

February 7, 2011

SPECIAL REPORT

The Future of the Mortgage Finance System

Prepared by

Mark Zandi
Chief Economist
+610.235.5000

Cristian deRitis
Director
+610.235.5237

The Future of the Mortgage Finance System

BY MARK ZANDI AND CRISTIAN DERITIS

The nation's housing market has gone from boom to bubble to bust over the past decade, with a devastating impact on the global economy and financial system. Millions of bad mortgage loans were made—loans homeowners would have had difficulty repaying under the best of circumstances—and as a result, millions are now losing their homes. As the financial institutions with stakes in these bad loans buckled, credit stopped flowing and the U.S. economy experienced its worst recession in decades.

This was not supposed to happen. After the Great Depression, the federal government established the FHA, Federal Home Loan Banks, and Fannie Mae to prevent such wild swings in the housing market as well as promote homeownership. The system worked reasonably well for more than 60 years. The housing market suffered ups and downs, and foreclosures increased at times, but the problems were modest and manageable. As a consequence, the U.S. homeownership rate rose steadily from about 45% after the Depression to 65% by the mid-1990s.

During the 2000s, however, the mortgage finance system changed dramatically, pulled by the growth of private-label mortgage securitization. Securitization—the process of packaging mortgage loans into securities sold to investors—was not new: The FHA, Fannie Mae and Freddie Mac had been securitizing mortgages for more than 25 years. But as the new century began, securitization surged in both size and scope, incorporating a wider range of mortgages, including subprime and Alt-A loans. Securitization also grew more complex and opaque, so that even the most sophisticated investors had trouble evaluating deals.

Critically, moreover, no participant in private-label mortgage securitizations had the responsibility for ensuring that the pro-

cess worked. Mortgage banks and brokers originated loans but quickly sold them to investment banks, which packaged the loans into securities. Credit rating agencies assessed them, often using faulty information provided by the investment banks. Investors who purchased the securities took the ratings largely on faith. And government regulators provided little oversight, feeling the private market could regulate itself. Yet as the events of the past three years show, it clearly could not. Today, the private-label securities market is comatose.

The system's fault lines were stressed by the flood of capital that poured into the U.S. from China and other emerging economies. With trillions of dollars in reserves earned in trade with the U.S., investors in these economies found U.S. mortgage securities particularly alluring. They offered good returns, particularly given their brief historical credit performance. The easy monetary policies of central banks such as the Federal Reserve only added to the flood of global capital, which stretched the faulty securitization pipeline to the breaking point as it rushed through.

U.S. policymakers' aggressive pursuit of homeownership also contributed to the problem. Since the 1930s, single-family housing has received more government help than any other sector of the U.S. economy. Subsidies

are provided via the mortgage interest and property tax deductions, favorable capital gains treatment, and the lower mortgage rates and affordable housing mandates of Fannie Mae and Freddie Mac, among other channels. The Clinton and Bush administrations often pointed to the rising homeownership rate as evidence of their economic policies' success. With both parties set on this policy objective, many households that should not have received mortgage loans got them.

Once the system began to break, the process was exacerbated by the collapse of Fannie Mae and Freddie Mac. While these institutions had been small contributors to the housing bubble, they were too thinly capitalized for the risks they were taking and were thus overwhelmed by the housing downturn and subsequent rise in mortgage defaults. Yet Fannie and Freddie were much too big to fail; because of their size and importance to the global financial system, both were put into conservatorship in September 2008. A string of massive financial failures followed, which led to the near collapse of the financial system.

The government's takeover of Fannie and Freddie effectively nationalized the mortgage finance system. Today the two institutions, along with the FHA and VA, account for nearly all new mortgage loans. No one is comfortable with this, and a debate on the future of the

mortgage finance system has begun. There is general agreement that for the system to succeed, it must make reasonably priced mortgages available to qualified borrowers while limiting both risks and costs to taxpayers. The system should be resistant to the business cycle, so that mortgage credit remains ample during periods of market stress and is not excessive during periods of market hubris.

Maintaining the federal government's current domination of the mortgage finance system is one approach. Fannie and Freddie could be put into receivership and their activities subsumed into the federal government. Permanently nationalizing the system in this way would ensure that mortgage lending is not disrupted in bad times, but the cost to taxpayers could be enormous if the system is not well managed. There is also a reasonable concern that government would stifle innovation, preventing the development of mortgage products that could more efficiently meet borrowers' needs.

At the other end of the spectrum is complete privatization of the mortgage finance system. The federal government would still regulate, but Fannie and Freddie would be downsized and their activities restricted. Some form of private-label securitization would have to be revived. Yet given recent history, it is unclear how well a purely private system would do during periods of financial market stress. It is also unclear whether the too-big-to-fail risk would be significantly mitigated; if the system were to fail again, the federal government would have to step in, at significant cost to taxpayers.

