delinquency and default rates nine to 16 times the equivalent rates on prime loans. They were slow to adjust to the reality that late in the bubble virtually all home mortgages in the rated pools were going to sub-prime borrowers. They certainly didn’t see or account for the consequences of the housing price deflation. They also didn’t understand how correlated the default risk had become, or the significance of the lack of private mortgage insurance. Surprisingly, as of 1980, when rating mortgage backed bonds both Moodys and Standard and Poors considered only the deflation and default experience of the Depression era, ignoring the more recent inflation of the 1970s. But the old guard was long since gone and their institutional memory had shortened to only five years during the housing boom.

Second, they were easily manipulated by investment bankers, presumably blinded—some say corrupted—by high ratings fees paid by issuers. This negotiation to load more risk than intended had been going on for decades as risk based capital requirements allowed investors to skip due diligence entirely for most highly rated e.g. AAA securities while providing an incentive to take as much of this risk as they could for the lowest investment grade eligible e.g. BBB securities so long as returns were commensurate with the risk.

Third, they treated the first mortgages on homes backed by seconds the same as if they had cash down-payments or PMI. They also rated pools of second mortgages as if they were home equity loans. Home equity loans became popular after the interest deduction was removed for consumer credit in the 1980s, and the default experience had been good because most borrowers still had substantial residual homeowner equity. But this was not the case with the piggyback seconds, whether silent or revealed, that were replacing private mortgage insurance.
Nevertheless, these “piggyback seconds” were subsequently securitized with almost as much leverage as the first mortgages. The excessively favorable ratings resulted in much less capital than regulated mortgage insurers were required to maintain to cover the same risk, making this approach cheaper for securitizers. This combined treatment was arguably their most consequential error.

The traditional “reputation” concern thought to keep rating agencies honest and accurate was overwhelmed by the profits to be gained from exploiting the franchise value. The raters and all their employees reaped in a few short bubble years what would have been a lifetime of normal earnings had they opened their eyes to what was going on. Bad models offered good cover.

**Private Pool Insurers**

Pool insurance on municipal securities had been extremely profitable because defaults were so rare. The pool insurers were arguably performing an assurance function, inducing municipalities to mitigate risks. There may also have been a tail risk incentive to providing municipal insurance, as capital may have proven insufficient to cover losses e.g. as would have occurred without the 2008 stimulus bail-out of state and local governments. The pool insurers apparently viewed rated mortgage securities as they did municipal securities. The book of highly profitable pool insurance on risky sub-prime loans exploded without a commensurate increase in capital. With little historical experience, they relied more on the credit rating agencies and past experience with prime mortgage pools than independent analysis. These pools in turn had historically had PMI coverage. Their insurance seemed cheap to private sub-prime securitizers, and was under-capitalized as a consequence.

Numerous industry publications questioned the pool insurers’ ratings and their ability to pay as early as 2002, but investors accepted it until they lost their insurance AAA ratings beginning in June 2008, well after the risks to their capital had been exposed. By year end they had all been downgraded. Having jumped on a deflating bubble at the top, their regulators didn’t catch on until it was too late.

**The “Traditional” Investors**

Virtually all the investors in sub-prime MBS debt and equity faced incentives distorted toward excessive risk taking.

Investment decisions regarding investment grade MBS are now made by banks and money managers. Bank investment decisions reflect risk-based capital regulations relating to NRSROs. Hence commercial bank purchases were almost entirely due to their public backing and regulatory arbitrage. Fixed income money managers have no more incentive than banks to evaluate credit risk independently from the ratings agencies as the securities are priced comparable to GSE guaranteed pools, but at a discount due to the lower credit rating and sometimes higher risk based capital requirement. The base of traditional non-originator non-bank investors for adjustable rate MBS was relatively small, only interested in the investment
grade securities and purchased based only on the ratings with no independent credit verification until near the end of the sub-prime securitization boom.

Most investors in highly rated debt assume that equity investors will do the required due diligence. This was not true for sub-prime MBS. The profits from securitization overwhelmed concerns with the risk of retained interests. Hedge fund buyers faced other incentive distortions. This compounded the regulatory failure to monitor the NRSROs.

Commercial Bank Investing and Funding: Regulatory Arbitrage and Excessive Leverage

As noted earlier, deposit insurance increased bank leverage from roughly 6 to 1 to about 20 to 1 within a few years after it was introduced. Regulation has kept it in that range ever since, so the focus of banks, particularly the big banks involved in securitization, has been how to leverage further.\textsuperscript{106}

The regulatory status of the inflated credit ratings affected commercial bank risk-taking and leverage in three ways. First, the risk-based capital rules allowed excessive on balance sheet leverage. Second, they provided an off-balance sheet liquidity backstop of over $500 billion to structured investment vehicles (SIVs). Third, they wrote credit default swaps (CDS) with capital and pricing based on these ratings. By the summer of 2007 when market sentiment regarding sub-prime MBS had turned sharply negative, commercial bank leverage including off balance sheet activity was approximately double stated book leverage due to these off-balance sheet holdings.\textsuperscript{107}

Balance Sheet Loans and Investments

Banks held sub-prime loans on their balance sheets in the fall of 2008 partly as a result of loans rejected from securitized pools, partly as a result of the demand for sub prime securities coming to such an abrupt halt in mid 2007 and partly as a result of a portfolio investment strategy based the fact that all mortgage loans and investments received preferential capital treatment under the risk-based capital rules. In 2001 the risk based capital requirement for AA and AAA MBS was lowered to the same incredibly low 1.6% as for the GSEs. They typically held the AAA tranches which had the most preferential risk based capital treatment. Some of the risky BBB sub-prime MBS funded by AAA CDOs ended up there as well. The FDIC apparently relied on the ratings as if they were insured to that level, without evaluating the underlying risk.

Investment banks and hedge funds rely on bank loans, generally in the form of repos to leverage as much as banks will let them; the higher the rating the less the required over-collateralization (and hence the greater the bank’s risk). Banks in turn rely on the credit ratings to determine the appropriate “haircut”, or discount to market value, to determine how much they will lend. As of mid 2007, commercial banks had lent heavily to the highly leveraged investment banks and hedge funds on rated sub-prime securities. The collateral was marked- to-market, so borrowers had to pledge additional collateral to meet collateral calls or sell assets to repay the loans in the
event the price fell. But neither the bank nor their regulator went beyond the rating to analyze
the risk of the collateral backing the repo loans.

Structured Investment Vehicles

SIVs are a special purpose vehicle often used in the 1990s to fund assets by issuing commercial
paper. They typically issued 30 day commercial paper and medium term notes mostly to money
market funds and corporate treasuries and used the proceeds to fund the purchase of
“marketable” securities. This SIV funding vehicle only works if a commercial bank pledges to buy
the underlying assets should the commercial paper funding the assets not be rolled over. The
relationship between the bank and SIV is analogous to the relationship between the Federal
Reserve and a commercial bank, i.e. providing a systemic liquidity backstop. As the Fed doesn’t
charge banks for this, banks could profitably leverage the Fed’s commitment. Advances are to
be fully collateralized to prevent a liquidity backstop from becoming a bailout in the event of
credit deterioration causing the price to fall.

These “liquidity put” contracts were off balance sheet on the assumption that the modest SIV
over-collateralization requirements that reflected the credit rating would provide enough cash
in the event of forced liquidation to pay off the commercial paper holders without resorting to
additional bank financing. But the collateral in this case was generally not liquid, just
“marketable,” meaning it traded within a narrow bid-asked range. The sponsoring bank could
earn big fees because marketable instruments are often risky and their value can fall
precipitously, which happened in this case as they were heavily invested in sub-prime MBS and
CDOs.

Asset backed commercial paper approximately doubled during the bubble from mid 2004
through mid 2007, from $600 billion to $1.2 trillion, and most of this funded MBS. Loans to
investment banks were the next biggest category.

Credit Default Swaps

A credit default swap is considered to be an insurance contract against an actual default, but
importantly not a decline in market value of a security. These swaps allowed a third party to
purchase insurance on a security they might or might not own, facilitating hedging or
speculation while limiting their possible loss to the premium paid, again assuming they could
hold the security until claims were paid and were not forced to sell at a distressed price in the
interim. The premium reflected the perceived risk of default, which was generally based on the
credit rating.

As CDS raw material became scarce in 2006, many new CDS were called “synthetic” because
they often didn’t rely on a particular sub-prime mortgage security directly. By treating CDS as
insurance rather than investment owning the underlying instrument, much weaker insurance
principles were used to establish capital requirements, which also allowed the premium to be
taken directly into income. Writing CDS represents a form of regulatory arbitrage, as the credit
risk of a CDS is essentially the same as investing but without the commensurate risk-based capital requirement.

Banks were market makers and hence both purchasers and, more likely, particularly if a universal bank, writers of CDS, as most CDS was in fact written by the big commercial and investment banks. It was often difficult to determine a bank’s net CDS position. As regulatory relief was provided by purchasing CDS, the questionable counterparty capital backing CDS purchased by commercial banks to increase their leverage as allowed under the existing regulations was an additional concern for fairly estimating bank capital.

AIG stands out as the primary provider of CDS on AAA MBS until it stopped writing such contracts between late 2005 and early 2006, when other less well capitalized municipal bond insurers moved in to fill the void left. AIG and others had made large profits writing such contracts on corporate securities, but like MBS pool insurers they likely under-priced the sub-prime CDS relative to the likelihood that the housing bubble would soon burst. AIG essentially behaved the same as a large bank: the CDS were written not by the highly capitalized insurer but a small FDIC insured thrift subsidiary regulated by the OTS within the US Treasury. The OTS specifically approved the AIG swaps because they were written on AAA rated CDOs (albeit some were backed by BBB sub-prime mortgage security tranches) and as with balance sheet assets they didn’t go beyond the rating to examine risk. The buyers viewed AIG CDS as backed not only by a thrift subsidiary with limited capital but implicitly backed by capital pledged to its normal insurance business as well. Swap buyers likely accepted AIG as counter-party without collateral because it was viewed as a TBTF regulated and highly rated AAA insurer, a view that was subsequently validated.

Non-Bank Traditional Investors and Informational Asymmetries

A large literature has developed around the proposition first put forward in Greenbaum and Thakor, “Bank funding modes: Securitization versus deposits” (1987) that securitization is an alternative to bank deposits and which will dominate depends on “informational asymmetries” relating to the risk of the underlying loans. Investors in MBS are thought by some to be at an inherent disadvantage because they have less information than the lenders and securitizers. Numerous analysts (e.g. Gorton 2008) have concluded that a major cause of the systemic financial crisis of 2008 was that investment bankers purposely made securities overly complex to trick investors. Some analysts have argued that originators, securitizers, rating agencies and other intermediaries conspired to mislead investors into purchasing securities that were much riskier than the investors were led to believe. While this may well have happened in some cases, it imputes a short term motive to the conspirators of taking advantage of their ultimate customers, and a naïveté and negligence on the part of investors. This doesn’t make sense.

The only inherent “informational asymmetry in mortgage lending is between the borrower and loan originator. Borrowers have a lot more information than lenders, e.g. about whether they are frauds, are going to refinance, default, or whatever. Equity, i.e. the cash down payment is
the primary way that this inherent informational asymmetry in mortgage lending gets resolved. Income underwriting and recourse in the event of default are secondary. Primary mortgage insurance companies and their capital can substitute for cash down payments in some circumstances, but adverse selection (i.e. the level of risk exceeds the price charged for it) quickly sets in. Hence insured loan may have a higher frequency of default than those with an equivalent down payment.

Informational asymmetries are the general state of the universe, but buyers typically pay more for good relevant information, so honest sellers have every incentive to provide it. Since the advent of computer tapes on pool data several decades ago regarding the loan origination and servicing data, all funders can have access to the same data as the originator. It is just a matter of what they asked for. In the Indymac example discussed above, the FHLB sets out requirements for the pools of loan collateral but allows the bank to hold the collateral and relies on audits. The FDIC also relies on audits as part of its regular exams. The private securitizers ask for the data up-front, but don’t look back after that. Indymac was just exploiting these different rules and procedures to maximize risk and leverage.

Investors in investment grade MBS could have access to the same data as the securitizer but are no more likely to ask for it than are bank depositors: that job has been delegated to intermediaries since the SEC designation of NRSROs and it wouldn’t be efficient to analyze the data independently. The PMIs would examine the underlying loans but the fact that the rating agencies and pool insurers didn’t even ask for the tapes containing the individual loans is primarily an indictment of the SEC oversight of its rule, as well as of all the other regulators that relied on the risk-based capital ratings. It didn’t make sense for investors to ask if the information processing intermediaries didn’t.

Securitization is an expensive process. So except in cases of fraud investors can generally get whatever information originators have. The fact that investors pay more for securities than pools of the underlying loans with full disclosure reflects their preference for intermediaries to evaluate and to some extent insure the credit risk and any observed informational asymmetries are voluntarily accepted by investors as a form of informational efficiency. The fact that investors were willing to pay more for CDOs, which reflect a second level of securitization with the commensurate costs, or even CDOs squared, is further evidence of investor preferences.

Virtually all of this activity was generated by the exogenous pricing based on credit rating, and the tiered pricing with risk-based capital particularly favoring AAA and AA securities. These securities were more easily repo’d as well, with virtually 100% funding.

There was tremendous variation among securitizations. Collateralized debt obligations simply repackage the cash flows from a pool of securities in a manner presumably more pleasing to investors, hence providing a net profit to the packager. The Table below represents a simplified sub-prime MBS and the typical way it could be re-tranched multiple times using the CDO structure to obtain higher prices. The Figure illustrates not only how the CDO process created
more of the highest tranches, but more of the lowest tranches as well. This indicates that the pricing advantage of the former outweighed the pricing penalty of the latter due to the depth of the market for highly rated securities and their low risk-based capital requirements. Securitizers weren’t trying to trick investors: they were trying to get them higher ratings so that they could leverage more.

The shocking stories about just how risky these sub-prime mortgage securities became as the bubble persisted are too numerous to repeat here. Stories of how the investment banks repeatedly re-packaged the securities financing risky mortgages to qualify for undeserved ratings are equally numerous and spell-binding. The basic story is that investment banks took the lowest and hardest to sell of the investment grade tranches, the BBB tranches of sub prime mortgage backed securities, and put them into CDOs, which generally turned a lot of this hard to leverage quasi “junk” back into AAA securities.¹¹²

Figure 1 Sub-Prime MBS and CDO Structures
Securitizers, Proprietary Trading and Hedge Funds: Incentive Conflict and Moral Hazard

Equity gets raised before debt for two reasons. First, the debtors rely on the equity holders to bear the first loss. Second, the debtors assume that because the equity holders bear the first loss, they will do whatever is necessary to make an independent assessment of risk and where possible to mitigate their risk of loss. So the question is, who funded the below investment grade securities and why?

The originator, a mortgage bank typically as a commercial bank subsidiary or the investment bank doing the securitization, generally retained just enough equity to book the front end profits from securitization, while considering the underlying mortgage assets as “sold.” The profits from securitization were so high that this offered no assurance to debt investors, who often asked if the equity was sold to a third party and if so, how much? The remaining equity interests not retained were typically sold to hedge funds. They also had severely distorted incentives.
**Investment Banks**

The investment banks generally ran the private label securitization machine, producing and distributing the securities. As the up-front profits from private security underwritings were extraordinary, it made sense for them to control or buy the loan originators to feed this securitization machine, which most of them eventually did. The investment banks that underwrote these securities could also fund the hard to sell tranches to their proprietary traders or sell them to managers of sponsored hedge funds in order to produce the up front securitization profits.

The love/hate relationship between the investment banks and Fannie and Freddie heated up as the competition for loans became ever more intense. Fannie Mae and Freddie Mac continued to use their monopoly power to negotiate ever lower underwriting fees even as it competed directly in the trading of MBS. Freddie Mac had an officer whose responsibility it was to monitor investment bank loyalty and pricing, pitting one bank against another.  

Investment banks also had dramatically greater but more opaque leverage during this bubble than in prior decades as stated leverage ratios approximately doubled. Banks provided some of this leverage, again the amount determined by the credit ratings of the underlying collateral. Much of the rest was short term commercial paper or non-bank repos against rated collateral, much of which was MBS. At year end 2007 the book capital to assets ration for Goldman Sachs, Lehman Brothers, Merrill Lynch and Morgan Stanley averaged 3.33%, exceeding commercial bank leverage.