A private system would also likely mean the end of the 30-year fixed-rate mortgage as a mainstay of U.S. housing finance. A privatized U.S. market would come to resemble overseas markets, primarily offering adjustable-rate mortgages. Based on the experience overseas, the fixed-rate share in the U.S. would decline to an average of between 10% and 20% of the mortgage market compared with a historical average of closer to 75%.¹ Reinforcing this likelihood are the limits placed on the use of prepayment penalties in the recently passed Dodd-Frank financial regulatory reform

legislation. Adjustable-rate mortgages are not inherently bad loan products, but they do shift the risk of fluctuating interest rates onto homeowners. This would be a very significant adjustment for many U.S. homeowners who are not well equipped to handle such risk.

An appealing middle way involves a hybrid of nationalized and privatized systems. Such a system could take many forms, but the most attractive would retain several roles for the federal government—insuring the system against catastrophe, standardizing the securitization process, regulating the system, and providing whatever subsidies are deemed appropriate to disadvantaged households. Private markets would provide the bulk of the capital underpinning the system and originate and own the underlying mortgages and securities.

Catastrophic insurance would be provided on mortgage securities only after major losses, much as the FDIC insures bank deposits. The FDIC ended runs by scared depositors on U.S. banks during the Great Depression. Catastrophic mortgage securities insurance would eliminate runs by scared investors on the global financial system such as those that sent the economy reeling in 2007 and 2008, precipitating the Great Recession.

Catastrophic insurance would ensure that mortgage credit remains ample in the bad times, and—assuming it is properly priced—at no cost to taxpayers. It would also reduce the odds of bad lending in good times, since the insurance would be offered only to qualifying mortgages, or to others only at a high price. Since private financial institutions would put up the system's capital, there would be significant incentive to lend prudently and, given the competition in a mostly private system, to innovate as well.

In a hybrid system that is proposed in detail later in this paper, mortgage rates would be higher than they were before the housing crisis, but only because the previous system was undercapitalized.² If the future system

is capitalized sufficiently to withstand losses on defaulting mortgages that would result if house prices declined by say 25%—consistent with the price declines experienced in the current housing crash—mortgage rates would be approximately 30 basis points higher. The pre-financial crisis mortgage finance system was capitalized to losses associated with a 10% decline in house prices.

But mortgage rates in the proposed hybrid system would be almost 90 basis points lower than under a fully privatized system. This is a significant difference. The monthly principal and interest paid by a typical borrower who has taken out a \$200,000 loan for 30 years at a 6% interest rate is \$1,199 under the hybrid system. With a 90-basis point premium in the privatized system, the monthly payment increases to \$1,317, a difference of \$118, or nearly 10%. The difference in payments under the two systems would likely be even greater for borrowers with less than stellar credit or who are seeking loans with higher loan to value ratios. The greater the risk, the greater the rate premium under the privatized system.

Homeowners would also benefit from the preservation of the popular 30-year fixed-rate mortgage, a type of loan that would quickly fade in a fully privatized system. Taxpayer bailouts would also be unlikely in the hybrid system, as homeowners and private financial institutions would be required to put substantial capital in front of the government's guarantee, and there would be a mechanism to recover costs if necessary.

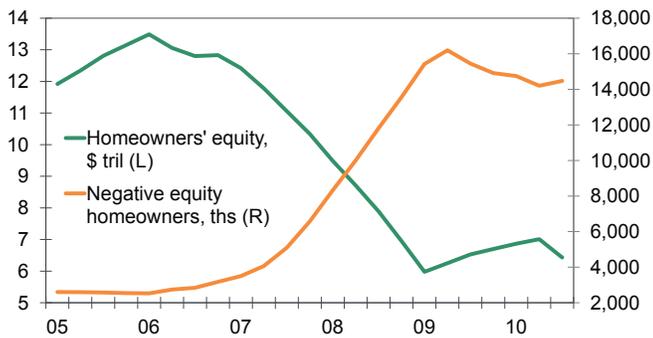
Given the fragile states of the U.S. housing market and economy, a transition from the current nationalized mortgage system to a hybrid system would take years and raise many issues, but these will be manageable. Given the expertise they have acquired over the past several decades, the downsized Fannie and Freddie could become federal catastrophic insurers. The transition would also involve establishing institutions and an infrastructure necessary to attract private capital.

Homebuyers will have to pay more for mortgage loans in the future than they did prior to the financial crisis. Given the nation's fiscal challenges, the federal government cannot afford to continue large subsidies for

² The hybrid system proposed in this paper are similar to a number of other proposals. Most notable include a proposal by the Housing Policy Council of the Financial Services Roundtable (a group of 32 leading national mortgage finance companies) <http://www.fsround.org/housing/gse.htm>, the Mortgage Bankers Association <http://www.mbaa.org/Advocacy/IssuePapers/CEML.htm>, and the Center for American Progress <http://www.americanprogress.org/issues/2011/01/pdf/responsiblemarketforhousingfinance.pdf>

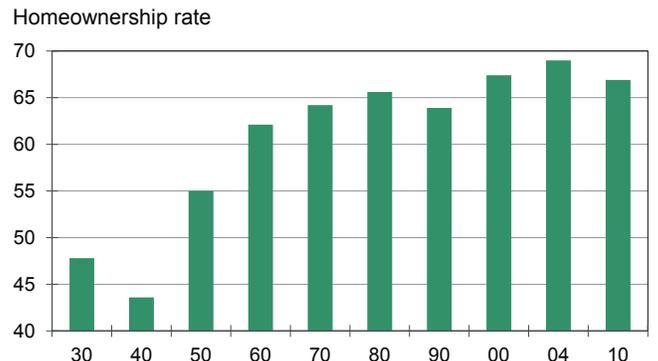
¹ This is based on data from the Federal Housing Finance Administration available since 1985.

Chart 1: Homeowners' Equity Evaporates... Negative Equity Homeowners Surge



Sources: Federal Reserve, Moody's Analytics

Chart 2: Homeownership Soars After the Depression



Source: Bureau of Census

homeownership. It is unclear that these subsidies were effective in any event, given the current foreclosure crisis. Nonetheless, it is critical that the mortgage finance system be better designed, or the costs for future prospective homeowners will be prohibitive, and the costs to taxpayers in the next financial crisis will be overwhelming.

History lessons

Before designing a mortgage finance system for the future, it is important to understand why the previous system failed so dramatically. There is no simple explanation; the collapse resulted from an unfortunate confluence of factors. But carefully documenting and weighing the importance of each is necessary to avoid repeating the same mistakes.

The old system's failure was devastating. Since the housing crash began nearly five years ago, house prices have fallen between 15% and 30%, depending on the house price measure, wiping out \$7 trillion in housing equity and leaving more than 14 million homeowners underwater (see Chart 1).³ Approximately 7 million households have lost homes through distress sales, generating \$700 billion in mortgage losses. The global financial system was brought to its knees, as major financial institutions buckled under the weight of these losses.

The resulting credit crunch ignited the Great Recession—the longest and most se-

vere economic downturn since the 1930s. An economic recovery has since taken hold, but growth has been insufficient to reduce the unemployment rate, which remains stuck near 10% despite almost \$1.5 trillion in fiscal stimulus and other financial support from the federal government.⁴ The federal debt-to-GDP ratio is now as high as it has been since the nation had to pay for World War II, and rising.

Depression baby

This was not the way it was supposed to be. After the Great Depression, the federal government established a number of institutions, including the FHA, the Federal Home Loan Banks, and Fannie Mae, to forestall wild swings in the housing market and to promote homeownership. The system worked reasonably well for more than 60 years. The housing market suffered ups and downs, but its problems were modest and manageable. As a consequence, the homeownership rate rose steadily from about 45% after the Depression to 65% by the mid-1990s (see Chart 2).

The key innovation of the Depression-era institutions was the 30-year, fixed-rate, self-amortizing mortgage. Before this, short-term balloon mortgages were common; after a few years, borrowers would either pay off their outstanding balances or, more typically, refinance their loans. As long as liquidity was flowing and banks were willing to roll over loans, the system

worked well enough. But in bad times, liquidity quickly disappeared, and borrowers with expiring mortgages found themselves in foreclosure, as millions did during the Depression. The FHA introduced the 30-year fixed-rate mortgage to shelter homeowners from the business cycle and provide a fixed payment schedule in order to attract Depression-scarred households back to the housing market.

Fannie Mae and the Federal Home Loan Bank System were established to ensure mortgage lenders had adequate capital and liquidity during both good and bad times. Fannie Mae purchases mortgages from banks and other lending institutions, while the Federal Home Loan Bank System offers cheap loans to banks collateralized by the mortgages they originate. All this was important, because 30-year fixed-rate mortgages exposed lending institutions to interest rate and prepayment risks, much more than short-term balloon payment mortgages had.

The FHA, Fannie Mae and FHLBs performed their functions well during the decades that followed their creation. Underwriting standards were high and loan losses were low, because banks looking to sell loans to the government were required to attest that they had met certain standards. Under this "rep and warrant" model, any defaulting loans found not to have met these conditions had to be repurchased by lenders at cost—giving lenders a strong incentive to follow the rules.

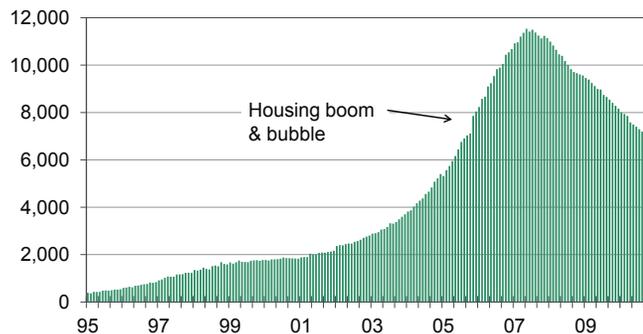
Fannie Mae's success was reflected in its quickly expanding balance sheet, which by the 1960s had become a sizable part of the fed-

³ The Federal Reserve's Flow of Funds, the Treasury Department, the FHFA, Bureau of Labor Statistics, Equifax, Fiserv Case-Shiller, and Moody's Analytics are the sources for the data cited in this and the next paragraph.