Table 1 below calculates the weighted average regulatory capital requirements for sub-prime MBS, CDO and CDO squared based on the size of the tranches in Figure 1 above. The top portion of the Table assumes a commercial bank retains the securities (or equivalently sells to other banks). Total CDO and CDO2 refer to the net amount of capital after being securitized twice (CDO) and three times (CDO2) respectively. Two things are noteworthy. First, in every case the total required capital is below the 4% required for whole loans, based on their 50% risk weighting. Second, with a 100% capital requirement for below investment grade retained interests, total capital rises with additional securitization. So the first implication is that if banks were going to retain loans, securitization likely pays (depending on the cost of and availability of deposits relative to investment grade MBS and the value of scarce deposits in other uses). The second implication is that CDOs in this structure didn’t add value unless there is a significant price break due to the higher capital requirements.
Table 1 Sub-Prime MBS and CDO Capital Requirements for Retained and Sold Securitizations

<table>
<thead>
<tr>
<th></th>
<th>Commercial Bank Capital</th>
<th>Securitization Retained</th>
<th>CDO</th>
<th>Total CDO</th>
<th>CDO2</th>
<th>Total CDO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAA</td>
<td>1.6%</td>
<td>81%</td>
<td>62%</td>
<td>88%</td>
<td>60%</td>
<td>88%</td>
</tr>
<tr>
<td>AA</td>
<td>1.6%</td>
<td>11%</td>
<td>14%</td>
<td>5%</td>
<td>27%</td>
<td>5.5%</td>
</tr>
<tr>
<td>A</td>
<td>4%</td>
<td>4%</td>
<td>8%</td>
<td>3%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>BBB</td>
<td>8%</td>
<td>3%</td>
<td>6%</td>
<td>2%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>BB</td>
<td>100%</td>
<td>.5%</td>
<td>6%</td>
<td>1%</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>NR</td>
<td>100%</td>
<td>.5%</td>
<td>4%</td>
<td>1%</td>
<td>2%</td>
<td>.5%</td>
</tr>
<tr>
<td>Total</td>
<td>2.87%</td>
<td></td>
<td>3.15%</td>
<td>3.89%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Investment Bank Capital</th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>BBB</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BB</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NR</td>
<td>4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1.72%</td>
<td>1.70%</td>
<td>1.63%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The bottom half of the table assumes that investment banks that are not subject to the RAP capital requirement of 100% imposed on commercial banks retain the bottom tranches in proprietary accounts. We assume for illustrative purposes that the BBB and maybe the BB can be repo’d with a 2% haircut. The residual is assumed to be funded with commercial paper (and potentially the BB) at an overall firm leverage ratio of 25 to 1 as is common for investment banks. The investment grade securities are all assumed to be sold (presumably to banks for illustrative purposes). The total capital requirement is extremely low, about half that of banks directly, even though the banks provide the repo financing and their SIVs purchase the cp. Retranching not only produces a pricing advantage due to the marginally greater portion in the highest rated securities, but the greater leverage as well. But the basic storyline is that CDO...
tranching facilitated over 94% of the underlying sub-prime mortgage loans to be rated AAA or AA with only 1.6% capital required, as compared to 4% for retained loans.\textsuperscript{115}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
Rating & Yield & Net Coupon 6.5\% & MBS & CDO \tabularnewline
\hline
AAA & 4.75\% & proceeds from sale & $105.91 & $105.74 \tabularnewline
AA & 5.2\% & retained interest & 1\% & 1.36\% \tabularnewline
A & 5.8\% & return on equity@20-1 & BB & 140\% \tabularnewline
BBB & 6.5\% & return on equity@2-1 & NR & 340\% \tabularnewline
BB & 10\% & & BB & 14\% \tabularnewline
NR & 25\% & & NR & 34\% \tabularnewline
\hline
\end{tabular}
\caption{Returns To Securitization}
\end{table}

A hypothetical securitization of a pool of 7\% coupon five year mortgages with a net coupon of 6.5\% is illustrated in Table 2 based on the securitization parameters specified in Figure 1 and capital requirements in Table 1. An investment bank is assumed to sell the investment grade tranches at the assumed yields, and accrue interest on the retained BB and NR interests at their assumed yield. (Note, there is enough assumed yield in the coupon to allow for a weighted average yield on the retained interests to be over 86\% in this case, but lower rates are assumed for illustrative purposes.) The up-front reported profit for the sold interests is about 6\% of par in each case, and the return on equity for the retained interests ranges from 14\% and 34\% at 2-1 leverage to 140\% and 340\% at 20-1 leverage at their assumed yields. Even if we assumed that the rates on the investment grade tranches were 100 basis points higher across the board, the front end profits would still exceed that value of the retained interests which could still accrue the same yields.

Similar results could be obtained with piggyback second mortgages. An industry trade group estimated in early 2007 that there was $850 billion outstanding in second mortgage securities, and most of these were issued to fund down-payments.\textsuperscript{116} The $338 million pool called GSAMP 2006-S5 issued at that time by Goldman Sachs is illustrative. These loans were all sub prime second mortgages issued at the riskiest time in the house price bubble. Without additional leverage, the yield on these second mortgages wasn’t sufficient to attract hedge fund investors. But about half the securities issued against the pool were rated AAA, and only 20\% were rated below investment grade. Assuming a 50\% haircut on the below investment grade, a shocking 90\% of the borrower homeowner equity was financed with a combination of investment grade securities and bank debt.\textsuperscript{117} Assuming banks financed the investment grade with an average 5\% haircut, the total regulatory capital would be only 4\%+10\%=14\% to replace the cash equity normally required of home borrowers to fund their down payment.\textsuperscript{118}
So the up-front profits from securitization swamp concerns with the residual interests. Even if the retained interests subsequently prove worthless, the stockholders would still retain profits of 6% of the gross volume of securitizations in this example. Hence any mortgages that could go through the machine and produce marketable securities were acceptable to the securitizers. Credit risk wasn’t their problem, and higher stated coupon yields increased reported securitization profits regardless of whether or not it was ever paid. So as long as the credit rating agencies weren’t looking at the actual loans, securitizers demanded increasingly risky higher coupon “product” from their originators. As qualified borrowers became scarcer, they actively recruited households that had no thought of buying a home due to their income and credit, and to whom the fees, typically added to the loan principal, and coupon mortgage rates mattered less than the low initial monthly teaser rate payment. Monthly payment, not house price, was the limit. In a role reversal, the lender contacted the household who then went house-hunting, a process sure to result in adverse selection.

The retained interests valued on the books as “marked-to-model” as markets were often thin to non-existent for such securities. Hence they were held at par and accrued the high assumed interest rate. Borrowers didn’t have to pay the coupon rate for proprietary traders to accrue the high yields it as most borrowers were paying e.g. a monthly payment based on a teaser interest rate. Traders holding the retained interests in their proprietary trading accounts would realize annual bonuses, often tens of millions of dollars, for several years based on the high (in this case up to 340%) accrued interest which would not be returned even if the interest was later reversed and the par value was written down to zero. The basic difference between this and the sub-prime securitization of the 1990s is that the investment bankers retained the interests rather than the finance companies, and they had much more leverage with which to fund residual interests.

Additionally, book leverage ratios generally well above 30-1 understated the extent of investment bank over-leveraging for several reasons. First, they used various accounting gimmicks (e.g. Lehman’s 105 accounting rule that hid $50 billion in assets) to move assets off their balance sheet. Second, they held a lot of inherently non-marketable assets such as commercial real estate more suitable for private equity funds or the hedge funds they had become.

The five biggest non-bank investment banks (Goldman Sachs, Morgan Stanley, Lehman Brothers, Merrill Lynch and Bear Stearns) were all mortgage driven with huge balance sheets, several exceeding a trillion dollars, which could hardly be considered “dealer inventory.” In spite of this, the SEC voted in April of 2004, just prior to the housing market moving from boom to bubble, to designate these five as “consolidated supervised entities” (CSEs) and lower their capital requirements. The theory was based on computer models in the 1988 Basel I Capital Accords. Estimates at the time suggested this would allow an increase in leverage of from 50%-100%, with much of the additional leverage to be provided by insured commercial banks, and the rest
with commercial paper and foreign and domestic bonds. They implemented this rule with no apparent change in supervision.

Investment banking stockholders should have been concerned with the moral hazard of proprietary trading. While none were partnerships, Goldman’s managing directors had the greatest long term stake in the firm and were the first to slow the securitization process down and to partially hedge the proprietary asset holdings. Some of the most vocal opponents in the managerial ranks of the other firms, particularly risk managers, were shown the door as they were at Fannie Mae and Freddie Mac. But stocks were trading at an all time high, largely driven by the reported sub-prime MBS securitization and trading profits. Whether this was all “tail risk” as was LTCM was not an immediate concern of stockholders, many of whom were foreign and some of whom were sovereign wealth funds.

**Equity Funding by Public Pensions**

It became fairly common for a proprietary trader to leave and establish his own hedge fund. The investment bank would “sponsor” this fund with a significant start up capital investment. In return, the fund manager would purchase the most difficult to sell MBS securities. This reduced balance sheet leverage, but whether such assets were truly sold was a matter of subsequent legal controversy in the event of bad performance.

Hedge funds whether or not affiliated with an investment bank were virtually the only buyers of below investment grade sub-prime MBS, and were major buyers of even AAA sub-prime MBS due to their ability to leverage these purchases. Buying all these tranches was likely highly profitably for hedge fund managers during the first seven years of the decade, as they shared (20%-25%) in the reported excess returns above their treasury target. Moreover, hedge fund managers are reluctant to exit an increasingly risky market prematurely because they don’t share in the downside losses. But their investors did! Other than investment banks with a conflict of interest, the question was who was investing in these hedge funds and were they considering the downside risks?

Hedge fund assets quadrupled from 2000 to 2007, and approximately doubled during the bubble from mid-2004 through year end 2007 (Hedge Fund Research) and most of this doubling of funds during the bubble apparently came from public pension funds. Some public pension money managers had also been investing directly in sub-prime equity tranches since the 1990s for the perceived yield. Most managers of public pension funds have an incentive compensation plan similar to that of hedge fund managers, i.e. they get bonuses based on the excess earnings in good years with no downside risk. This risk-seeking structure wouldn’t make much sense for government guaranteed defined benefit pension plans that arguably should be invested in relatively risk free securities. But higher returns meant lower contributions that, especially for public employee unions, translated into higher promised benefits that taxpayers then guaranteed. In addition, many plans have a provision for beneficiaries to reap any “excess” earnings in the form of bonus retirement pay-outs of an extra month a year, while taxpayers are responsible for the losses. This created a moral hazard incentive distortion quite similar to
deposit insurance and GSE backing. It is thus likely that even independent hedge funds, like the investment banks and originators, invested this money in the riskiest sub-prime-related securities with insufficient regard for the underlying risk.

**Universal Banks and TBTF**

There were only three large universal banks prior to the crash, JP Morgan Chase, B of A and Citicorp. JP Morgan Chase was created in 2000 after Glass-Steagall was repealed, but was still a merger of two banks and was a fairly minor player among investment banks during the bubble. Citicorp was the only one with a large well established proprietary trading desk, so this is a small sample from which to draw conclusions regarding the repeal of Glass-Steagall. This is especially true since the JP Morgan CEO Jamie Dimon had been expected to become the Citicorp CEO until he got into a dispute with his mentor, former Citicorp CEO Sandy Weil. Chuck Prince inherited that role because as Citicorp General Counsel he had been instrumental in getting Weil out of a big personal legal jam. He in turn relied heavily on former Goldman Sachs trader and US Treasury Secretary Robert Rubin. Basically, Rubin pushed risk while Dimon shunned it.\(^{123}\)

Citicorp exploited regulatory arbitrage more than any other bank, as previously described. It is no coincidence that Citicorp, was the sponsor of 6 out of 16 SIVs and that the sponsored SIVs were repositories of the sub-prime securities being issued by Citi’s investment bank, particularly the most toxic CDOs. In addition, it expanded the old now renamed Salomon Brothers proprietary trading desk. It also built the largest inventory of residual interests from its own securitizations. Eventually, it even gave buyers of its CDOs a free par “put” to nominally get the assets off its books. Blundell-Wignall and Atkinson (2008, pages 84-88) estimate Citi’s total book assets too be over $2.6 trillion as of the end of the third quarter 2007, with book capital of $87 billion, a capital ratio of 3.75%. But they estimate that total off-balance sheet assets were more than 50% of those on the balance sheet.

Most of Citi’s transgressions were those of a TBTF commercial bank. None of this additional risk reflected the repeal of Glass-Steagall’s prohibition of traditional investment banking and market making. Some of it reflected the development of a “proprietary trading” hedge fund within the investment bank which was then combined with a commercial bank. This brought the leverage that banks had been providing to investment banks with repos in house, making it more difficult to subsequently unwind. More specifically, the problem is proprietary trading at TBTF banks, whether commercial or investment.

**The Bubble Continues to Inflate**

**The Musical Chairs Encore**

By 2005 evidence that the housing boom had turned into a bubble was widespread, and had been reported on by the Economist magazine for at least five years. House prices started declining in some markets in 2005 and by the middle of 2006 there were many warning signs that the housing market was highly inflated and that the sub-prime mortgage bubble would
inevitably end. Book leverage within the banking system and at the GSEs was at record levels, and risk to book capital was greater still. But even after the housing boom of the first half decade, the private and public mortgage investors still hadn’t met their “affordable lending” and homeownership quotas and were anxious to continue lending. On the one hand, skyrocketing GSE security issuance during the boom and bubble years and the enormous risk exposure, leverage and borrowing of particularly the very large commercial banks should have been alarming, at least to regulators that had more access to information than bank investors. On the other, this had been going on for a long time and had been very profitable for all but the shorts.

Raghuram Ragan (2010) a University of Chicago economist, describes how in 2005 at the annual FRB conference in Jackson Hole he presented the thesis that the housing bubble was about to burst and was treated as if he had taken away the Fed’s proverbial punchbowl. Fed Chairman Alan Greenspan famously argued at the 2002 annual gathering that it was not the Fed’s role to intervene in asset bubbles. Rather than raise interest rates in 2005 or 2006, the Fed took no action to deflate the mortgage finance bubble which continued to inflate even in the face of falling house prices, spurred on by politically popular low interest rates. What sustained the bubble for another year to mid 2007?

“They Shoot Horses, Don’t They”

Some sub-prime MBS investors recognized the danger signs of sub-prime lending as early as January 2004 (Lewis, 2010 pp.27). As the sub-prime mortgage bubble continued to expand and some of these stories surfaced about the spate of defaults, the potential returns no longer justified the risks. Investors in the highest rated tranches of sub prime securities and the derivative CDS started dropping out of the dance contest in mid 2006. Some investors and particularly the investment bank Goldman Sachs with continued partner interests used CDS to partially hedge existing and ongoing investments as well.

But betting on the bubble remained profitable and hence rational for all but taxpayers and stockholders of several major trading firms right up until it started rapidly deflating in mid-2007. Most homebuyers by that time were getting a free lunch, with a house thrown in! Investment banks, hedge funds, money managers—essentially all of “Wall Street,” except those few speculators who had been shorting the market—was still reaping gains. Even public pensioners were receiving bonus pension payouts for investment performance that could be traced back to the sub-prime lending machine. Few investors were brave enough to bet against the market before the end was in sight, and that end can be difficult to discern even as defaults were rising when so much publicly backed money is propping up the market and increasing the tempo. One could easily short GSE stock based on a guess of technical insolvency, for example, but calculating the political bailout risk was much more difficult. As Citicorp CEO Prince is widely reported to have said in the spring of 2007 “as long as the music is playing you’ve got to get up and dance.”
The TBTF commercial banks and investment banks that underwrote and distributed sub-prime securities kept the dance going by stuffing ever more of the resulting MBS and CDO securities in their sponsored SIVs and hedge funds and on their balance sheets in proprietary trading accounts as well. One TBTF universal bank—JP Morgan in 2006—pulled back from the market, while the other—Citibank—continued to dance until the music stopped. That’s because managers were protecting their 2007 bonuses, which most still got in spite of the falling prices for sub-prime MBS. The machine was able to produce reported profits from these toxic securitizations, at least until late 2007 by holding the toxic securities and financing them with short term repos and cp. It is also the case that the particular crop of CEOs at the handful of TBTF firms running securitization machines displayed more than the normal CEO hubris, not realizing the source of the profits and attributing it to their personal skills, failed to react. But many investors figured it out before the profit decline and started selling their stock.

The Music Stops Playing

The music stopped playing in the summer of 2007. The ABX index, purportedly an index of trading prices for asset backed sub prime mortgage securities but as actual trading was so thin it reflected the cost of CDS insurance. This insurance was in great demand due to the massive over-exposure of investors to sub-prime MBS, and was in short supply after AIG backed out, so CDS prices skyrocketed as the shorts used it to bet against the market. This drove down the ABX index sharply all year. It was the “greedy Wall Street speculators” not regulators who eventually performed the public service, albeit belatedly, of pricking the mortgage bubble as more hedge funds joined in shorting the sub-prime mortgage market (Lewis, 2010). They chose private sub-prime MBS as the less overtly political playoff shorting the GSEs, but in full recognition that they were betting against the stability of the US Financial system (Lewis, 2010). Paolo Pellegrini is reported to have made $15 billion net in 2007 from this strategy for the Paulson and Co. hedge fund, which was only about twice this size, a huge bet that if made prematurely could have wiped out his fund. So any resulting hedge fund losses from sub-prime MBS at the end would appear to be related to strategy rather than inability to exit before the music stopped.

When investor purchases of sub-prime MBS slowed in 2006, the nation’s tenth largest sub-prime lender, American Home Mortgage, was not bank affiliated and hence was forced to hold more securitization interests on its balance sheet. They filed for bankruptcy in August 2007 when they could no longer fund this balance sheet. That same month the highly leveraged Bear Stearns sponsored hedge fund supposedly invested in low risk super-senior AAA MBS had been losing investors to redemptions due to rising market pessimism as delinquencies soared. Goldman Sacks gave a market price of 50 cents on the dollar for their assets held and financed at par, and when Merrill Lynch seized $400 million of repo collateral it received bids of only 65 cents. And this was supposedly for the good stuff! By August 2007 the securitizers had become the market for new issue MBS and there was no secondary market. The fund couldn’t meet collateral calls and redemptions. The proprietary trading desks and hedge funds that had gorged
on sub-prime were now way over-stuffed and the securitization machine grinded to a halt. This was the second day the music stopped playing.

Google “Sub-prime Mortgage Crisis and Panic of 2007” and you will get over 400,000 hits. Economists assume that whenever a price index drops so precipitously as did the ABX it reflects irrational panicky selling by investors. But there was no irrational exuberance turned to panic. Even the less astute fixed income money managers were aware by 2006 of widespread criticisms of credit rating agencies as reported in the financial trade press of the time and many simply stopped purchasing new issues. The dramatic drop in the price, alternatively increase in yield, didn’t reflect a change of credit risk premium of that magnitude so much as the initial attempts to de-leverage in what was a very thin market. Investor perceptions of credit loss changed somewhat gradually over a three year period from 2006 through 2008 when the rating downgrades swept the market, as discussed below.