⁴ This includes approximately \$1.3 trillion in a fiscal stimulus, \$150 billion in capital provided to Fannie Mae and Freddie Mac, and \$50 billion in other costs including TARP.

Chart 3: Private Label RMBS Soars During the Bubble

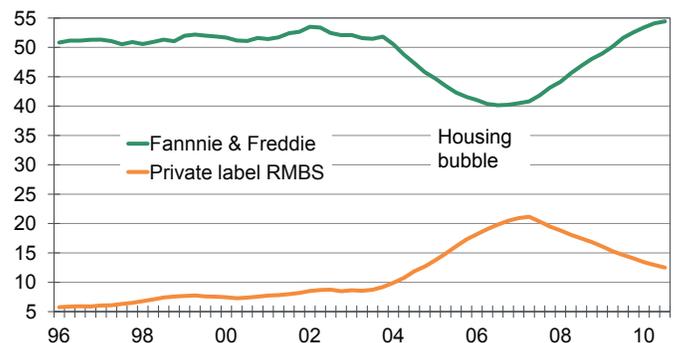
First mortgages in private label securitized pools, mil



Sources: Moody's Investors Service, Moody's Analytics

Chart 4: Trading Places

Share of mortgage debt, %



Sources: Federal Reserve Board Flow of Funds, Moody's Analytics

eral government's own assets and liabilities. For a government looking to finance both the Vietnam War and Great Society programs at home, Fannie's debt was a heavy burden, even if its underlying assets were solid. As a result, Fannie was spun out to private shareholders as a so-called government-sponsored enterprise at the end of the decade.⁵

The federal government still maintained significant control over the mortgage finance system. Fannie had presidentially appointed board members and a line of credit with the U.S. Treasury. There were no explicit guarantees, but Fannie's creditors assumed the government would come to the company's aid if necessary. A second GSE, Freddie Mac, was established to provide more support to the housing market and supply competition for Fannie.⁶

At the same time, policymakers also created Ginnie Mae and launched the residential mortgage-backed securities market. Ginnie Mae guarantees timely payment of principal and interest on RMBS backed by federally insured or guaranteed loans, mainly from the FHA and VA.⁷ Ginnie does not buy or sell mortgage loans or issue mortgage-backed securities, but securitization would likely not have spread without its guarantees.

⁵ Fannie Mae's evolution into a GSE began with the 1968 Charter Act and was completed by 1970.

⁶ Freddie Mac was created under the Emergency Home Finance Act of 1970.

⁷ Mortgage-backed securities are pools of mortgages used as collateral for securities sold in the secondary market. Ginnie Mae MBS are commonly referred to as "pass-through" certificates because the principal and interest of the underlying loans is passed through to investors. The interest rate of the security is lower than the interest rate of the underlying loan, to allow for payment of servicing and guarantee fees.

The mortgage finance system worked admirably for 30 years after Fannie and Freddie became GSEs. The system was severely tested during the recessions of the early 1980s, the savings & loan crisis of the late 1980s and early 1990s, and the Asian financial crisis of the late 1990s, but it did not break. Without the government and government-backed institutions that formed its backbone, the system would not have weathered these storms nearly as well.

Securitization fails

The seeds of the mortgage finance system's failure were sown in the late 1990s, when private mortgage lenders and investment banks began to expand aggressively. A ballooning U.S. trade deficit generated massive global capital inflows, powering this expansion into increasingly risky mortgages that were not allowed under GSE guidelines. Ultimately, millions of loans were made that could not have been repaid under any reasonable scenario. The private-label securitization process that created them was fundamentally broken.

The private-label RMBS market surged between the late 1990s and the mid-2000s. Fewer than 1 million first mortgage loans backed such securities in early 1997, amounting to \$130 billion in outstanding mortgage debt. A decade later there were nearly 12 million such loans, equal to \$2.2 trillion in outstanding mortgage debt (see Chart 3). It is no coincidence that as the market experienced exponential growth, the housing bubble was inflating rapidly.

The loans backing securities in the private-label RMBS market grew increasingly risky. At the market's apex in early 2007, almost 40% of such loans went to subprime borrowers with low credit scores and carried elevated loan-to-value ratios. So-called alternative-A loans, made to homeowners whose credit files contained some irregularity, accounted for another 27% of the market.⁸ Option-ARM loans, which allowed homeowners to make reduced principal and interest payments and thus increase their debt over time, accounted for 13% of the market. All these novel loan arrangements increased the lenders' risk; adding to it further was the practice of issuing "stated-income" loans, for which borrowers were not required to document their incomes with W2 statements or tax returns. At the peak in activity in 2007, almost half of all mortgages were stated-income loans.

The explosion in private mortgage lending and securities issuance significantly diminished the role of the GSEs and FHA. Their share of total mortgage debt outstanding, which was consistently above 50% during the late 1990s and early 2000s, fell to 40% during the housing bubble (see Chart 4). The FHA and GSEs lost business to private-label RMBS, whose market share rose above 20%.⁹ In particular, FHA lending all but dried up.

⁸ The definition of a subprime mortgage loan blurred as lending surged, but traditionally a subprime loan has a FICO score of less than 620. An alt-A loan has a score of between 620 and 660. The average FICO score across all borrowers is approximately 700.

⁹ The private-label RMBS market accounted for an even greater 70% share of origination volume at the height of the housing bubble, with the FHA and GSEs accounting for only a 30% share.

Global liquidity

The explosive growth of private-label RMBS was fueled by a flood of global capital. An explosion of low-cost Chinese production and a strong U.S. dollar caused the trade deficit to swell, as hundreds of billions of dollars flowed overseas each year in exchange for imported goods. Surging prices for oil and other commodities, driven in part by booming Chinese demand, added to the import bill. As a result, investors in places from China and India to Russia and Brazil collected huge pools of dollars.

For these newly flush global investors, Wall Street's innovative financial securities seemed perfect investments. Global investors were led to believe they could take precisely calibrated risks using the new instruments, within a U.S. bond market that was huge, liquid and historically safe. Overseas cash soon showered U.S. credit markets, pushing interest rates lower.

It did not take long for some of these global investors to become especially enamored of private-label RMBS. Foreigners had historically bought risk-free U.S. Treasuries; bonds issued and insured by government-tied institutions such as Fannie Mae and Freddie Mac were only a small step removed. From there it was not much of a leap to invest in mortgage securities tied to Wall Street instead of the U.S. government.

Not responsible

But the private-label RMBS market was not up to the task of investing global investor dollars wisely. Trillions of dollars in bad mortgage loans were made because none of the system's participants were responsible for ensuring that it worked. These included the mortgage banks that originated the loans, the investment banks that packaged the loans into securities, the rating agencies that graded the creditworthiness of the securities, the global investors who purchased the securities, and the government regulators who oversaw various pieces of the system.

Securitization changed mortgage banks' long-standing "originate-to-hold" model of lending, in which they kept the loans they

made on their own balance sheets. In its place was a new "originate-to-distribute" model, in which loans were sold to investment banks. That left the mortgage banks less exposed to risk and thus less motivated to lend carefully in the first place. This change in the banking business model was tacitly endorsed by regulators, who saw

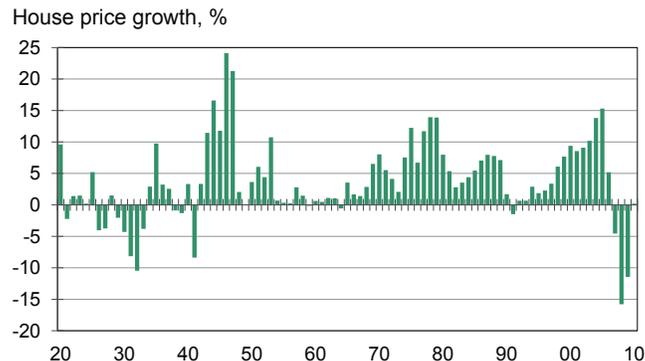
the transfer of risk as a way to diminish the chance of another savings & loan-type crisis. But of course the risk in these loans did not disappear; it simply shifted to investors and, by extension, to the broader financial system.

Investment banks themselves did not retain the risk long, as they bundled loans from various mortgage lenders into securities. As a result, the investment banks would not be on the hook if things went wrong. Yet their incentives for ensuring the securities were sound also grew fuzzy as the investment banks acquired their own mortgage banking operations and even became investors in their own securities to keep the deals and fees flowing.

Without a rating from the credit rating agencies, the investment bankers who issued the RMBS could not have sold them to investors. The agencies' opinions held particular weight when it came to pricing RMBS, as most global investors were ill equipped and often disinclined to evaluate these extraordinarily complex debt instruments on their own. But when house prices fell sharply starting in 2007, the agencies downgraded the ratings of tens of thousands of RMBS.

The rating agencies' opinions were in many cases based on bad data. Unable to scrutinize each of the thousands of mortgages and properties that served as collateral in RMBS, the agencies accepted the representations of RMBS bond issuers as complete and correct. So when the issuers provided data on such things as homebuyers' debt-to-income ratios, property prices, and so on, the agencies took it at face value. This aspect of securitization was widely understood; the

Chart 5: Consistent Price Gains Since the Depression



Sources: Robert Shiller, Fiserv Case Shiller, Moody's Analytics

agencies did not consider it their responsibility (nor was it practical) to verify such data, so they had no basis for judging whether homebuyers were stretching the truth, or simply lying. With so many loan documents containing "stated" incomes and lax appraisals, ratings on trillions of dollars of RMBS were based on what is now understood to be faulty, if not falsified, data.