The Deflating Bubble, the Crash of 2008, Contagion and Subsequent Bailouts

Mortgages are long term investments, and the Federal Reserve apparently viewed the looming default problem ind-2007 through a historical pre-securitization lens of tradition portfolio lenders or buy-and-hold investors. The failure to realize that virtually all these sub-prime MBS securities were funded not by long term investors but in the regulated banking and “shadow” banking systems is the source of the systemic financial system collapse and contagion a year later. (The “shadow banking” discussion here follows Gorton 2008, 2009, 2010.) That, in turn precipitated the massive bailout with its extensive negative repercussions.

The focus of this paper thus far has been on how political incentives that are not aligned with the goal of prudential regulation and supervision could create this lending bubble. This discussion addresses how policymakers mis-handled the required de-leveraging and how the incentives facing politicians and regulators in the aftermath, particularly when they were implicated in creating the bubble and systemic crash in the first place, worsened long term moral hazard.

The Bubble Deflates mid-2007 through mid-2008

By August of 2007 the housing production boom had turned to bust, the housing price bubble was rapidly deflating, and home sales were plummeting. Mortgage delinquencies and defaults and foreclosures were skyrocketing. But foreclosure and loss is a long drawn out process, and there was still optimism regarding the ultimate cost of default. This optimism was reflected in the statements of Federal Reserve policymakers, as officials there remained bullish on the financial system and economy even as the market for sub-prime MBS was crashing. In late May 2007 Chairman Bernanke stated “we believe the effect of the troubles in the sub-prime market will be limited, and we do not expect significant spillovers from the sub-prime market to the rest of the economy or the financial system.”131 In late October of 2007, well over a year after the
sub-prime securitization machine had started slowing to an eventual halt, William C. Dudley, then Executive Vice President (now President) of the FRB of NY asked “How did the problems in the sub-prime mortgage market—with losses that ultimately will probably turn out to be in the range of $100 to $200 billion—lead to such broad market distress?\textsuperscript{132}

Dudley’s question was on the mind of many investors. The sub-prime loans were, after all, backed by houses, not tulips. Prior to securitization, traditional portfolio lenders or buy-to-hold investors had to reserve for “asset impairment”, which essentially translated into predicting losses that would be realized in the near future. In the traditional model, additional reserves would prove necessary as actual losses exceeded forecasts. This process has taken four to five years or more in the past, during which time earnings would replenish capital, and in the interim investors would receive lower dividends and or capital gains. These losses would affect long term savers, e.g. 401k accounts, etc. as well as banks, some of which would fail, but they wouldn’t threaten the global financial system.

The answer to Dudley’s question is threefold. First, virtually all of the loans had been securitized, and very little of this was funded by buy-to-hold investors. Most of these securities had been indirectly funded by short term commercial paper (cp) or medium term notes (mtn) or “overnight” repos in the “shadow” banking system. The regulated commercial banking system indirectly backstopped the shadow banking system and funded a large share of these securities directly as well. Second, the excessive leverage was systemic. Third, the untimely implementation of mark-to-market accounting likely accelerated a downward spiral of MBS and bank stock prices.

His optimism in this case prove to be unwarranted because he and the investors didn’t realize how a small decline in house price could lead to such a large increase in borrower defaults as unqualified borrowers couldn’t refinance into new teaser rate loans, and optimism would gradually change to pessimism over the next two years. But the shadow banking system was too over-leveraged and fragile to withstand the stress that even his optimistic views would cause.

**The Regulated and Shadow Banking Systems**

The “shadow” banking system grew out of the money market funds introduced in the 1970s to rival the regulated banking system in size and scope (Gorton, 2010). Trillions of dollars of illiquid sub-prime mortgage securities worked their way into this near banking system primarily through SIV and investment bank 30 day commercial paper and overnight repos on the premise that prices for “liquid collateral” couldn’t change more than the haircuts (over-collateralization) over this short a time horizon. Many financial as well as non-financial corporate treasurers skipped the money market funds entirely and invested their cash directly in commercial paper explicitly or implicitly backed by sub-prime MBS, or even lent on repos of the underlying collateral. Marketable sub-prime mortgage securities may not have been “liquid”, but as long as markets were continuous these protections would suffice.
For SIV holdings, the haircut may have been 1%, depending on the collateral’s rating. For overnight repos, there was virtually no haircut (Gorton, 2010, pg. 13). This worked fine during the boom years. Unlike the retail fear and irrational panic attributed to depositors in the Great Depression, the run this time was by institutional investors and there was nothing irrational or panicky about it. Whereas traditional long term investors have no incentive to sell so long as their credit risk perception mirrors that of the market, short term investors want liquidity. As they were funding repos and commercial paper at or close to par, the slightest drop in price could cause widespread selling. But the flaw in this reasoning was again demonstrated beginning in the summer of 2007 when even as Merrill refused to sell at the 65 cent bid sub-prime related prices went into a virtual free-fall, but the real lesson was that there was no other side of the market.

About $400 billion of SIV cp and medium term notes expired in 2007 without being rolled over, a pace that continued in 2008 until the SIVs were completely absorbed by the banking system or liquidated. Over 90% of the assets that they funded were in residential, commercial or second mortgage MBS or investment bank borrowing backed by the same (S&P). As deposit insurance was limited to institutional investors and banks were already extremely leveraged, investors in the shadow banking system would naturally migrate to Treasury securities for liquidity. Whereas some economists argue that these investors didn’t role over the SIV paper due to “informational asymmetries,” that presumably kept them from distinguishing the most risky from the less risky, they were all in fact too risky fund in this way. These investors just demanded and then exercised their commercial bank put.

The haircuts on repos for asset backed collateral followed a path similar to that of SIVs, rising from zero in the summer of 2007 to about 10% by year end, 15% in mid 2008, and 25% by fall 2008 (Gorton 2010). The more they sold to meet collateral calls, the more prices fell, precipitating further calls. As the foundation of repo lending is price stability, repo lending essentially dried up.

Systemic Excess Leveraging

Once prices of sub-prime related MBS started falling, there was no stopping them. Commercial banks and investment banks around the globe that had invested in the most toxic of these highly rated securities all had to dramatically de-leverage when the music finally stopped playing. When bank loans for leveraging sub-prime investments and SIV commercial paper dried up, there were very few buyers for sub-prime related securities at any price. The ensuing ratings downgrades to below investment grade on most of the underlying collateral further limited the ability to sell them. The hit to capital was more than most could bear, so they were forced to sell their better assets that had fallen less in price to raise cash.

The traders, many of whom had made hundreds of millions of dollars for themselves and the firm during the boom had convinced themselves and management that their positions were “liquid” and they could get out of these trades when the time came. The GSE securities generally remained “marketable” due to their perceived public backing, although spreads did widen as
these were sold off. But as prices of private MBS and derivatives continued to fall traders were generally able to convince senior management (most often former traders) that prices were “distressed” below their intrinsic value and “liquidity” would return. Senior management was also optimistic, not wanting to take the hit to earnings and capital. Thus by the time of the bankruptcy filing well over a year after prices started falling precipitously, Lehman Brothers still had over $600 billion in debt, much of it in very short term repo and cp.

The over-leveraging was in fact so massive and so systemic that the financial system could not de-leverage on its own. During this period of massive de-leveraging there were few buyers with cash who could legally buy the no longer investment grade MBS and derivative securities. Even the too small pool of “bottom fishers” who could buy junk didn’t want to “catch a falling knife.” While perceptions of sub-prime credit risk had clearly turned negative, it was not credit panic, rational or otherwise, that hung a for-sale sign on the entire market at this time, but illiquidity of both the commercial and shadow banking systems. Market prices became severely distressed relative to investor and policymaker perceptions at the time due to the ill-fated attempt at systemic de-leveraging.

**Mark-to-Market Accounting**

Regulators had lobbied for years to impose mark-to-market accounting in place of mark-to-model as allowed by the then current rules, and this was implemented in late 2007. The timing couldn’t have been worse. In a re-play of the S&L crisis, regulators continued to require mark-to-market write-offs in the virtual absence of any trades. As the book net worth of sub-prime laden bank and investment bank balance sheets was driven down by these marks, making survival questionable, raising capital became increasingly problematic as the bubble deflated. This made it even more difficult for banks and investment banks to de-leverage (Gorton 2008, p63-65).

Estimates of actual net credit loss increased about ten-fold during the ensuing 2 years. Land prices had inflated rapidly all during the boom, falling as much as 90% when the bubble deflated. In addition several years worth of excess housing supply had come on the market. Moreover the US and much of the world was entering into a recession by the last quarter of 2007, at least partly due to the sub-prime collapse, which further depressed investor sentiment regarding the intrinsic value of these securities. We will not know what the actual cash flows are until after the default, forbearance, foreclosure, resale and housing market recovery is complete which as of this writing is still several years off.

Defenders of mark-to-market accounting note, with the benefit of two years of hindsight, that the so-called “distressed” prices may not have been that far off the mark, as defined by the total loss now projected over the life of the security. But clearly Fed officials thought they were distressed based on their expectations at the time. Even with the subsequent ten-fold increase in expected loss, the debate continues as to whether the mark-to-market prices in late 2008 over-shot the ultimate value of these subsequent actual cash flows. Mark-to-market accounting has always been problematic. The concept gained acceptance in the 1980’s as a way to measure
interest rate risk, but it was flawed even in that application. The treatment of loans is entirely
different than “investments” assumed to be marketable, even when they no longer are. Hence
its application has always been selective and ad hoc. It was not applied to commercial bank
loans to Latin American governments in the 1980s, for example, which were written off more
leisurely over a decade.

The Financial Market Crash and Contagion of Late 2008
The global collapse of the financial system in September through December of 2008 was
unprecedented in its combined speed, scope and depth. The plummeting price of sub-prime
securities was sufficient reason to cause the general loss of confidence by the shadow banking
system and a rational flight to Treasury securities. As Bartholomew and Caprio (2000, page 360)
point out, moving systemic risks to the less regulated non-bank financial sector may make crises
originating in the banking sector less likely, but the risk to the financial system may grow, with
spill-over back to the banks. This is essentially what happened. There were three channels of
contagion. The first was the GSEs. The second was the TBTF commercial banks. The third and
most important, based entirely on the actions of regulators, was the Lehman Brothers failure
that finally triggered the systemic collapse of the “shadow” banking system itself more than a
year after the collapse of the sub-prime market.

The GSEs
The crisis became international partly because US Treasury securities are pervasive, with over
half held by foreigners. Investors globally, including many central banks, treated GSE securities
as equivalent, investing trillions of dollars for the slightly higher (quoted, not expected) yield.
The GSEs have promoted their securities to investors globally for at least three decades, and the
Chinese central bank alone held over a half trillion dollars in GSE securities in late 2008. Had
they let them default, this would have undoubtedly been the triggering event of the systemic
collapse. Hence as these investors became increasingly nervous and vocal the Treasury had to
recognize their equivalence ex post by putting the entities in conservatorship in September
2008. Although it still did not explicitly back their debt, it has no choice but to do so now.

Commercial Banks
As the transparency of financial firm balance sheets further dissipated, the solvency of financial
institutions around the globe was called into question. Commercial bank capital and safety was
being questioned by large institutional customers. Large US based international commercial
banks virtually stopped freely lending to one another in the Fed Funds market. In addition, the
internationalization of bank regulatory requirements resulted in heavy concentrations of US
originated toxic but investment grade rated sub-prime mortgage securities in numerous large
international and foreign banks.

The Failure of Lehman Brothers Triggers the Crash
By September 2008 Lehman Brothers still had $600 billion of short term debt obligations that it could no longer re-finance backed by an incredibly illiquid and increasingly unmarketable portfolio. The precipitous drop in market values of sub-prime related securities had largely shut down the repo market by then. In addition, the collapse of market prices caused Lehman Brothers book capital to evaporate. The impending downgrades of their credit rating made further issuance of their cp problematic.

The price decline caused some money market funds to “break-the-buck” (fall below par). At the time of the Lehman Brothers bankruptcy, the money market manager who was the most vocal opponent of purchasing any commercial paper had over 1% of his own fund, the Reserve Primary Fund, invested directly in Lehman Brothers cp, and this fund is illustrative of the impact the failure had on the shadow banking system. The Reserve Primary Fund, almost $100 billion, had 1.2% of their holdings invested in Lehman Brothers CP. Redemptions skyrocketed within minutes of market opening after the 2am Sunday night Lehman Brothers bankruptcy filing, to $5 billion in the afternoon and to $25 billion overnight, shutting down the fund (Lowenstein 2010, pp205). Investors in this fund received over 99% of par value over the next two years, but the damage to the payment mechanism had been done.

Most analysts agree that the loss of confidence in “near” money in the shadow banking system was the cause of the systemic contagion. The Lehman Brothers default in mid September 2008 is considered by most observers to be the trigger that brought credit markets crashing to a virtual standstill. If not “too big,” Lehman Brothers was “too systemically integrated” to fail, at least without severe market disruption. But Lehman’s bankruptcy isn’t the only potential cause. Kane (2009, pg. 24) cites sharply deteriorating consumer confidence and the President's televised address on September 24th. Taylor (2009, pg. 28) argues that that the perception that policymakers didn’t understand what they were doing and the uncertainty of the proposed bailout actions precipitated the crisis.

In the ensuing systemic rush for liquidity, sellers overwhelmed buyers for all but risk free liquid US Treasury securities. Investors sold their most liquid assets first to raise the most cash, simultaneously minimizing the hit to earning and capital. Many economists view the rising spreads on these assets that resulted from this selling as evidence of a rising credit risk premium, hence panicky selling. But the rush to liquidity was systemic. The SIV and repo market was never structured to survive a systemic liquidity crisis, and investors in cp and repo never intended to make hard discretionary credit assessments. That doesn’t mean that panic had spread to a concern with the credit quality of all assets. It does suggest that the Fed failed to maintain system liquidity.

Securitization Lessons Learned?

Is there Good and Bad Securitization?

Whether there is more to securitization than regulatory arbitrage is still in dispute. Some, e.g. Jaffee et al. (2009) continue to believe “the securitization of the mortgage market is one of the
great stories of financial innovation.” In our view the inability to intermediate cash flows
remains an investor drawback and the purported diversification advantages of securitization can
be achieved by other means, e.g. by equity and straight debt or covered bonds issued by banks
and/or finance companies.

Others, e.g. Guttentag, (1996) argue that better management techniques, technologies and the
availability of hedge instruments give mortgage capital markets a universal absolute advantage
over commercial bank funding. But all of these techniques, technology and instruments are
available to and typically used by deposit based lenders as well. Guttentag essentially makes the
leveraged buyout case for mortgage bankers, i.e. that the imminent threat of bankruptcy forces
them to manage operating and financial risks better than banks. We generally agree, but this is
really a moral hazard of bank deposit insurance especially for TBTF banks that is mitigated
somewhat by operating origination and servicing as separate profit seeking subsidiaries of bank
holding companies.

Levitin, Pavlov and Wachter (2009) argue that investor pricing models caused them to under-
price credit risk of sub-prime MBS and the lack of a market to short these investors allowed the
magnitude of miss-pricing to grow until the resulting failure was systemic. In our view, there was
no collusion among investors in the choice of pricing models, no shortage of shorting
mechanisms and no ex ante price to charge borrowers that could have prevented the
subsequent investor credit losses. Rather, there were few if any traditional at-risk investors in
investment grade MBS that were pricing credit risk.

Gorton (2008, pg 75) is a big defender of securitization even after rendering his diagnosis that a
particular security design caused the systemic collapse of the financial system:

“Securitization is an efficient, incentive-compatible, response to bankruptcy costs and
capital requirements. Although there are only a few studies, the evidence to date is
consistent with the experience of a quarter century of securitization working very well.
The assertions of the —originate-to-distribute view simply are not consistent with what
we know. The idea that there is a moral hazard due to the alleged ability of originators
to sell loans without fear of recourse, and with no residual risk, also assumes that the
buyers of these loans are irrational. That may be, but the irrationality, it turns out, had
to do with the belief that house prices would not fall.”

He views the problem as one of technical design flaw, i.e. that house prices had to keep rising to
facilitate the refinancing required to prevent defaults, and believes that investors didn’t
understand this because they were likely tricked by securitizers. Blaming the systemic collapse
of the global financial system and world economy on a presumably little understood technicality
is somehow not more comforting than our moral hazard explanation. Our disagreements with
his reasoning as explained thus far are briefly summarized below.

**Investors:** Investors made a rational regulatory-sanctioned decision to rely on the credit rating
as part of the securitization model. Their mistake was in trusting regulators. The PMIs were the
traditional securitization gatekeepers and most likely they did understand the risk, which would explain why they exited the market early.

**Regulatory Capital:** We clearly agree with the second part of his assertion that securitization is an efficient response to capital requirements, but the capital requirements are severely distorted. If you assume that the cost of equity is the least distorted by government interventions and hence no more expensive for originators, especially for TBTF banks presumably with preferential access to capital, then we conclude that when securitization becomes a better execution than raising capital to facilitate on balance sheet securitized funding or FHLB advances, this most likely reflects its additional leverage, i.e. regulatory arbitrage.

**Incentive Compatibility:** We’ve cited massive private and public incentive conflicts in the securitization chain that worked against the investor’s interest: 1. mortgage broker/mortgage banker, 2. mortgage banker & finance company management/shareholders, 3. proprietary traders/shareholders/taxpayers, 4. banks/shareholders/taxpayers, 5. investment & hedge fund managers/investors/taxpayers, 6. raters/shareholders/investors/taxpayers The essence of his argument that securitization incentives were aligned is that lots of participants lost a lot of money when the crash came. We have three problems with that argument. First, taxpayers were the biggest losers, which skewed the *ex ante* behavior toward excessive risk taking. Second, the *ex post* losses to which he refers should be weighed against the cumulative prior gains in all cases. Third, shareholder losses occurred in industries previously owned by the management precisely to mitigate agency conflicts, and these industries were converted to stock form in part to accommodate securitization.