The agencies also relied too heavily on historical performance trends rather than the full range of possible economic outcomes – including a Great Depression-style scenario. The long history of house price gains since the Depression (at least in nominal terms averaged nationwide) led to the strong conclusion that prices, in aggregate, would never decline (see Chart 5). Prices in one region or two another might fall, as in Los Angeles in the early 1990s or Houston in the 1980s, but a broader downturn was unthinkable. The maxim that "all real estate is local" -- a once strongly held tent of the mortgage business -- was ingrained in the assumptions of rating agencies and other securitization market participants.

Global investors grew increasingly complacent in making decisions about RMBS. In other asset classes, institutional investors had well-established in-house analytical capabilities to augment the judgment of the rating agencies. But in RMBS, they accepted the agencies' opinions as fact. Times were great, the global economy was strong, and asset prices were rising quickly almost everywhere. Skeptics argued for a time that markets were becoming overpriced, and for a time they were heeded. The financial pain of the tech-stock bust

and the Asian financial crisis had not been forgotten, and most of the signals used to value investments were flashing red. However, as asset prices continued to march higher, those who arguing argued that something was askew in global asset markets lost credibility. Eventually they either changed their minds or their views were dismissed as simplistic and impractical.

Seeking to make sense of their own investment decisions, asset managers devised their own intellectual defense of lofty global asset prices. This time it was different, the argument went. Never before had the global economy been this stable or this open. In this great moderation, business cycles would be milder and briefer than in the past. Ups and downs in employment and income, corporate profits, and landlords' rents—conditions that determined the value of mortgage-backed bonds—were less volatile. Investors were encouraged to believe a more stable global economy meant more stable returns. Feeling secure, they sought to magnify their returns through leverage, borrowing to buy even more of whatever they were investing in. Leverage can generate extraordinary returns if an investment works out but can be financially devastating if it does not.

Government regulation of the housing and mortgage markets proved ineffective during the boom. This was in part simply because of the mishmash of regulators overseeing different aspects of the market. Their sheer numbers muddied the response to the frenzy leading up to the financial crisis. Some regulators recognized that increasingly easy lending standards would soon be a problem; a few publicly warned of the risks. But with so many diverse groups involved, it was difficult to get a working quorum for decision-making. At a time when more diligent oversight was desperately needed, half the nation's lenders were regulated at the federal level and half by the states.

The 1980s and 1990s were also marked by a steady march toward deregulation. The trend climaxed in 1999 with congressional passage of the Gramm-Leach-Bliley bill, which overturned Depression-era

banking laws separating commercial banking from securities dealing and insurance. The Basel II rules on banks' capital reserve requirements were being fashioned at about the same time. These rules rely heavily on market forces; how much capital banks need, and therefore how aggressive they can be in their lending, is determined mainly by the market value of their holdings. The fashion in banking circles was to let the market—not regulators—determine what was appropriate.

As the subsequent financial crisis has made clear, the private label RMBS market did not responsibly self-regulate.

Homeownership goals

While securitization failed, the excesses in the housing and mortgage markets were also fueled by America's fierce, long-running devotion to the goal of homeownership for all. Since the Depression, policymakers had viewed the percentage of American families who owned their dwellings as a benchmark of economic success. Regulators were given a seemingly open-ended mandate to drive that number higher.

The policy pursuit of higher homeownership went into high gear beginning in the 1970s, as it also became a test of the nation's success in promoting civil rights. The 1977 Community Reinvestment Act had outlawed "redlining," banks' practice of withholding mortgage loans from certain disfavored neighborhoods, which typically were outlined in red on maps. Such neighborhoods were usually inhabited by the poor or by out-of-favor ethnic or racial groups. The CRA was meant not just to end but to actively reverse the effects of such discrimination by encouraging banks to lend in underserved areas. The CRA was given more teeth during the 1990s: Regulators could now require banks to explicitly target disadvantaged neighborhoods for both business and home-mortgage lending.

About this time, the Federal Reserve also unveiled new statistical methods for detecting discrimination in mortgage lending. Marrying data from mortgage loan applications and approvals (as required under the 1975 Home Mortgage Disclosure Act)

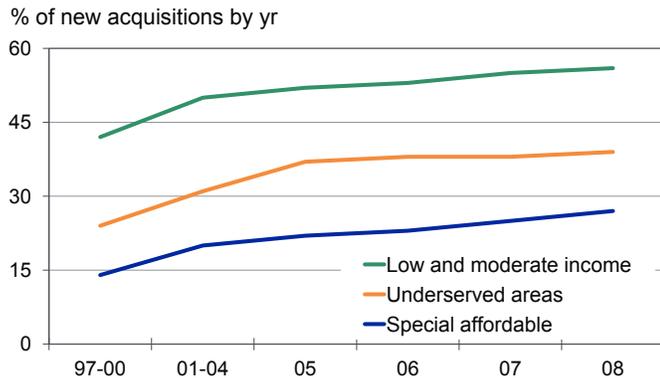
with sophisticated econometric techniques, researchers at the Fed felt they could tell whether lenders were discriminating racially. A bank tagged by the Fed's models could be denied permission to acquire or merge with another bank. This was a period of active consolidation in the banking industry, and any institution that could not be a shark quickly became a minnow. Only a handful of banks actually failed the Fed's test, but they were soon acquired, reinforcing the regulators' message to push homeownership aggressively.