That the originate-to-sell model played a key role in the facilitating the sub-prime crisis due to insufficient incentive compatibility is hard to deny. That doesn’t mean that there is no such thing as good securitization. We support virtually unlimited financial innovation, but not when it is driven by tax and regulatory arbitrage. The proof of Gorton’s conclusion is whether markets with an efficient bankruptcy procedure not suffering from severe political distortions will securitize in the historical US manor. This test would require non-distorting tax and regulation, something we haven’t yet had.

**Is GSE Securitization Better than Private Label?**

Does good securitization require a GSE guarantee? The government guarantee mitigates systemic risk, and hence was unneeded for Ginnie Mae and was made a bit more explicit for Fannie Mae and Freddie Mac. The Treasury and Fed could also have extended this to private label MBS to limit systemic damage, so this proves nothing. The more fundamental question is whether the bubble would have been funded in an alternative policy environment.

Had there never been GSEs, then the private securitization bubble could arguably have funded both the GSE share and the private share. But would they? While it is true that populist pressure played a role in weakening underwriting guidelines for private originations, this pressure was no where near as great as it was at the GSEs which needed to justify their franchise value by
accepting a public mission that by this time accounted for well over half of their purchases. FHA would more likely have been used for credit allocation in the absence of Fannie and Freddie, but with budget subsidies as provided in the Nixon years to support homeownership. Private label securitization was pushed down market by the overwhelming GSE funding advantage.

Alternatively, could the GSEs have funded the entire bubble in the absence of the private securitization? The adverse selection and systemic risk was not in the long run interests of their shareholders. But it is not at all clear that management could have resisted the political pressure. In addition, the stockholders had always resisted raising capital requirements to the level necessary to sustain this lending. The experience of the first two years of conservatorship reinforces the view that the would likely have funded it all.

Blundell-Wignall and Atkinson (2008, pages 82-84) examine the reason why the GSE market share of securitizations fell from 50% in 2004 to below 40% in mid 2006 before again rising to the prior level. There were two statistically significant reasons. First, the OFHEO imposed an additional 30% capital requirement over the minimum in 2004. This reflected their concern with the massive accounting scandals at both enterprises rather than with the housing boom. The requirements were later lifted when the audited accounts were finally released in 2006. Second, Basel II was published in June of 2004 which would further lower the bank capital requirements for mortgages and residential MBS, increasing the desirability of private label securitization.

Having both private label and GSE securitization may have made things worse as competition between the GSEs and private securitization clearly added fuel to the bubble. Had the GSEs stood aside, it seems likely that investors in private label MBS would have wondered why and potentially smelled a rat a bit earlier.

Had neither securitization model existed, then mortgages would have been funded by deposit institutions and wholesale at-risk investors, and we would probably still have a viable thrift industry. While leverage would still have been excessive, it is difficult to imagine a comparable deterioration in underwriting by portfolio lenders. In addition, without securitization the credit risk would not have been funded by the shadow banking system and contagion would have likely been avoided.

This is all speculation in the realm of political economy. But both securitization models are fundamentally flawed by political distortions and neither model has any economic justification for continuation as historically practiced.

**Regulatory Lessons Learned**

This Financial crisis was very much like a war in which the Federal Reserve was at the center of the fighting. In the aftermath of a war books are being written about the conquering heroes; see for example David Wessel In FED We Trust: Ben Bernanke’s War on the Great Panic, Crown Publishing, 2009. Did the Fed save the day or make matters worse? Opinions obviously differ and we do not question character and intent. The Fed should have discretion to act and at times
do so opaquely, but within a strict set of rules. The unsettled policy issue is what happens when it is way behind the curve and believes it is facing a crisis?

In our view: The Fed had the primary duty and responsibility of preventing the last bubble, which it was complicit in inflating. It had the responsibility to prevent regulatory arbitrage and excessive leverage that financed the bubble, which it ignored. It had the responsibility to deflate it, in which it was derelict. It had the responsibility to manage an orderly de-leveraging of the financial system to prevent systemic collapse and contagion, in which it was arguably slow and tepid. It had a responsibility to provide systemic liquidity support without bailing out insolvent firms and exacerbating moral hazard, which it arguably didn’t do. It extended government protection to proprietary trading and hedge fund activity, which worsens the potential for systemic risk. It then requested appropriations, which vastly expanded the scope of the bailout beyond financial firms, opaquely distributing subsidies and reducing the public’s acceptance of such measures in the future.

But there is plenty of regulatory and political blame to go around.

The Sub-Prime Lending Bubble
This was most egregious from mid 2004 through mid 2007 and was fueled by extremely low mortgage rates. Political intervention, regulation and protection replaced market discipline at all the gatekeepers. Then the regulators outsourced private label securitization risk analysis without any oversight and caved to political pressure on underwriting.

The sub-prime crisis couldn’t have occurred without the complete lapse in primary underwriting. What may seem surprising is that those regulators at the OTS, OCC, FRB, FDIC, and OFHEO (now Federal Housing Finance Authority or FHFA) whose responsibility it was to maintain high underwriting standards to protect the safety and soundness of the firms they regulated failed across the board to do anything about it. That regulators had conflicting goals is the most plausible explanation. The Justice department was still threatening discrimination suits, and even Fed Chairman Ben Bernanke bragged in November of 2006, just before the bubble burst, of the large gains made in the homeownership rate, particularly among racial minorities. HUD which oversees FHA as well as the GSEs was increasing affordable housing goals even as FHA was cutting back and HUD had to know what was going on. But the political pressure favored continued lending.

Regulatory Arbitrage and Excessive Leverage
Investor due diligence was replaced by risk-based ratings that bank regulators and the SEC outsourced to the private credit rating agencies. Prudential regulators delegated the responsibility to the NRSROs without describing their responsibility, asking them to accept it or conducting the regulatory oversight necessary to make it work. The Fed was well aware of regulatory arbitrage and Federal Reserve Board researcher David Jones (2000) published a paper on this topic. No regulator was assigned the task of eliminating the potential for regulatory
arbitrage. These two regulatory failures explain why private label securitization funded bad assets. Politicians have not yet held regulators accountable for failing to oversee the credit rating agencies or for allowing excessive often off-balance sheet leverage at insured commercial banks.

State and local taxpayers are already being asked to make up the funding shortfall from bad hedge fund investments by their pension plan managers. There is as yet no evidence of politicians holding investment managers accountable for failed hedge fund investments.

Politicians now demand coddling of past borrowers while getting tough with lenders. Fannie Mae and Freddie Mac are liberally interpreting representations and warranties to require an unprecedented number of repurchases.

**Deflating the Bubble and De-leveraging the Financial System**

The Federal Reserve, along with others, regulates commercial banks to prevent credit losses from undermining confidence in the payments mechanism. As the de-facto systemic regulator, it is also responsible for monitoring the shadow banking system. The money market extension of eligible collateral from Treasury securities to AAA corporate paper had proven safe for decades. But by 2007 trillions of dollars in transactions balances were now exposed to sub-prime credit default risk and other risky assets. Well over a trillion dollars of the SIV commercial paper could be paid off and the assets put back to commercial banks, and as SIVs collapsed and couldn’t sell their collateral, that’s what they did. The banks could also seize collateral from investment bank repos. But that didn’t get the problem out of the regulated banking system.

The Fed should never have let the commercial and investment banks put them in this position in the first place, especially after the failure and bail-out of LTCM a decade earlier. Cp and repo buyers are in an inferior position to measure the capital adequacy of issuing firms, and would likely have avoided firms and instruments too complex to readily evaluate in the absence of SEC determined credit ratings and capital requirements. But the capital rules for these borrowers were set by the SEC and bank regulators, not the market, and the SEC had just lowered them at a time when they should have been raised. The logical regulator of this moral hazard would have been the Fed as protector of the payments mechanism.

Having been instrumental in funding the crisis and letting banks finance it off balance sheet, the Fed was already behind the curve by mid 2007. Any actions taken then would likely be costly because they were facing both a systemic liquidity crisis and a looming credit default crisis. But Fed officials didn’t seem to understand how a small decline in house price could cause a large increase in defaults, creating a vicious downward house price and default spiral. They similarly didn’t seem to understand how a small decline in the price of securities could lead to investors not rolling over commercial paper and repos, creating a similarly vicious downward spiral in security prices.
The TAF auction facility introduced in December of 2007 did advance $450 billion by year end 2008. But the fact remains that from mid-2007 to mid-2008 prices and capital spiraled downward with little public intervention to stop them, subsequently preventing an orderly de-leveraging of the financial system.

Had regulatory accounting treated these securities as held for investment and reserved against anticipated credit impairment—essentially treating them as loans—the immediate write downs would have been substantially less. Having spent decades lobbing to implement mark-to-market accounting tools, however, regulators were apparently reluctant to waive them even when there were no markets.

Had the Fed provided all the necessary systemic liquidity support through the discount window, or purchased the underlying toxic assets financed by the sale of treasury securities starting in mid 2007 (as proposed in the Troubled Asset Relief Program (TARP) a year later) the distressed sale of virtually all assets could have potentially been avoided. This wouldn’t have directly changed the ultimate sub-prime losses due to default, but it might have allowed banks and investment banks to sell more assets and raise more capital without the threat of systemic default hanging over the financial system. Banks would still have had to raise capital and repay the discount loans in full, and some would fail, but contagion arguably could have been averted.

**The Bailout: More Moral Hazard?**

Policymakers, particularly Fed Chairman Bernanke and Treasury Secretary Paulsen, remained relatively sanguine and un-involved in the massive de-leveraging that was being attempted from mid 2007 until the spring of 2008 when they were faced with the possible failure of Bear Stearns. To avoid a likely bankruptcy, the Fed provided a $29 billion loan against reportedly highly questionable collateral to facilitate an acquisition by JP Morgan. This was unprecedented, and a Bear Stearns failure arguably didn’t directly threaten the payments mechanism or real economy the way Lehman’s failure subsequently did. But this followed the interventionist pattern established by the Fed bailout a decade prior with the hedge fund Long Term Capital Management (LTCM).

The issue raised here is whether the Fed saved the day or compounded the problem? The short answer is perhaps both. A more definitive answer is well beyond the current scope, and hopefully will be provided by the FCIC before the Fed is given the additional powers and responsibilities to regulate systemic risk as provided in Dodd-Frank. But there are plenty of reasons for concern. First, the bailout of Wall Street seems destined to entrench moral hazard. Second, the relatively limited Fed resources forced them to turn to politicians for funds, expanding the scope of the bail-out beyond providing liquidity to the insured banking sector to potentially providing subsidies and extending crony capitalism to politically favored TBTF firms and labor unions in and out of the financial sector in spite of legislative limits to the contrary.

**The Bailout of Wall Street**
The role of central banks when faced with a systemic liquidity crisis has since Bagehot’s time in the 19th century been to provide unlimited liquidity, and that is essentially what the Fed did in late 2008. Such lending is to be fully collateralized and at penalty rates to prevent the provision of liquidity from bailing out otherwise insolvent firms, thereby mitigating moral hazard. It appears from that perspective that the so-called “massive bailout” of private commercial banks as well as AIG in the US worked because it eventually albeit belatedly restored bank liquidity and made good on AIG claims at no apparent taxpayer cost.

But the bailouts during this trying period were at best ad hoc. The basic problem in this case is that when private speculators finally burst the bubble in mid 2007, Fed officials failed to manage the de-leveraging process in an orderly way until faced with a crisis, then over-reacted. The Bear Stearns bailout did exacerbate moral hazard as Lehman Brothers failed to downsize and reportedly rejected suitors in the expectation of a better deal from the government. But the Fed apparently still hadn’t recognized during the year of de-leveraging the systemic threat posed by the shadow banking system in spite of the experience in the wake of the failure of LTCM. Having bailed out Bear Stearns the previous spring and having just put Fannie Mae and Freddie Mac into conservatorship a few days before presumably due to their potential to trigger a systemic crisis, the FRB and Treasury officials evidently failed to consider that a default of the magnitude of Lehman Brothers on September 15th financed largely by cash accounts of foreign as well as domestic firms would turn the gradual de-leveraging of the shadow banking system into a rout. By then significant damage had already been done, so long term concerns regarding moral hazard were subjugated to the short term survival of the financial system and contagion.

Immediately after the Lehman failure, Chairman Bernanke, more concerned with preventing a Great Depression contagion scenario at this stage after the financial markets had frozen up, pushed for the bailout of AIG a few days later purportedly to avoid a complete market collapse. Within about two months of the Lehman Brothers failure, more than $7.5 trillion of public money had been committed to the bailout. Chairman Bernanke has since expressed regrets that Lehman Brothers was not bailed out in spite of its technical insolvency to avoid the uncertainty of bankruptcy proceedings.

The structure of the bailout of AIG and commitment of over $180 billion of taxpayer funds is also a concern. AIG had written CDS against actual ex post credit losses on the super-senior tranches of sub-prime MBS. It appears that investment banks, particularly Goldman Sachs, were the most exposed to a partial default on these contracts. Projected losses in mid 2010 are ten times greater than Fed Chairman Bernanke’s projections at the time of the takeover, as noted earlier. Nevertheless, Chairman Bernanke has since announced that the Fed will be paid in full on its loans after paying off all of AIG’s CDS claims. That’s great news, but begs the question why the Fed took over AIG in the first place?

While ultimate insurance payments are based on realized losses that are still unknown in this case and won’t be known for years, investment bankers began adding in collateral requirements.
to CDS contracts several years prior to this. These collateral requirements are related to specific benchmarks: The ratings of the securities being insured, AIG’s own rating and the market value of the collateral. All three were distressed relative to the forecasts of default at the time, and if Chairman Bernanke’s prediction regarding the loan pay-off proves true, then collateral was unnecessary in any event. But it was the inability to meet Goldman’s collateral calls based on Goldman’s own arguably low-ball marks based on the ABX that put AIG out of compliance, not the inability to pay claims that apparently prompted the takeover.

Shortly after the take-over in November 2008 the FRB of NY purchased $62 billion of deeply underwater mortgage assets at par to terminate the AIG insurance payments otherwise due to be paid out to the holders in dribs and drabs over 30 years. This seems like an incredible windfall to the insured parties, particularly Goldman Sachs who apparently was the biggest holder of AIG CDS. Why didn’t the Fed simply waive the collateral requirements for CDS citing a lack of markets for the underlying securities and inaccuracy of the ABX, acting as a re-insurer or guarantor of these payments only if necessary? Better still, why not let the parties of interest argue it out among themselves? The counter-argument is that the collateral defaults could have encouraged counterparties to pursue a bankruptcy filing, and the Fed believes it can reduce uncertainty of a potentially lengthy bankruptcy proceeding. But bankruptcy was not in the interest of CDS holders so long as the claims were being paid and the takeover and bailout precedent is unsettling to say the least.

There are numerous other examples of the bailouts appearing to be ad hoc or political. As One example, the Treasury encouraged Fannie Mae and Freddie Mac to issue preferred stock in late 2007 giving purchasers the impression that it was a safe investment by granting a 20% risk based capital requirement, the same as for their MBS, then less than a year later in 2008 when placing them in conservatorship chose to default on that stock. This bankrupted many otherwise solvent small community banks and forced other to sell out to larger banks, some already TBTF. The savings to the US Treasury by defaulting was small, and partly paid indirectly by the FDIC.

The Fed, along with Treasury, was in the position to determine winners and losers. How did it determine which firms to save? The world didn’t come to an end with the Lehman Brothers bankruptcy, and Taylor (2010) argues that moral hazard and ad hoc bailouts created uncertainty that was the systemic trigger for contagion rather than the filing, recommend a pre-packaged streamlined bankruptcy.

Because policymakers in the US and elsewhere had promoted bank consolidation over competition, some bigger and more integrated financial firms where these losses were concentrated were likely technically insolvent, potentially posing a systemic risk that could make them too big or too integrated to fail. The worst evidence of moral hazard was found at the TBTF banks, e.g. Citibank, WaMu, B of A, Wachovia, etc., the TBTF investment banks, e.g. Lehman Brothers and Morgan Stanley, as well as AIG, Fannie Mae and Freddie Mac. These firms took excessive risks with excessive leverage, and whether they were all deserving of rescue is questionable. It is difficult to refute the accusation that bailouts were more likely for the
politically powerful. But the regulators forced numerous mergers creating even more TBTF firms.

The manor of the bailouts also deserves analysis. Goldman Sachs and Morgan Stanley were converted into bank holding companies over the weekend. While Glass-Steagall had been repealed, the risk of extending the umbrella of banking protection to huge proprietary trading operations, essentially hedge funds should have at least been considered.

Second guessing policy actions taken under duress are extremely unfair but necessary to policy formation. The main reason for concern is that their discretion is massive—the government committed over $12 trillion to support the financial system and economy—but the use is not very transparent. The Fed and Treasury argued that bailouts should be opaque to prevent panic spreading, while others, e.g. Taylor 2010) argue for transparency so markets can function properly. This access to an unlimited amount of taxpayer guaranteed funding with virtually no accountability is exactly what caused the systemic crash in the first place. That those responsible for preventing it appeared to worsen the potential for future moral hazard is relevant to policy going forward. Even if we assume they were necessary, having the US Treasury Secretary and Fed Chairman call the CEOs of the TBTF firms to Washington D.C. to dictate terms of a takeover and bailout of the financial system should be avoided at all costs.

The $12 trillion estimate of the bailout cost far exceeds the direct cost of sub-prime losses, and much of it will not be spent. Actual taxpayer expenditures have been estimated to be in the range of $3.5-$4.0 trillion (Lowenstein, 2010, pg 282), but these estimates are constantly being revised. The FDIC will attempt to resolve failed banks without a taxpayer subsidy. But that does not mean it is without cost to the public. Some bailouts, e.g. Citicorp, have economic costs that are not transparent. The traditional approach of merging weak banks into stronger ones is a major source of the systemic risk. In addition, raising fees on insured banks requires protecting future bank franchise value—and perhaps keeping interest rates low—so that the cost can be passed on to bank customers. This problem is exacerbated by the trend toward TBTF universal banks. The fear is that the pattern of bailouts has established a crony capitalist system that comprehensive reform would entrcheon.

The Bailout of Main Street

In this crisis the door was opened to the accusation that the government bailed out Wall Street rather than Main Street which is not true. The bailout of the GSEs is a Main Street bailout that is the antithesis of Wall Street as the debtors have always been viewed as guaranteed and the borrowers captured much of the subsidy (managers, stockholders and politicians took a large share as well). The commercial banks and AIG were bailed out without cost to taxpayers. In contrast, the unprecedented non-financial GM and Chrysler bailouts—which bypassed senior creditors in favor primarily of labor unions—are estimated to cost taxpayers $81 billion. The bailout of the other union pensions could eventually cost more than that. The fiscal stimulus largely bailed-out states with severely under-funded pensions, some of which funded the
bubble. These problems were decades in the making and essentially unrelated to the financial crisis. The cost of mortgage forbearance programs for homeowners could prove to be even greater. The TARP loan repayment was eventually viewed by some politicians as a slush fund, e.g. to pay unemployment insurance claims or the pay for the systemic risk fund. What remains to be seen is the consequence for future moral hazard behavior, as the least deserving home buyers appear most likely to be bailed out.

**Future Bail-outs**

Senator Dodd promoted the Dodd-Frank Wall Street Reform and Consumer Protection Act as preventing ever having another bailout like AIG and President Obama assured the public of this when signing the bill. Why so, if the prior bailout was necessary and costless as the Fed now argues? This is an important question, as Dodd-Frank may well exacerbate future moral hazard. The answer seems to be that the congressionally appropriated bailout is so politically unpopular, and for good reason, that it motivated Dodd-Frank. This is a big price to pay for the Fed going beyond its normal role, which the public is not likely to fathom but at the same time historically hadn’t objected to.

Economists still disagree widely on the economic origins of the Great Depression, so a consensus on whether the bailouts were optimal is unlikely to be settled soon. As was the case with Fannie Mae several decades earlier, the political incentives for a bail-out far exceed the limits of sound public policy due to the opaque costs to the public. Kane (2009) adds that the incentives facing civil servants such as the Fed Chairman also go well beyond these limits in a crisis, especially when it is of their own making. The main lesson is to avoid crisis situations by implementing appropriate systemic reforms.

**Controlling Moral Hazard: The Appropriate Goal of Financial Reform**

Market discipline has a long albeit imperfect track record of mitigating systemic failure with smaller brush fires. Regulation free of politics has a shorter track record with worse performance. Both suffer from incentive conflicts. But markets attempt to mitigate or bypass private incentive conflicts before they become systemic. While market discipline is less than perfect, it has never allowed anything like the levels of risk and leverage seen in the sub-prime mortgage bubble. The incentive conflicts in public regulation and supervision with political oversight are, in contrast, prone to systemic risk. Freeing regulation from politics in home mortgage finance is rare, and no mechanism to stop the politicization and consequent growth of housing banks has ever been found. Bank regulation has also become more politicized with the growth of TBF firms.

There are several pre-conditions for regulation to work. First, it must be de-politicized to remove the obvious and ongoing conflicts. Second, it must be non-distorting to mitigate
regulatory arbitrage. Third, it must mitigate moral hazard, particularly for TBTF firms. This is all technically possible but as yet politically unpalatable. Hence the good news is that the flaw in the US system, however big the subsequent failure, is easily repaired. The bad news is that the political incentives that created the problem are almost certain to prevent the repairs needed to fix it.

The premise that deregulation caused the crisis lacks merit and seems designed to support proposals for more regulation, including a systemic regulator, in spite of continued systemic regulatory failures through the fall of 2008, which then posed the Hobson’s choice between either a massive bailout or a systemic financial system collapse. The primary lesson should have been that systemic risk needs to be mitigated rather than dealt with *ex post*.

As noted by Blundell-Wignall and Atkinson (2008, pg 56):

> “Indeed, if current policy responses increase moral hazard in the banking system, then future crises may not only be likely, but possibly larger than the current one.”

True systemic financial reform has only to address two primary issues: First, what should be done about Fannie Mae and Freddie Mac? Second what should be done about commercial banks? The answers to both of these questions are surprisingly simple to formulate and implement, i.e. liquidate Fannie and Freddie and re-invigorate bank safety and soundness regulation while implementing large bank early resolution. We conclude that nothing should have been or be done about the rest of the financial system in the context of systemic reform to mitigate moral hazard, and in particular we reject a systemic regulator as likely to exacerbate systemic risk.

The Dodd-Frank Wall Street Reform and Consumer Protection Act purportedly implements necessary “comprehensive” reform, providing a dramatic extension of the systemic regulation and protection umbrella. It followed past practice of absolving politicians and the regulators they oversee while ignoring Fannie Mae and Freddie Mac, instead blaming markets. As long as politicians continue to “reform” Wall Street with more regulation without reform at Pennsylvania Avenue there are two likely outcomes: 1. stifling regulation and government control, or 2. complete systemic collapse of TBTF enterprises. Dodd-Frank seems *designed* to produce both outcomes, albeit as an unstated and hence sure to be labeled “unintended” consequence.

Post Dodd-Frank, the two systemic regulators US treasury Secretary and the Fed Chairman have been waffling on the need to remove the systemic risk of Fannie Mae and Freddie Mac. Hence while stifling regulation is the better short run bet, complete systemic collapse is an excellent long run bet. By then, it seems more likely that the “flight to quality” will be away from rather than toward US Treasury securities as hedge funds pursue *The Next Big Short*.

The paper concludes with a discussion of the appropriate role of policy in the US mortgage market. Other questions regarding the mortgage market that have been a political focus of
reform are potential distractions and feints to the immediate goal of mitigating systemic risk that should be addressed separately are discussed in the Appendix.

The Future of Fannie Mae and Freddie Mac

The certain liquidation of Fannie Mae and Freddie Mac is essential to mitigate future systemic risk. Because their political power was the root cause of the systemic failure, this should have been the centerpiece of reform legislation. Postponing this resolution in a purportedly “comprehensive” financial reform is a clear signal of political intent to once again double down.

The decision to allow the Boards of Fannie Mae and Freddie Mac to vote for conservatorship under the threat of receivership was politically and legally expedient, but kicked the can down the road. The Administration has again kicked the can down the road to January 2011, after the elections, and likely off the road as they gear up political constituencies for the battle. In less than two years of being operated by the Administration off-budget in conservatorship, the GSEs drove mortgage rates to the lowest level in four decades, since the data were first recorded. The argument that this was necessary to keep housing markets from adjusting is dubious but irrelevant to establishing an orderly liquidation policy in any event.

There has never been a good time to fix this problem, so now is as good a time as any to announce the certain liquidation while simultaneously implementing a transition plan. The McCain proposal for liquidating these entities is a good basis for discussion. The existing liabilities should be transferred explicitly to the federal balance sheet (Ginnie Mae has previously handled the management and liquidation function), and the operations sold to the private sector or closed.

Bank Regulation

The economic benefits of deposit insurance may well be overblown (Friedman, 2008) and the costs minimized (it was after all a root cause of the savings and loan crisis) but opinions differ on this and for better or worse commercial banks with virtually complete deposit insurance seem certain to remain at the center of the US financial system. Hence the regulatory primacy of maintaining their safety and soundness should be restored, and progressive social legislation should be delegated to secondary agencies independent of and subservient to prudential regulators. Capital requirements should be strengthened, off-balance sheet activities should be limited, and mechanisms such as convertible preferred or sub-debt that would automatically dilute shareholders if capital falls short of required levels should be implemented. Within the banking sector, greater reliance on market discipline is necessary to minimize credit risks. None of this is new or difficult.

If risk-based capital requirements continue to rely on credit rating agencies, then this will require another regulator to approve ratings of mortgage related securities. Based on past experience, public regulators don’t seem well equipped to oversee credit rating agency incompetence. It would thus be preferable to remove these regulatory references to NRSROs,
with the possible exception of traditional corporate debt, and force commercial banks (and others) to do their own due diligence on mortgages. Otherwise, a significant effort is required to mitigate regulatory arbitrage, and investors rather than issuers should be required to pay for the ratings in this scenario.

The essential liquidation and merger of the thrift industry into the commercial banking sector, while costly, has generally improved diversification and competition. The expansion of commercial banks across state and regional lines has done likewise. But those two trends increased bank size, and subsequent mergers have led to several huge nationwide banks that are now TBTF, and placed banks at the center of the mortgage finance system. Bank of America, JP Morgan, Wells Fargo and Citicorp held $7.7 trillion in assets as of the first quarter of 2010, more than the next 46 largest banks combined. The first three held 33% of the nation’s deposits and made 56% of the nation’s mortgage loans in that quarter.\textsuperscript{168} TBTF firms have been indirectly implicated in the most recent crisis, and bank consolidation has arguably gone too far, pushed entirely by politics beyond economically optimal or operationally manageable levels and policy prospectively should promote competition rather than consolidation. Economists from the liberal to the libertarian ends of the spectrum have called for breaking up the already TBTF banks, a highly desirable goal even if it is now to difficult to achieve.\textsuperscript{169}

One market factor undermining community banking and promoting consolidation is the lack of a sufficient local asset base. Home mortgages provided that base for a century, and could again when the GSEs are liquidated and interest rate spreads restored to a market level. This is not a repeat of the so called S&L fiasco, as a bank portfolio containing up to fifty percent adjustable rate home mortgages has been demonstrated to be safe in many countries. Commercial banks should be expected to be the major issuers of covered mortgage bonds as well.

The separation of investment and commercial banks by Glass-Steagall may not have been justified at the time, and took more than half a century to reverse. By then deposit insurance had not only been implemented, but made essentially comprehensive. The contemporaneous result is TBTF universal banks. It is worth noting that two of the biggest failures, WaMu and Wachovia, were not universal banks. Citibank, a universal bank, got into trouble mostly due to banking activities.\textsuperscript{170} Of the five investment banks designated by the SEC as CSEs deserving of lower capital requirements, one (Lehman Brothers) has been liquidated, two (Merrill Lynch and Bear Stearns) have been merged into commercial banks, and two (Goldman Sachs and Morgan Stanley) have become bank holding companies. Universal banking—appropriately regulated—is a potential solution for the investment bank contagion spread by the shadow banking industry. That said, the next financial crisis will likely stem from unknown origins and these TBTF universal banks are a likely source. Citicorp, as well as Merrill Lynch, Morgan Stanley, Lehman Brothers and Bear Stearns got into trouble in part because of their securitization and proprietary trading, essentially hedge fund activities. Goldman Sachs remains a premier investment bank, but it is also essentially a giant hedge fund. Extending the FDIC umbrella to investment banks prior to divesting of their proprietary trading activities seems premature at best and arguably reckless.
The “Volcker Rule” in Dodd-Frank attempts to undo the damage by prohibiting proprietary trading for universal banks to prevent bank capital from supporting non-bank risks, although this may prove difficult to implement and enforce. Separately capitalizing non-bank activities and installing firewalls goes without saying, but this is not foolproof either.

The current challenge is to mitigate the moral hazard of TBTF universal banks because regulators will likely face political pressure regulating these firms. The growth of firms to TBTF status takes moral hazard to the logical extreme, granting political favors in return for protection from competition and market discipline, as well as political persecution, and thus deserves special consideration. In every case past problems have been exacerbated by excessive leverage due to regulatory capital arbitrage. If regulators aren’t up to the task of regulating this, then more book capital should be required. The FDIC is currently promulgating regulations to facilitate large bank take-over, and pre-packaged bankruptcy should also be required. Otherwise, we need to reincarnate Glass-Steagall and emulate FDR’s trust-busting uncle.

Dodd-Frank requires that the Fed set capital requirements, which is nothing new. How to do this in the context of international Basel risk-based capital rules while eliminating regulatory arbitrage remains the challenge.

The politicization of take-over and bailout decisions should be mitigated. Limiting campaign contributions and other political activities of private firms is problematic. But the political activities of TBTF commercial—now universal—banks and the GSEs are functionally equivalent to “pay-to-play” schemes that donated to politicians at the state and local level who oversaw public investment funds. Perhaps the same prohibition that the SEC just applied at the sub-national level should be applied at the federal level as well. Alternatively, a less extreme measure would be to require an “excess” capital cushion before allowing TBTF banks to engage in political activities. Any mechanism to mitigate this political incentive conflict will obviously require strong political leadership.

The Systemic Regulator

The Federal Reserve System is the only logical choice for a systemic regulator, should one be needed. This has been a central focus of reform thus far, and Dodd-Frank gives the Fed vast new powers and authorities. Dodd-Frank establishes the Financial Stability Oversight Council (FSOC) comprised of 15 members, 10 with voting rights. This council of nine regulatory agencies has the responsibility of identifying emerging threats and heading them off.

Next in line to the Fed in monitoring systemic financial risk would be the IMF. In the second quarter of 2007, as the sub-prime market was crashing, the IMF Global Financial Stability Report, (IMF 2007, p 7) wrote:

“... weakness has been contained to certain portions of the sub-prime market (and to a lesser extent, the Alt-A market), and is not likely to pose a serious systemic threat. Stress tests conducted by investment banks show that, even under scenarios of nationwide house price...
declines that are historically unprecedented, most investors with exposure to sub-prime mortgages through securitized structures will not face losses.”

It is hard to see how the FSOC will do a better job foreseeing and preventing systemic financial crises than the Fed and IMF have done.

A systemic regulator would need to eliminate the potential for systemic risk at the source for the benefits to outweigh the costs. That is presumably why the Fed has long recognized Fannie Mae and Freddie Mac as the most important sources of systemic risk. Nevertheless, post crash, FRB Chairman Bernanke (2009) reviewed the costs and benefits of numerous legal structures under consideration from full privatization at one extreme to full nationalization at the other, with lots of options in between. He suggests they may be needed in a time of crisis, such as he perceived in 2009, and recommends that the GSEs continue to operate. But history makes clear that the markets will never recognize them as private and not TBTF no matter what. Moreover, implicit or explicit guarantees should no longer be viewed as free: the cost of additions to the federal deficit may be exponentially higher than in earlier decades.173

This is a surprising turnaround, as the previous FRB position that the GSEs were a potential source of systemic risk is apparently being reversed.174 In spite of all the other faults that have since been revealed in the financial system, it is unlikely we would have got to the point of systemic collapse without the GSEs. This current Fed position, more than anything else, demonstrates the likelihood that systemic risk management will be inherently political, pointing out the futility of establishing an all powerful systemic regulator. Establishing a fund, really just a tax that Treasury would spend (like Social Security Trust Fund), would likely entrench the moral hazard while funding only a penny on the dollar of the economic cost, which is why Congress rejected this proposal the first time it was proposes by Williams Jennings Bryan in 1893.175

Perhaps the most important lesson is that once a crisis becomes arguably systemic, almost everything the Fed and other policy makers do will increase moral hazard. Similarly, each political cycle of regulatory failure, increased regulation and protection worsens the repeating cycle. More market discipline is needed to eliminate systemic risk at the source.

The Fed missed the problem in the shadow banking system, and it seems doubtful the other regulators on the FSOC would have educated them on this. The Fed understood the GSE problem, but Senator Dodd, Congressman Frank and others wouldn’t listen. The $50 billion asset size to qualify as systematically significant will eventually cover most of the banking system setting off a wave of uneconomic mergers and acquisitions. The umbrella is intended to cover non-banks as well. There is moral hazard inherent in this approach. Based on past experience, the regulation will prove insufficient, and the ensuing protection excessive.

Having the Treasury chair the FSOC unnecessarily introduces politics into the determination. The Fed is and should remain the implicit systemic regulator, and its scope should continue to be limited to protecting the payments system. The systemic threat can come from anywhere, as evidenced by the failure of LTCM, but it is always focused on the TBTF banks. So if they can’t be
regulated appropriately or sufficient capital imposed, then breaking them up is the only alternative to a repeated cycle of moral hazard, systemic failure and bailouts.

A fundamental question is which is the greater problem, the moral hazard that arises from believing that the FSOC will do its job or the costs associated with all the crises it prevents that never were? By limiting the Fed late in a crisis, Dodd-Frank provides an incentive for early action that may prove difficult to resist.176

The Rest of the Financial System

If commercial banks and the GSEs had been appropriately regulated within existing powers and authority, it seems entirely reasonable to conclude that the sub-prime bubble would not have occurred, and the bubble not been pricked with bank backed CDS. In this context it is not clear what the proponents of non-bank investment bank and hedge fund regulation (e.g. Krugman 2009, Stiglitz, 2009) would prescribe, or how they would prevent future moral hazard.

Regulation of Non Banks

Extending the regulatory and protective umbrella across smaller more independent firms engaged in traditional investment banking and to hedge funds, nationally as well as internationally, may superficially appear prudent. But as a practical matter given the failure to appropriately regulate banks after eight decades of practice, it takes hubris to propose public regulation of the economy’s risk-takers with no realistic plan for mitigating moral hazard. Rather, the SEC should focus on its traditional role of making independent investment bank balance sheets totally transparent and relying on market discipline wherever possible. Hedge fund investors can fend for themselves regarding disclosures. Whether hedge funds are an appropriate investment for state and local retirement accounts or simply reflects an agency conflict should be addressed by the appropriate politicians. The certainty of bankruptcy when technically insolvent is the ultimate market discipline, and certainty of the rule of law and bankruptcy procedures is a better palliative than the uncertainty of political discretion (Taylor, 2010).