The Clinton administration was proud of the rise in homeownership during the 1990s, particularly among lower-income and minority households who gained meaningful access to mortgage credit for the first time. African-American and Hispanic households with incomes and savings, who may have been unable to obtain mortgage loans in the past, now finally could do so. While homeownership rose 7% among white households during the decade, it increased 13% among African American households and 18% among Hispanic households. This was a priority for the Clinton administration; it empowered and then pushed regulators to aggressively enforce requirements on mortgage lenders to extend more loans to previously excluded groups.

President George W. Bush readily took up the homeownership baton at the start of his administration in 2001. A home became one pillar of his "ownership society," a vision in which every American would possess a financial stake in the economy. For millions, this meant owning their home. In the summer of 2002, Bush challenged lenders to add 5.5 million new minority homeowners by the end of the decade; in 2003 he signed the American Dream Downpayment Act, a program offering money to lower-income households to help with down payments and closing costs on a first home.

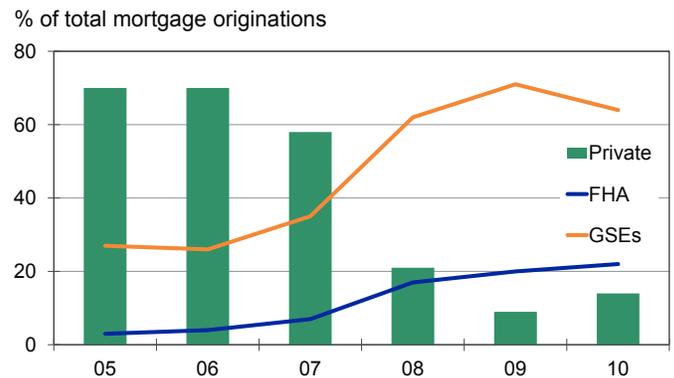
To reinforce this effort, the Bush administration put substantial pressure on Fannie Mae and Freddie Mac to increase funding of mortgage loans to lower-income groups. HUD gave them aggressive "affordable"

Chart 6: Fannie and Freddie's Housing Goals



Source: HUD

Chart 7: Government Lending Filled the Void



Sources: FHA, GSEs, Moody's Analytics

housing goals (see Chart 6). Both Fannie and Freddie—whose activities had been severely circumscribed after they were found to have improperly managed their earnings through irregular accounting during the early 2000s—were willing to go along with policymakers' requests. This also fit with the GSEs' business objective to stem erosion in their market share to the private-label RMBS market. The GSEs thus lowered their underwriting standards—becoming sizable buyers of the Aaa tranches of subprime and alt-A mortgage securities—at the very worst time, just prior to the start of the financial crisis in 2007.¹⁰

The federal government's aggressive pursuit of homeownership was a significant contributing cause of the financial crisis. It was up to policymakers and regulators to strike the appropriate balance between promoting homeownership and ensuring prudent mortgage lending. They failed to strike that balance.

Government backstop

The housing market peaked in the spring of 2006, and cracks in the mortgage finance system were developing by the spring of 2007.¹¹ By the spring of 2008, house prices were falling quickly and mortgage delinquencies and foreclosure were rising rapidly. Bear Stearns failed under

the weight of its exposure to the housing and mortgage markets, and it was evident that Fannie and Freddie's gambit to regain market share from the private-label RMBS market had been a serious mistake. Federal regulators put the GSEs into conservatorship in early September 2008, effectively wiping out shareholders.¹²

The missteps and failure of the GSEs did not cause the housing market and mortgage finance system to collapse, but they set off a chain of events resulting in the most severe financial crisis and economic downturn since the Great Depression. Fannie and Freddie's takeover persuaded global investors that none of their investments were safe, and just as occurred during the Great Depression, a panic ensued. Lehman Brothers, the next weakest link in the financial system, filed for bankruptcy a week after the government takeover of the GSEs, and a series of blue-chip financial institution failed soon thereafter.

The GSEs had come full circle, once again becoming part of the federal government. Along with the FHA, they quickly filled the void left by the vanishing private-label RMBS market. The GSEs' share of mortgage originations surged to almost 95% in 2010, and their share of mortgage debt outstanding is quickly closing in on

55%, a record (see Chart 7). There currently is no private-label RMBS-related origination activity to speak of, and the private share of mortgage debt outstanding is falling rapidly toward 12%.

The federal government's ability to quickly intervene in the nation's mortgage finance system saved the housing market and economy from an even more catastrophic fate.¹³ While a severe credit crunch took hold across nearly all lending and credit markets, residential mortgage credit continued to flow. Credit was not nearly as ample as it had been—which, given the egregious underwriting of the housing boom, was a desirable outcome—but the availability and cost of mortgage credit was not a major impediment to homebuying. This government backstop is one of the most important reasons why the economy suffered a Great Recession, and not another Great Depression.