Derivatives

It is true that derivatives were largely unregulated. It is also true that the market provided economic benefits throughout the sub-prime boom and played a useful role in finally bursting the bubble. The recent policy emphasis on derivatives regulation essentially blamed the shorts, and then settled old political squabbles. Fear of counterparty default likely contributed to contagion, but the problem of under-capitalization is better addressed by bank regulators within the existing regulatory framework. Moreover, systemic risks could well be exacerbated by centralizing it in a single exchange as required by Dodd-Frank.177 This market is too large and diverse for regulators to effectively regulate, and too tempting for politicians to extort (WSJ 14/05/2010). What to do about derivatives is well beyond the scope of this paper, but they should not have been the focus of the debate regarding systemic risk prevention.
The derivatives market started with interest rate swaps to hedge fixed rate prepayable mortgages. Virtually all of the problems of the derivatives market have been associated with home mortgages, and most of them with regulations requiring pre-payment without penalty for fixed rate mortgages. This problem should be addressed at the source.

Compensation Incentives

We’ve identified three primary private principal-agent conflicts, all relating to individual agent incentive compensation to take risks that the principal bears, that contributed to the financial crisis. The first relates to the conflict between the loan originator and investor. The second related to the conflict between proprietary traders and their investors. The third related to the conflict between credit rating agencies and investors. The fourth related to the conflict between taxpayers and owners and managers of the GSEs. Dodd-Frank addresses some of these indirectly. Others, e.g. Roubini (2010) would have the government regulate compensation practices.

Mortgage Brokers: This conflict exists as an outgrowth of the originate-to-sell model of origination. Countrywide distinguished itself as the only mortgage banker paying a salary and bonus rather than commissions, but then changed the practice in the late 1990’s, contributing to its subsequent demise. The covered mortgage bond with full recourse to the issuing commercial bank should address that issue by giving banks an incentive to change the commissions practice.

Proprietary Traders: Annual bonuses of $10 to $100 million earned by proprietary traders are obviously ridiculous. That is a good reason why regulated banks shouldn’t be allowed to engage in it. It is also a reason why taxpayer backed pension money shouldn’t be invested in hedge funds. If a trader is using his own funds or that of other significant investors that are in no way linked to taxpayers, then there is no reason for public regulation. Stockholders of non-bank investment banks that engage in proprietary trading and hedge fund investors should have wised up long ago, but is it the federal government’s job to protect sovereign wealth funds? That’s another reason for not extending the Dodd-Frank umbrella of systemic risk protection to such firms.

Credit Rating Agencies: Investors used to pay, but the agencies realized that issuers would pay a lot more once they got franchise value. This should either be reversed at the source by eliminating the franchise value, or having investors pay, or both.

Concluding Comment

There is undoubtedly room for other regulatory improvements, and always will be. But the systemic failure resulted from overly politicized regulation rather than any particular “market failure.” The recent experience with politically sanctioned regulatory failures should temper over-confidence in the substitution of public regulation for market discipline. Extending the regulatory umbrella and vesting regulators with additional power to mitigate systemic risk will likely lead to more TBTF firms, a form of crony capitalism that is typically more stable and
politically appealing but economically adverse to the long term public interest. Systemic failure is bad, but a stagnant financial system that hides the costs is worse. You can call it “unintended,” but that seems to be the direction of policy.

**The Future of US Mortgage Markets**

Some emerging market economies with no mortgage market may be tempted to have the central government create one. The best advice one can give in that circumstance is to keep it separate from the private commercial banking system to prevent distorted incentives from undermining the safety and soundness of the financial system. The US was fortunate to have inherited from the British a system of private mortgage lending by so-called terminating societies—the predecessor of today’s S&Ls—dating back several centuries. The sub-prime mortgage crisis and systemic collapse of the financial system in 2008 represents the failure of the public/private model. Most analysts in the US, if forced to choose between one or the other, would pick the private model.

The simple explanation for this is that the US financial system, with the recent exception of housing finance, remains the envy of the world. It is the most innovative, competitive and efficient allocator of capital ever known. Moreover, households have unprecedented access to every form of credit generally at competitive rates, parenthetically and somewhat unfortunately resulting in the highest rate of consumer indebtedness in the developed world. Not a single instrument or institutional arrangement in this system was designed by a collaboration of economists and politicians, again with the unfortunate exception of housing finance. Economists’ estimates of benefits from the government role have mostly ignored the inherent and now explicit costs.  

Politicians have promoted numerous forms of public protection for savers, the trillions of dollars of implicit guarantees, deposit insurers and GSEs being the two most important. They have also promoted home mortgage borrower interests in numerous ways, the excessive reliance on the fixed rate non-recourse loan with a prepayment option being a dominant example. The sum total of these political interventions don’t necessarily reconcile with the requirements of a stable financial system. Arguing that such distortions were “unintended” is a meaningless defense for what at the time they were introduced considered inevitable. The problem with the US mortgage markets in the last decade reflected what Senator Dodd and Congressman Frank did. The problem going forward is what Dodd-Frank did, and more importantly what it didn’t do.

We need to de-politicize the US Housing Finance System. Higher capital requirements for securitization are necessary, but having Congress set them is not the way to do this. The government’s role should not be to design or re-design the US mortgage market but rather to remove politically inspired incentive distortions, regulate appropriately while promoting competition and allow the mortgage market to innovate and determine what’s best. Lea (2010) describes the lessons to be learned from the compromises made in the mortgage finance systems of other developed countries that have proven successful while at the same time more
stable than the US system. There is no economic reason to believe the market cannot meet the various needs of housing finance at competitive market rates without this instability, but imposing political goals and mandates on market outcomes, particularly those promoting fixed rate mortgages with mandated features, will continue to distort the financial system.

Huge political constituencies have developed that represent private interests. Since the time of the Great Depression, the public mission of providing “affordable housing” has been backed by major construction interests and justified as “providing jobs.” The economic public policy debate as to whether housing affordability is a housing or income problem generally favors the latter, but even advocates of the former realize that the way to favor households is with budgeted targeted subsidies. Whether any of this should favor owner over rental housing is also highly questionable. The GSEs never represented a viable way to deliver these subsidies in any event and certainly don’t in the future.

Other political constituencies have evolved around the GSE originate-to-sell housing finance mechanism of mortgage origination and funding in the US well after the initial motivations disappeared. Yet many analysts continue to focus on one externality of that system, trading of MBS. That leads to an undue focus on government interventions such as GSEs that fostered such trading. That was the wrong focus during the Great Depression, and it is still the wrong focus. Removing the GSEs is a big step, and most economists want to present policymakers with a detailed plan for the residential mortgage markets in their place, in particular one that maintains the primacy of fixed rate mortgages. This also is the wrong policy focus.

The Transition

Virtually the entire institutional infrastructure needed for the mortgage finance system described above is in place. Any regulatory changes or legislative impediments, e.g. to mortgage bonds, could be easily removed. So there is virtually no required transition period. If the operating parts of the GSEs were put up for sale, it may take a few months to complete the transactions and integrate operations.

A major problem with mortgage lending two years after the systemic collapse is uncertainty. The government is now doing almost all mortgage lending, mostly at non market terms and conditions. In addition, much of the public activity over the past two years has been to keep house prices from falling to the market clearing level while forestalling the foreclosure process. The current situation reflects the government completely crowding out private lenders by providing massive unbudgeted subsidies. Banks and other mortgage originators would have to tap the same sources of funds as the GSEs currently do, and this will require capital by homeowners (e.g. bigger down-payments, full recourse, pre-payment fees, etc.) and commercial banks (to hold the first loss securities and/or adequately capitalize mortgage backed bonds). It would be better to assist in those issues during a transition than expand the use of government guarantees and extreme leverage to mask the ongoing subsidies. Refinancing may shrink, and housing turnover as well, but with no great impact on current economic activity. Builders have
had financing subsidiaries for many decades and will find a way to finance qualified new house buyers.

None of this will happen without an ironclad exit plan by the government. Without that, private lenders may be better advised to abandon the home mortgage market.
Appendix: The Future of US Mortgage Markets

Economic Rationales for Fannie Mae and Freddie Mac

There is no way to re-incarnating Fannie Mae and Freddie Mac that will eliminate the implicit backing and moral hazard no valid contemporary economic rationale to do it.

They have already been privatized, and alternative technical structures will suffer the same fate. They are too political and TBTF in any event. So why take the risk?

The problem with funding fixed rate mortgages (discussed below) is independent of the resolution of these enterprises. The purely political limitations of private lenders tapping capital markets directly have been resolved for decades, and “market failure” rationales were all concocted ex post. The two privatized GSEs only add dangerous political distortions and potentially a small share of the economic rent of a federal guarantee. Nevertheless, Fannie Mae and Freddie Mac still retain a loyal following among many economists in spite of the continued massive government presence in mortgage markets provided by FHA/Ginnie Mae and the FHL Banks in their absence.

Sanders and Van Order (2009) correctly note that GSEs are comparable to TBTF federally insured commercial banks, and then propose the reincarnation of GSEs with an equivalent “dueling charter” to support fixed rate mortgage lending. Woodward and Hall (2009) make the same “dueling charter” argument to provide market “liquidity,” adding that risk information should be opaque. Marron and Swagel (2010) essentially propose GSE reincarnation with unlimited access of all originators to government backed AAA MBS, essentially the equivalent of a Ginnie Mae conventional PC to promote competition among originators.179 Davidson and Sanders note the role of the government backing in forward markets. Chairman Bernanke has resuscitated the countercyclical and emergency lending rationales. These arguments are all flawed and insufficient to warrant continued existence.

Dueling Charters: Having extended deposit insurance from small to essentially all household depositories, proponents of “dueling charters” now want to extend it to virtually all institutional investors as well, as was done in the shadow banking system. The “duel” is over which charter provides greater regulatory arbitrage, exposing taxpayers to the most risk. Commercial banks are ubiquitous because they serve an economic function. They are regulated as an unavoidable consequence of deposit insurance, and that some have become TBTF is an unfortunate circumstance demanding a regulatory and political solution. Should any one of them focus exclusively on mortgages, the political risk could again become unmanageable. But housing banks are purely political institutions with no economic purpose in a market economy. They don’t exist in any other countries with fully developed financial systems. And they are by nature TBTF whether legally structured as “totally private” or “totally public.” The political motive for re-incarnating them is the same motive that will undermine any regulatory mechanism to limit them.
Providing “Liquidity”: Woodward and Hall (2009) argue for a government duopoly with private shareholders to issue government backed opaque mortgage backed securities, essentially a return to the status quo ante of private ownership for public profit, in order to promote “liquidity” of fixed rate mortgages. This is an explicit or implicit theme of other promoters of GSE reincarnation as well. If this argument had merit, it should apply equally to corporate debt, particularly junk bonds. What they really want is an instrument to trade pre-payment options opaquely. The government guarantee is necessary to facilitate the regulatory arbitrage of investors otherwise limited to risk free government debt, in large measure because there is no natural hedge for prepayment risk (i.e. no option writers whose risk is reduced by writing prepayment options) among capital market investors. Using a government guarantee combined with opaque disclosure to suppress risk in the interest of homogeneity has in the past primarily benefited Wall Street proprietary traders.

Conventional Mortgage Securitized Funding Instruments: The only rationale for government backed securitization of conventional fhm’s, as with “dueling charters”, is which provides the greatest most opaque leverage. When Ginnie Mae developed the PC, it was meeting an unmet investor demand for fixed income securities, albeit in the least investor friendly manner, the only design legally available to it at the time. The advantage to the government is that the interest rate and pre-payment risk is passed on to investors. But investors still don’t like the uncertain cash flow of securitizations, as evidenced by the preference for GSE debt over MBS, and the PC is the least investor friendly securitization in this regard. They still don’t like the uncertain prepayment, as evidenced by stiff call penalties in virtually all non-mortgage securities in the rare cases it is allowed, and the pricing advantage of CMOs over PCs. Moral hazard in conventional MBS was amply demonstrated in the sub-prime crisis. Moreover, investors generally prefer to earn a credit spread as evidenced by the growth in the high yield bond market, and there is plenty of US Treasury debt to meet the demand for “risk-less” securities in any event. So the proposed Ginnie Mae AAA MBS instrument makes a bad funding vehicle worse.

Hedging and Forward Delivery: Davidson and Sanders (2009) provide an explanation why over the over the counter forward delivery markets are more likely to develop in government guaranteed than private securities markets. Forward delivery to be announced (TBA) markets are an important hedging and security delivery mechanism, allowing forward sales of securities before the underlying loans are closed. Nevertheless, the bulk of hedging for mortgage pipeline risk, i.e. the risk of price changes during the period from when the borrower’s rate is “locked” and the loan is ultimately financed, is done with US Treasury futures and options where trading volume is greatest. This does not provide for hedging post closing pre-payment risk, generally considered modest over the lock time horizon of one to two months (especially as compared to pipe-line fallout risk, i.e. the risk that once sold forward the loan is not closed), although significant over the life of the loan. This pre-payment risk can be hedged separately from a deliverable new origination forward market.
Countercyclical and Emergency Lending Role for Fannie Mae and Freddie Mac: While economists have considered the potential for Fannie Mae and Freddie Mac to be an instrument of countercyclical housing policy, their institutional and political bias is pro-cyclical, as rising house prices and mortgage rates late in a boom typically results in political action to address the “affordability” crisis. That was amply demonstrated as they financed the last sub-prime lending bubble. The original deposit disintermediation arguments no longer apply.

The Future of the US Mortgage Market without Fannie and Freddie

The US mortgage market was the source of the recent systemic global financial system failure. The policies that lead to this failure were implemented during the Great Depression to protect borrowers from systemic risk originating outside of the housing finance system. The policy challenge is to find the correct balance.

The Systemic Risks of Mortgage Borrowing and Lending

The systemic risks of lending are largely monetary in origin (reflecting not just monetary policy, but fiscal policy and exogenous shocks as well) relating to the value of money, the availability of money, and the price of money. The first risk relates to unanticipated changes in the nominal value of money, i.e. inflation or disinflation/deflation. The second relates to the liquidity of borrowers and lenders, i.e. their access to cash to meet contractual obligations. The third relates to political (or possibly exogenous) influences on the nominal price (i.e. the interest rate) of money, either for borrowers, savers, or both, the nominal value of collateral, and/or the ability to seize and liquidate collateral to obtain cash to satisfy contractual obligations.

Systemic risk discourages savings and investment generally, and formal financial savings in particular. Equity finance is not subject to these monetary phenomena. In a purely theoretical sense, following Modigliani and Miller’s famous “Irrelevance Theorem” (1958) and Hendershott and Villani (1980), businesses have no inherent need to raise debt. Rather, debt issuance reflects distorted incentives, primarily those embedded in tax laws. On the other hand, many households have few alternative investments (e.g. homeowner “sweat equity”) to formal financial savings. Similarly, they may have fewer financing alternatives (e.g. extended family owned housing) to formal mortgage borrowing. Hence some argue that the systemic risks of macro economic uncertainty and volatility may be a relatively bigger problem for home mortgage borrowers, justifying state sponsored insurance and/or guarantees to correct this “market failure.”

Inflation creates two types of problems for mortgages. When it is high but anticipated, the current real interest payment is higher for mortgages with nominal fixed payments. If unanticipated, the real payments decline, unless the lender has the right to adjust the payment. Typically, this allows lenders to adjust for rising real interest rates as well. Disinflation has the opposite effect, raising the real value of fixed nominal payments, unless these adjust downward. There are a variety of instrument designs intended to compensate for one or more of these
problems. But no debt instrument can compensate for the full variety of *ex post* changes in the real contractual burden of debt contracts that may arise from an unstable currency.

The nominal, and in some cases real value of housing collateral may be affected even more by these policies. Anticipated inflation, as well as changes in tax and other fiscal policies, can cause a relative rise in house prices, i.e. a bubble that can be burst by a policy change. Disinflation/deflation can cause a precipitate drop.

The last major prolonged systemic global liquidity crisis prior to 2008 experienced in market economies was during the Great Depression. The deflation of the time reflected a dramatic shrinkage of the money supply. The impact on borrower real payment burdens necessitated greater liquidity, which was shrinking systemically as a consequence of the same policies. Avoiding systemic liquidity crises in the banking system is now viewed as a primary responsibility of the monetary authorities.

More recently, deposit based mortgage lenders, particularly savings and loans in the United States during the 1970’s, experienced bouts of systemic liquidity shortfalls. This reflected the dis-intermediation that occurred as a result of government imposed ceilings (removed in 1980) on allowable deposit rates that prevented these institutions from competing when interest rates rose and their lack of access to the central bank liquidity facilities.

The political risks of mortgage lending relate to events that reduce earnings from mortgage lending due to political intervention in the selection of borrowers, the rate adjustment process, the mortgage terms and conditions, and/or the foreclosure and eviction process. Perhaps the most glaring example of this occurred in the US, where law and regulation required federally chartered savings and loans to invest almost 90% of their short term deposits in long term fixed rate mortgages. As widely predicted, this interest rate risk technically bankrupted the S&L industry subsequent to the inflation that followed the de-linking of the dollar from gold in 1971.

Homeowner income and wealth is particularly sensitive to systemic risk. The desire to own one’s house may reflect cultural traditions, but most often includes an absolute political policy bias in favor of owner occupied housing and an independent bias against rental housing. Most homeowners are as a consequence over-leveraged and over-invested in a house by any measure. This bias pushes mortgage leverage ratios beyond normal market bounds, and exacerbates these systemic risks. Households who put 5% down on a home not only have all their investment eggs in one basket, but have leveraged that egg. Any financial advisor that recommended putting all of one’s family net worth into a single stock, then leveraging that single stock investment by 20 to 1 by borrowing on margin, would likely face prosecution for fiduciary malpractice.

**The Current Government Response to the Systemic Risks of Mortgage Lending**
Not all systemic risks of mortgage lending relate to endogenous policy decisions, but historically most relate to the nominal price of money, tax, or regulatory policies as discussed above. To the extent home mortgages are subject to greater systemic risk, this too reflects a policy distortion which encourages excessively leveraged housing investments. Moreover, these policies may generally be characterized as an unlegislated implicit tax on one group in favor of another. Governments typically prefer a mild unanticipated inflation that taxes investors at the expense of borrowers. Miss-managed macro economic policies result in a dead weight loss, which the government typically partially shoulders ex post. This may help explain why governments have generally not provided direct insurance and/or guarantees ex ante to fully compensate all the victims of such policies, e.g. a housing price bubble.

There are three contemporaneous policies to address systemic risk common to market economies. The first line of defense against systemic risk is mitigation. The second is limited discretionary ex post compensation. The third is support of the commercial banking system, through explicit ex ante deposit insurance, prudential regulation and central bank liquidity facilities.

The joint efforts to coordinate and discipline monetary and fiscal policies by the G8 and the EU reflect this first strategy. These countries also share a commitment to a liberalized well regulated commercial banking and financial system, with interest rates and terms freely determined within the broad bounds of consumer protection regulation.

When these policies for whatever reason fail to prevent a recession, governments engage in counter cyclical spending to speed recovery. This may well include a discretionary ex post extension of unemployment insurance benefits and other adjustments to the social safety net. Governments also can and often have introduced discretionary mortgage forbearance programs in seriously distressed situations.

It is said that macro economic policy is more of an art than a science, and even well intentioned policies will occasionally fail. The existence of franchise value allows the central bank and regulatory authorities (if separate) to use wide discretion in dealing with the consequences ex post. They have time, whether or not the banks are state owned, because the bank balance sheets are not typically totally transparent (and economic losses were before the implementation of mark to market accounting in 2008 typically reported in accounting statements with a long lag), depositors are comforted by deposit insurance, and the banks are not subject to a market bankruptcy threat. Hence in the absence of a fixed closure rule, regulators will typically “forebear” with discretion by allowing bad loans to be gradually written off over time as the revenue generated by the deposit franchise value permits.

The Use of State Insurance and Guarantees to Protect Mortgage Borrowers and Lenders from Systemic Risk
Theoretically, the state could guarantee against falling house prices, although we know of no specific examples where this has been done. In the early 1990’s, the British government, as reported in the Financial Times, toyed with the idea of buying up several hundred thousand unsold housing units to stabilize prices, but ultimately decided against the concept. Shiller (2007) has recommended the government write put options for households to prevent loss in the wake of falling house prices.

Practically, it is often difficult to identify the specific causal factors of an individual borrower default and/or of falling collateral value. Hence it may be difficult to limit insurance and guarantee coverage to these specific causal factors.

The US government flirted with the concept of interest rate risk insurance during the late 1970’s (Canada implemented a program that was never utilized) following a period in which interest rates exhibited more volatility in one month than they previously had in decades. But interest rates stabilized before any proposal got to the implementation stage.

There may be no single explanation why governments generally don’t provide explicit \textit{ex ante} insurance against systemic risks. One possible explanation is that, as the risks are largely endogenous, the guarantee’s credibility is questionable. The most direct guarantee against manipulating the nominal value of money may be to adopt a gold standard, for example. But if the necessary underlying reforms to allow this mechanism to work are not implemented, default through de-linking is inevitable. The “Catch 22” is that credible governments don’t need guarantees, and the guarantees of governments that do need them are not entirely credible.

\textbf{Current US Housing Policy}

\textbf{Remaining Government Lenders}

The absence of the two housing banks Fannie Mae and Freddie Mac wouldn’t leave the government without policy instruments in the mortgage market. Jaffee and Quigley (2008) provide an extensive overview of these programs and suggestions for their future. Two large programs and one dormant one would remain. While they were not a major factor in the systemic failure of 2008, they could be in the future and this risk should be addressed.

\textbf{FHA/Ginnie Mae}

State sponsored mortgage insurance and/or (secondary market) guaranties to reduce down payments are a major contributor to systemic risk. The household is more leveraged and prone to default, transferring the risk to the banking system. FHA insurance initially protected borrowers from a systemic liquidity crisis in the banking system. But as minimum down-payment requirements were lowered from 40% and eventually eliminated, borrower default became a source of systemic risk to that system.

The FHA and Ginnie Mae program performed with admirable restraint during the early stages of the sub-prime bubble. This model is far preferable to the GSE model in that it doesn’t suffer
from the political tribute incentive conflict, which judging by the experience of the sub-prime crisis is the major one. The huge change of posture since the 2007 mortgage lending bust highlights the ongoing populist incentive conflict within these programs. As with the GSEs, FHA/Ginnie Mae securities are implicitly (albeit now most assuredly) government backed (see footnote 13). And the underlying loans are inherently risky: FHA insurance nominally requires a 3% down-payment, but as sellers are allowed to provide 6% in cash concessions, the effective loan-to-value can be as high as 103%.182

According to CBI estimates, the implicit subsidy necessary to make FHF actuarially sound was $2 billion in 2007. 183 This subsidy will likely skyrocket as the Housing and Economic Recovery Act (HERA of 2008 raised the maximum loan limit of 1155 of median house price up to $625,000. When added to the large subsidy provided by Ginnie Mae financing, FHA will retain its monopoly advantage over private insurers in its expanded market share. Reform of this FHA/Ginnie Mae model should follow the liquidation of the GSEs.

The FHLB System

The FHLB System, which relies on collateralized advances and full recourse, also performed admirably during the crisis, although some losses inevitably occurred. But this safety sometimes comes at the expense of the FDIC, as over-collateralization and recourse increase resolution costs in a failure, a source of the regulatory arbitrage. The potential for regulatory arbitrage between and among deposits, advances and GSEs has long been recognized, as discussed in frame and White (2004). The policy concerns regarding mortgage market “liquidity” or countercyclical support have always been the responsibility of the FHLBs, but the last vestiges of the independent S&L system are gone. The FSLIC was merged into the FDIC with the passage of FIRREA with the only industry opposition coming from the banks as the FSLIC was technically insolvent. The FHLB System arguably should have been dissolved at that time, with access to the Fed discount window provided to all insured deposit institutions.184

They served an economic purpose for S&Ls, but are now entirely political and that’s why they have attempted to emulate the GSEs. The individual FHL banks didn’t get to go public, like Freddie Mac, but they have the same incentives as Freddie Mac executives had to do so. And their growth endeared them to the commercial banks as a political constituency. The excessive bias toward growth since the 1989 FIRREA reorganization opened access to commercial banks should be addressed.

Direct Lending

The government has run numerous direct lending programs in the past, and is moving back in that direction with student loans. While it would be better to grant transparent targeted subsidies to borrowers for private loans, direct lending appropriately accounted for is a second best alternative to GSEs, far preferable to distorting the private financial system. It goes without saying that it should be budgeted and strictly limited.

Other Mortgage Market Policy Concerns
Government policy dominates residential housing. Whether the government should push home ownership over rental with financial interventions and tax incentives is a perennial issue. Whether the various public financing and subsidy schemes for rental housing are efficient should rise on the policy agenda. If housing is to be promoted for low income buyers, then direct assistance for savings for down-payment schemes may be the best way to go. As budgets become increasingly tighter this will increase the temptation to reduce transparency of costs by using regulation to implement quotas.

**Credit Risk:** First and foremost, regulation should focus on safety and soundness of mortgages to mitigate future delinquencies. Underwriting guidelines should be restored as the first line of defense by all prudential regulators. Underwriting at teaser rates or anything less than the full permanent payment rate should be prohibited. In addition other regulatory practices should be reviewed across all regulators for uniformity. Full recourse should be allowed to prevent all borrowers from paying for the risk of a few. Mortgage insurance should be required of all loans with less than 20% down payments, as these risks get funded by purchasers of investment grade rated paper.

**Future of Fixed Rate Mortgages**

The GSEs have been mere intermediaries in delivering the benefits of fixed rate mortgages. Funding was provided by long term savers through institutional investors. The role of policy is to continue to remove any unnecessary obstacles between borrowers and investors without distorting incentives.

The institutional investor markets have changed in two fundamental ways since the growth of mortgage capital markets in the 1970s. First, the excess demand for fixed income securities that motivated the creation of the Ginnie Mae pass-through in 1970 has been reversed. Whereas in 1970 about 70% of long term savings was in fixed nominal life contracts and pension annuities, today that percentage has dropped to only about 10% as retirement plans are now indexed or performance based. The remaining fixed income demand can generally be met with the advent of high yield bonds and other credit market instruments.

Second, pre-payment risk—minor when these instruments were introduced—is now paramount. As the prepayment option can’t be hedged, the price for wring these options in a way that reflects transparent speculation by a presumably sufficiently well capitalized party will likely not be insignificant. Whether home owners or originators choose to bear this risk or purchase options to transfer it to others at this market price is a matter of pricing and risk tolerance in the market. Most likely this will be separated from the underlying mortgage and traded in a separate market with a specific instrument. Politicians should allow households to chose, and if they want home-owners to get the option for free, they should budget it transparently and subsidize it directly.

**Likely Role of Banks, Covered Bonds and Securitization**
That securitization should have more capital is indisputable. But setting a specific legal minimum as in the Dodd–Frank bill makes the amount the object of regulatory lobbying. So long as we continue to have risk-based capital rules, they should be set to prevent regulatory arbitrage. This requires an assessment of originator, bank, institutional investor, and PMI and pool insurer capital. Moreover, the risk allowed for each level of capital must be carefully monitored.

In the absence of GSE price distortions, conventional residential mortgages are likely to become even more attractive investments for commercial banks, especially as the three decade migration of commercial loan customers to the junk bond market persists. This more even more true for community banks over-exposed to businesses in the local economy. They would likely hold a greater share of adjustable rate mortgage originations for portfolio as they do now to minimize interest rate risk.

For long term fixed rate mortgages the choices are; deposit funding with interest rate swaps, sale with or without recourse (or participations), covered mortgage bonds or private securitizations. We argued above that private securitization would likely fall by the way side due to the greater moral hazard risk, and hence deposit-short banks will probably chose mortgage backed covered bonds over MBS. Legislation may be necessary to facilitate the issue of covered bonds by banks and finance companies. At the same time, we have no objection to a market preference for securitization that is not biased by regulatory favoritism and public protection.

Consider three alternatives: GSE pass-through securities, private securitization and covered bonds. The GSE securitization addresses the originator moral hazard by passing all credit risk on to the government, but creates unnecessary monthly cash flow and re-investment risk. Private securitization passes both risks to investors as the securitizer seeks asset sales treatment. The covered bond improves upon a securitization as a financing, e.g. selling only the AAA and AA bonds with full recourse to the issuer to address the moral hazard, then intermediates the cash flow uncertainty by providing regular bond payments. Regulators still need to address the consequences of recourse for risk-based capital and deposit insurance fees.

**Future of Multifamily Lending**

Multi family and commercial mortgages were historically too large and heterogeneous to securitize. The resolution Trust Corporation (RTC) essentially created commercial MBS (CMBS) that they backed to dispose of S&L assets. Private securitization of large pools of small homogeneous loans was common in the late 1990s as well. The GSEs became much more active in multifamily lending at this time as well (Ellen, Ye and Willis, 2010, pp5-7) to meet affordable housing goals and reduce their federal tax liability. Most multifamily loans on new construction are now relatively big and involve layers of subsidies: state and federal low income housing tax credits, special purpose tax exempt financing, etc. There is no reason to believe that in the absence of Fannie Mae and Freddie Mac multifamily loans won’t otherwise get financed by banks as they historically had been, i.e. on the balance sheet.

**Consumer Protection**
Regulators didn’t lack authority to stop “predatory lending”, which occurred largely as a consequence of regulatory imposed lending quotas. Consumers should always be well informed when engaging in a transaction as consequential as buying a house and consumer protection is warranted. But the current consumer disclosures are so comprehensive as to be overwhelming to many homebuyers. The Bureau of Consumer Protection established by Dodd-Frank won’t diminish systemic risk, but offers the potential to improve upon the myriad of consumer disclosures and requirements.

But Dodd-Frank ignored the source of the consumer problem, i.e. that Senator Dodd and Congressman Frank pushed quotas that led to unqualified people getting mortgages. So if it does its job of protecting consumers, then lenders will be in violation of affordable housing, CRA and other goals. This blame the lender mentality motivating the creation of a new watchdog agency can harm consumers in several ways. First, lawyers are among the few winners in the financial system collapse: ex ante consumer education remains preferable to ex post class action, which could seriously discourage home mortgage lending in the future. Second, mandating certain features, for example prohibiting a pre-payment penalty, means that all consumers will pay for what could be an increasingly expensive feature valuable to only a few. So quotas remain, and all borrowers will likely pay more for credit.

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1 Firms that are “too interconnected to fail” are included here by implication.


3 Only those first time buyers purchasing at the peak of the bubble with significant down payments lost money. Repeat buyers realized capital gains from sales and many took cash out upon moving up.

4 The Financial Crisis Inquiry Commission, chaired by Phil Angelides a former state Treasurer of California, is bipartisan with a democratic majority. The report is due out December 15, 2010 after the November elections.

5 See for example Roger Lowenstein (2010) and Charles Gasparino (2009).

6 Calomiris and White (1994) discuss how it was the smallest banks that were the least diversified and hence most likely to fail during the Great Depression.

7 The main battle against derivative regulation was led by Robert Rubin and his Deputy Larry Summers during the Clinton Administration. See Lowenstein (2010, pp.59).


9 Motivation can’t be proved, only inferred. Moral hazard consequences that some would label “unintended” others would more accurately label “unavoidable”.

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Hendershott, Hendershott and Shilling (2010, pg. 3)) describe the bubble as “spawned from a politically/regulatory-sanctioned mortgage finance boom.” Friedman (2008) summarizes an exhaustive study of all the various potential causes including but not limited to those to be addressed by the Financial Crisis Inquiry Commission, concluding that the cause was political, not economic.


It is hard to measure hedge fund losses, which aren’t very transparent, and some hedge funds benefited by betting both on the boom, and later the bust. The debt is about 100 times the equity in these securitizations, and was largely publicly backed. Private and public losses also occurred indirectly due to the related economic collapse, but that’s another matter.

The Secondary mortgage market consisted almost exclusively of direct sales or participations of new loan originations until 1970. After that it was mostly securitization of newly originated loans. See Villani (1983)

Calomiris and White (1994) note that large banks opposed the cross subsidy to the small banks, more likely to fail due to branching restrictions.

See Bodfish, Morton and A.D. Theobold, Saving and Loan Principles, Prentice Hall, New York, 1940 for this discussion.

The Fed had the ability to purchase FHLB securities and in that way provide systemic liquidity, but it was not obligated to do so.

HOLC was liquidated in 1951 at a small profit CRS, 1966, pg3).

Housing construction had plummeted, but demand had fallen even more and vacancies rose as people moved to smaller units and doubled up. The 1934 Act was nevertheless intended to stimulate construction (Colton,2002, pp. 4-5)

It also resulted in interest rate risk, but this was not a Depression era focus as falling rates resulted in rising real payments.

Mortgage bankers became Fannie Mae’s only clients as they gradually sold to it rather than directly placed loans with investors, typically life insurance companies for fixed rate loans. Fannie Mae required the purchase of a nominal subscription of stock for each sale, which is how the industry came to own the entity when it was subsequently privatized.

Sherman Maisel, Vice Chairman of the Federal Reserve at the time, developed and promoted the concept.

Each Ginnie Mae security is a “grantor” trust. Parenthetically, Ginnie Mae’s website now boldly proclaims “The only mortgage backed security that enjoys the full faith and credit of the United States Government.”
FHA is a mutual insurer but was placed under the department of Housing and Urban development by the 1968 Act. The Treasury doesn’t guarantee FHA, but the Secretary of HUD is the prudential regulator. Congress has never appropriated funds to back the insurer, but markets (and apparently Ginnie Mae (see footnote 15) assume it would based on this regulatory responsibility.


The same Act transferred FHA to HUD but did not change its mutual charter.

James Horn, a former aid to Senator Sparkman when he headed the Finance Committee, was asked to lobby the bill through the congress establishing Freddie Mac. He agreed, but only with the proviso that private mortgage insurance be required. He was a CEO of a Boston based insurer at the time, but the requirement stood on the merits and dramatically reduced the public risk exposure.

FHA became technically insolvent in the 1980’s and was reorganized, but didn’t require a budget transfer.

Securitization is a US phenomenon, in spite of tremendous government funded efforts to spread it to other countries. The prior American and European mortgage backed (covered) bond addresses the moral hazard by leaving the originator on the hook for the performance of the loan.

Mike Stamper, the author’s long time friend and colleague, proposed this as a VP at Ginnie Mae. He was later an EVP at Freddie Mc. The author opposed the idea as a HUD economist at the time.

Any firm could sell to Fannie Mae, but virtually all the sellers were mortgage bankers. The minimum stock subscription was establish in law and varied from a stiff 3% of loan principal, lowered to 2% then in 1965 to 1%

Fannie Mae’s regulation consisted of me a HUD economist at the time (1975-82), keeping an eye on them (but not necessarily a waking eye). HUD’s general Counsel served on the board, and then upon leaving HUD accepted a staff position there.

This discussion is contained in John Weicher, “Setting GSE Policy through Charters, Laws and Regulations,” Serving Two Masters Yet out of Control, ed. by Wallison, chapter 6, AEJ, 2000, pg 125.

These provisions in the 1934 Charter remained until 1991.

They decided to load up on credit risk in the mid-1980s, the revenues from which were intended to cover the interest rate bets. This backfired as credit losses soared. But Fannie Mae’s disclosure requirements at the time were minimal, and a government agency doesn’t have to stop issuing debt until the government says so.
State chartered S&Ls had issued mostly adjustable rate loans, minimizing the maturity mismatch. But William Proxmire, Chairman of the Senate Banking, Housing and Urban Affairs Committee refused to allow federally charted S&Ls from doing so, explaining that his aunt had a loan interest rate (modestly) adjusted after being fixed for several decades.

This was done directly by regulation and indirectly by tax law. They were allowed to take a “bad debt reserve, essentially a tax reduction, if 80% of their portfolio was invested in mortgages. If it fell below that, all past deductions were recaptured, an amount generally far exceeding their net worth.

FIRREA and insurance regulators required an immediate sale, for which there were no US buyers. Foreign buyers purchased most at prices about 50% of par. The high yield bond yield spreads subsequently covered ex post losses, as expected.


See Wallison (2009) for a discussion of this history.

Tony Yezer of George Washington University provided this useful insight.


As one example, Shearson Lehman Brothers ran both an investment banks and mortgage bank in the late 1980s. During periods of volatile interest rates, it was not unusual to obtain a price quote from the investment bank of 3-4 points to hedge a rate lock that their mortgage bank was offering to borrowers for free.

The now extensive literature on the put option in mortgage contracts was spawned about a quarter century ago by Robert Van Order, then Freddie Mac Chief Economist. See Chet Foster and Robert Van Order, 1984, for the first discussion of default as an option.


The rating agency problem was addressed in the mid-1980s with the introduction of the “cash flow” mortgage backed bond.
This included Ginnie Mae, Fannie Mae and Freddie Mac (the “cousins”) as well as the FHLB System. Later references are limited to the two “privatized” entities Fannie and Freddie.

The bid-asked spread shrunk substantially, but trading had not historically been a concern for long term investors.

More sophisticated investors made decisions based on the ex ante “option adjusted” spread, but few looked back to measure gains and losses relative to this benchmark.

Residential Mortgage Investment Trusts (REMICs) provided for credit risk tranching, leading to Collateralized bond offerings (CBOs) and the like. Financial asset securitization investment trusts (FASITs) extended this treatment to non-residential mortgage assets.

Politicians argued that it was systemically too big to fail because the mortgage market would collapse, but private industry generally disagreed.

The bonuses and severance paid to the two CEOs upon removal for causing the two biggest accounting scandals in history was estimated to be over $150 million dollars in total value.

They earned a spread between their GSE debt and what the market would have otherwise charged: this is equivalent to an option premium for an out of the money option to put the portfolio back to the government when they fail. Home borrowers got a small portion of the premium in the form of a slightly lower mortgage rate. Most of it went to stockholders, with managers and politicians extracting a surplus measured in $100’s of millions.


See Ragan (2010, pg.36).

See Johnson, (2010, pg 36).

The vote to increase capital requirements continually failed during the bubble along strict party lines, with Democrats voting against.


See Munnell, Browne and McEneaney (1992) and US House of Representatives Staff report (2009, pg6)

After the first lender that was targeted failed while fighting the law suit, others readily agreed to quotas. See Paul Craig Roberts, “Confiscation by Consent Decree”, National Review, vol. 46, October 24, 1994 and also Jo Ann s Barefoot, “Navigating the Shoals between Alan and Deval: How do Banks Price for Credit Risk While Avoiding Discriminatory Pricing”, ABA Banking Journal, Vol. 88, 1996.

Goldman Sachs is considered the premier investment banker, but even at Goldman trading profits average about double those of investment banking.
This is named after the FRB Chairman of the time Alan Greenspan. It most often is linked to his comments regarding not pricking bubbles, but cleaning up afterwards.


The credit rating agencies imposed capital requirements on independent mortgage banks that issued private label rated securities.

This is different that the former Freddie Mac Guarantor program which left the entire yield with the originator for a small fee.

Banks would all things equal want to transfer the riskier loans off balance sheet, but investors and insurers attempt to avoid adverse selection through a variety of pool qualification standards. This would explain why Ambrose and Sanders (2005) found retained loans performed worse. But there were other reasons why a loan might be rejected as well.


Cho (2009, pg. 4) describes the highly sophisticated Tier 1 models to screen borrowers, Tier 2 models to price credit risk and Tier 3 models to structure MBS.

An REIT was like a grantor trust in that it was tax free as long as it was purely an investment vehicle and the earnings were paid out in dividends. Rule changes in the 1990s allowed a REIT to have a taxable operating subsidiary such as a finance company. The residuals were then transferred to the REIT. Of course the price at which they were transferred determined the subsidiary’s tax liability, which was subject to abuse.

Whereas investors typically discounted these extremely risky cash flows at about 30%-40%, SEC rules generally discounted them at about 8%, resulting in a book value many multiples of the accounting value.

Fannie Mae maintained an international office to promote this approach and presumably garner international political support while expanding the market for its securities globally (Thompson, 2009).

Paul Krugman takes the opposite position, blaming the dominance of the Chicago economists for not believing sufficiently in “market Failure”. See his discussion in “How Did Economists Get it So Wrong”, NYT, September 6, 2009. In contrast, the Chicagoboyz.net blames it all on government inspired moral hazard.

Many financial writers criticize economists for arguing that markets are always perfect. They do no such thing, but accepting less than perfection opens the door to unlimited—and less than perfect—public intervention.

Fannie Mae in particular spent tens of millions of dollars running academic conferences, publishing journals heavily staffed with preferred economists and the like.


Peter Wallison of AEI, and Thomas Stanton, among the most vocal critics, are both lawyers.

Home ownership rates increased from their long term historical average of about 65% to a peak of over 69% by mid-2004 then began falling. This suggests a shift from first time buyers to speculative buyers at this time, or at least an acknowledgment that such borrowing had occurred.

See Barth (2009 pg. 25).

It is estimated that about a third of buyers were investors speculating on rising prices with little downside risk, as much of this was openly tolerated fraud it is difficult to accurately assess.

Industries loss rates skyrocketed by year end 2008 to their previous peak of 1987 and total industry capital fell from 17 billion in 2005 to $12 billion by year end 2008. Losses have continued but the industry is still writing new insurance and rebuilding capital.


The PMIs hate to lose business and have chased it in the past, much to their subsequent regret. This time they prudently stayed on the side lines while pointing out the risk. Their current capital difficulties can be explained by the fall in house prices and economic recession, rather than a lack of underwriting for sub-prime.

Epic Mortgage Securities collapsed in the 1980s because the equity investors were limited partners who were presumed by appraisers, insurers and lenders to be gatekeepers. In fact, they were loss seekers in a 50% personal income tax bracket who got to write off a loss equal to five times their actual investment for tax purposes! There is no reason to suspect tax distortions induced loss seeking behavior \textit{ex ante} in this case, although Congress has proposed to extend the two year loss carry back to five years, an \textit{ex post} tax loss bailout for builders, lenders and other speculators.

See Wallison (2009, pg3).

Countrywide became the nation’s largest mortgage banker, while also purchasing a bank. It changed its compensation plan in the late 1990s from salary and bonus to commission as was the case in the rest of
the industry. Countrywide was the largest and the industry leader. Lowenstein (2010, pg. 31) describes how loan officers coached borrowers to lie so all loans would get approved. Countrywide was also very politically active: Senators Chris Dodd and Kent Conrad, two former HUD Secretaries, and two former Fannie Mae CEOs got sweetheart mortgages as “friends of Angelo”.

89 See Wachovia-Golden West: Another Deal From Hell?, WSJ blog, July 22, 2008


91 See Robert Avery, Federal Reserve Board of Governors, remarks at George Washington University, Housing and the Credit Crunch, “The Sub-Prime Crisis, How Much Did Lender Regulation Matter”, May 26, 2010.

92 This apparently includes all academic economists, as the only published academic papers argue for reinstatement.

93 This estimate precedes the Administrations decision to drop the requirement that their activities be self funding to free them to pursue Administration goals.

94 See “Sup-prime Markets, the Role of GSEs, and Risk based Pricing”, HUD and Urban Institute, 2002

95 Fannie Mae was alleged to have over-stated earnings by $10 billion to increase current year bonuses. Freddie Mac was alleged to have reduced current year income by $5 billion, presumably to save to protect future bonuses. Thompson, (2009, pp.8-9)

96 The internal memo from Freddie Mac’s SVP for risk management Dave Andrukonis Sept 7 2004 pointed this out. Fannie Mae’s Chief Credit Officer Edward Pinto has written several books and articles on their suppressed risk.


98 The charter required pmi, an 80% or less senior participation, an equity second, or recourse.


100 See McLean, Bethany, “Fannie Mae’s Last Stand,” Vanity Fair, February 2009 for a good discussion of Fannie Mae’s unprecedented political influence.

101 During the Bush Administration Republicans repeatedly proposed and Democrats blocked higher GSE capital requirements (Thompson, 2009).

102 Persistent proposals to set capital requirements the same as that of commercial banks never got political traction.

103 See Wallison (2009, pg.3).
There are many excellent discussions. See for example White (2008).

Peter Wallison, op cit.

See Holman Jenkins, “Bank CEOs and the Bewitching Carrot,” WSJ, July 14, 2010 for a review of several academic papers discussing the stockholder incentives for TBTF banks to leverage excessively.


The investment banks argue they did this as intermediaries, but it is hard to measure their net exposure.

AIG became the dominant provider immediately after NY AG Elliot Spitzer had long time CEO Hank Greenburg removed,

Stuart Greenbaum was at the time a member of the Board of Directors and Chairman of the Finance Committee of ICA, which owned Imperial Savings, the largest securitizer on the west coast at the time. I was CFO.

CDO squared and CDO cubed refer to the number of times these loans can be re-leveraged, e.g. from 100 to 1 for a CDO 1000 to1 for CDO squared to 10,000 to CDO cubed 1.

See Charles Gasparino (2009, pg 413) for a more detailed discussion.


For simplicity the table combined senior and junior AAA, but senior AAA apparently had a significant pricing advantage.


Sure enough, the AAA rating dropped to the lowest investment grade rating of Baa within months after the issue and was rated junk--reflecting its true “when issued” quality--before the year was out. Now it is invisible toxic waste.

If hypothetically the average yield on the below grade securities was 15% and half could be borrowed at 5%, then the return on equity would be 25%, i.e. 15% x5% + .5 x25%.

If the financed it at a 5% discount or haircut, that was considered safe enough to treat it as sold.

See Barth (2009, pg. 166) for a discussion of this action.

See GAO (2008).

See Charles Gasparino (2009) for the best discussion of how this all came about.

Securitization was on the rise generally, and the GSEs increased market share from 35% at the beginning of the housing boom to 50% by mid 2003. It fell back to 35% for several years, and then back to 50% as the bubble was inflating in 2007.

This is a reference to the comment by FRB Chairman William Machesney Martin’s comment on the Fed’s role in the economy.

A reference to a Jane Fonda movie of 1969 about the around the clock Depression Era dance contests that went on for weeks and sometimes months.

One reason forbearance has resulted in repeat delinquency may be that for many “buyers” the purchase was just a way to pay low or no rent until foreclosure and eviction. Many of the investor properties were empty or were rented out by the investor even when in foreclosure.

See Murphy, (2009) for a discussion of payouts.


See “Robert Rubin on the Job He never wanted”, by Carol Loomis, Fortune Nov 28 2009 for a discussion of Rubin’s role, and lack of an in depth understanding of SIVs.


For the traders, only the year end bonus was at stake. For the firm, it was survival.

FASB 157 was phased in November 15, 2007 requiring mark to market accounting.

GAAP was modified somewhat at the end of 2008, but it was too late by then.

See Barth (2009, pg103) for the trend of rising estimates.

Land prices were obviously depressed as numerous builders liquidated inventory at steep discounts to raise cash.

Bottom fishers such as mortgage expert Larry Fink of Blackstone established funds in late 2008 to take advantage of these distressed sales, but this turned out to be premature and the funds performed badly, losing half of their capital in about 18 months.

Thrifts used several ways to measure interest rate risk: regulators preferred duration gap analysis. Mark-to-market was really a discounted cash flow analysis based on the theory that the yield curve is always an unbiased predictor of future interest rates, hence showing thrifts to be technically insolvent by
1980. But this prediction proved to be terribly wrong, as interest rates fell in several years to reverse the calculated industry insolvency.

140 The TED spread, i.e. the spread, the gap between the US Treasury and rate that banks borrowed, quadrupled at this time.

141 UBS, for example, took $19 Billion in sub-prime write-downs in late 2007 and 2008.

142 Gorton (2010) has a graph showing the haircut, i.e. discount to par, on structured assets rising from 1% in mid 2007 to 45% in mid 2009, following their price decline of that magnitude.

143 The ratings agencies were threatening Lehman with a downgrade when they filed, making bankruptcy inevitable.

144 The Reserve Primary Fund had paid out 99.04% of assets according to the WSJ, July 17, 2010, B11.

145 See Gorton, Gary, Questions and Answers about the Financial Crisis, FCIC, Feb 2010.

146 Treasury prices went up, everything else went down, and hence spreads widened. Economists generally point to this as evidence of contagion.

147 The 221d3 program provided subsidies to homebuyers to help them afford a zero down-payment loan.


149 FHA’s market share stayed in the 10% to 15% range of total originations from 1985 through 2001. FHA’s insurance was cut in half from the boom years 2003-2004 to the bubble years 2005-2006. Ginnie Mae’s share of total securitizations fell from 42% in 1985 to 4% by 2006. This precipitously fall would not go without notice.

150 See White (2010) for a complete discussion of the rating agency role.

151 TARP was implemented ostensibly to maintain collateral prices, but the magnitude of the underlying credit impairment by then and inability to justify any price likely doomed the initiative.

152 Treasury Secretary Paulsen stated on CNN on March 16, 2008 that “I have great confidence in our capital markets and our financial institutions. Our financial institutions, banks, and investment banks are strong.


154 The Fed has been criticized by some for not charging a sufficiently high penalty rate to discourage profitable investment in government securities, thereby delaying a resumption of normal lending.

155 This has been announced by the administration, but is only true in a narrow sense. The FDIC taxes banks to cover losses. The FDIC needs to promote safety to protect banks which can include protecting their franchise value and limiting competition.
Chairman Bernanke announced on June 9, 2010 that advances to all the financial firms had been paid back with dividend and interest by then with the exception of AIG, which he said was expected to do the same (WSJ, June 10, 2010, C3).


The HOLC that ran the Depression era forbearance programs didn’t face the same moral hazard and closed in 1951 with a small profit.

Larry summers, director of the National Economic Council in the Obama Administration, said it was impossible to argue a comprehensive financial system regulatory overhaul wasn’t needed, as reported in the W.S.J., A5, May 22-23, 2010.


Citi’s problems largely stemmed from banking activities, which JP Morgan Chase avoided.

In the spring of 2010 there were almost daily stories in the W.S.J. as to how Shorebank, a bank with reputedly strong political connections in both Chicago and Washington, had failed but had not been taken over. All the TBTF banks and investment banks, including Goldman Sachs after being sued in civil then criminal court, lined up to bail it out. The Republicans have called for a complete investigation.

The SEC voted 5-0 to ban “pay-to-play” schemes on June 30, 2010.
A decade ago the concern was that federal debt would disappear. Now the concern is that the massive debt will cause a recurring cycle of financial and economic crises. See the comments of former CBO Director Rudy Penner, “Choosing the Nation’s Fiscal Future”, National Commission on Fiscal Responsibility and Reform, Urban Institute, Washington DC, April, 2010.

FRB Chairman Bernanke (2009) argued based on the contemporaneous crisis situation that government (GSE) securitization is needed in times of crisis, and did not take the opportunity to call for the elimination of Fannie Mae and Freddie Mac. He defines the GSE problem as the conflict between private shareholders and the public interest to be solved with regulation, rather than the alignment of stockholder with political interests not aligned with the public, understandable for a political appointee, but not for a systemic risk regulator.


It is inherently difficult to estimate what would have happened in the absence of the massive public intervention in mortgage markets. But none of the rationales are applied to e.g. the auto loan market.

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179 They propose that politicians would set “an actuarial price” for the guarantee, essentially the user fee first proposed in the 1970’s. How politicians would determine the price of a 30 year out of the money put option and reserve the premium for when it is exercised is not explained.

180 Woodward and Hall (2009, pg2.) argue for opaque prepayment risk as a positive trade-off to the “liquidity” benefit of homogeneity, citing the minimal call features in otherwise non-callable municipal bonds. But that is orders of magnitude different that $5 trillion of fixed rate securities whose maturity can range anywhere from 30 days to 30 years.

181 References to the extent GSEs lower borrower costs are misleading. Prospectively they can do this by 1. Inefficiently transferring a portion of the implicit taxpayer subsidy, 2. Causing investors to under-price the risk of imbedded options. Transparency and investor awareness mitigates the need to trade, making wider bid-asked spreads a moot issue. Of course, this is devastating for Wall Street traders.

182 FHA proposes a change in the limit to 3% starting in the summer of 2010.


184 This System was restructured by FIRREA to serve the commercial banking industry, and suffers some incentive conflicts biasing it towards growth as a result.

185 Estimates are taken from the Flow of Funds Accounts, FRB.

186 Mandating no pre-payment penalty forces all buyers to pay for it in the fees, points and rates.

187 Truth in Lending, ARM, Reg Z and other disclosure go on for many pages, in some cases discouraging careful reading.
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