Remaking the mortgage finance system

Aggressive government intervention succeeded in backstopping the housing market during the financial crisis, but the costs were high. Taxpayers will ultimately spend nearly \$200 billion to shore up Fannie and Freddie, fund mortgage modification and refinancing efforts, finance three rounds of homebuyers' tax credits, and cover the Federal Reserve's

10 The affordable housing goals also created a perverse outcome: Private lenders knew the GSEs would be desperate to purchase loans to meet their goals and extracted higher prices or other concessions such as the purchase of lower-quality loans.

11 The Case-Shiller national house price index hit an all-time high in first quarter of 2006. Two high-profile Bear Stearns hedge funds with investments in subprime and other mortgage-related securities failed dramatically in May 2007.

12 The enactment of the Housing and Economic Recovery Act of 2008 established the Federal Housing Finance Agency and gave it the authority to place Fannie Mae and Freddie Mac in conservatorship—a step it took in September 2008. The Treasury was granted authority to provide the GSEs with unlimited capital (by purchasing their stock) to maintain their solvency through 2012. Those actions gave the government control over the two institutions and effectively made its backing of their debt securities and MBS guarantees explicit.

13 The federal government took a large number of other steps to directly support the housing and mortgage markets, most notable being the Federal Reserve's purchases of Fannie and Freddie debt and mortgage-backed securities, an increase in conforming loan limits, various efforts to facilitate mortgage loan modifications including HAMP and HARP, and three rounds of tax credits to incent homebuying.

Table 1:

Federal Government Response to the Housing and Mortgage Market Crisis

\$ bil

	Originally Committed	Ultimate Cost
Total	1,494	202
Federal Reserve		
Purchase of GSE debt and MBS	1,425	15
Treasury		
Homeowner Affordability and Stability Plan	52	28
Fannie Mae and Freddie Mac	Unlimited	142
Congress		
Homebuyer Tax Credits	17	17

Sources: Federal Reserve, Treasury, Moody's Analytics

likely losses on the mortgage securities it purchased during its period of credit easing (see Table 1).¹⁴

Meanwhile, the financial crisis has left the mortgage finance system in tatters. Fannie and Freddie are operating in conservatorship, an unsustainable form of financial and regulatory limbo. The FHA makes almost half of all home-purchase mortgage loans and is thus taking on more credit risk than policymakers ever envisaged. The Federal Reserve has close to \$1.2 trillion in Fannie and Freddie debt and mortgage securities on its balance sheet, which it will eventually sell or allow to mature. Very little private lending is taking place, save for large jumbo mortgage loans to borrowers with high credit scores and ample home equity. Private lenders will likely remain reluctant to provide more credit until the government's future role in the mortgage market is clear.

This is untenable; thus, planning for a new mortgage finance system is under way. Given the fragility of the housing and mortgage markets and the complexity of the system, any change will take years, if not decades, to be fully implemented.

¹⁴ The bulk of the costs are related to the capital provided to Fannie and Freddie, which amounts to nearly \$140 billion to date. For historical context, the cleanup of the savings & loan crisis in the late 1980s and early 1990s cost U.S. taxpayers an estimated \$275 billion in today's dollars.

The new mortgage finance system should satisfy several criteria. Most importantly, it must provide a source of dependable and affordable mortgage loans for homeowners through both good and bad economic times. The new system must also be able to effectively and explicitly provide whatever government subsidies policymakers deem appropriate, particularly to minority, lower-income and other disadvantaged groups.¹⁵ The new system should also be evaluated for its effectiveness at controlling risk-taking and addressing the too-big-to-fail or systemic risk that emerged over the past decade.

Three broad approaches to reform have been proposed, including:¹⁶

- » Nationalize Fannie and Freddie, under a federal agency that would purchase and guarantee qualifying mortgages.
- » Privatize Fannie and Freddie and encourage a secondary market with no

¹⁵ Since housing is a necessity and not a luxury, there is a justification for the provision of housing subsidies. Minority groups should also have the same access to mortgage funding as other groups. There is a reasonable debate regarding the current magnitude of those subsidies and whether they strike the appropriate balance between single-family and rental housing. But all housing subsidies should be explicit.

¹⁶ A wide range of proposals to reform the mortgage finance system have already been put forth, and the Obama administration is expected to come forward with its suggestions later this month. The Congressional Budget Office has provided a comprehensive evaluation of these proposals in a study released late in 2010, "Fannie Mae, Freddie Mac, and the Federal Role in the Secondary Mortgage Market," <http://www.cbo.gov/doc.cfm?index=12032>

federal guarantees, possibly drawing on one or more of the systems in use overseas as models.

- » Create a hybrid public/private system with explicit federal government guarantees of some privately issued mortgage securities. Fannie's and Freddie's operations would be wound down, with some of their activities subsumed within the government and other activities spun out to the market.

Nationalized system

In a nationalized mortgage finance system, the federal government would provide the buyers of mortgage securities explicit protection in the case of default by homeowners. The cost of this insurance would be paid through guarantee fees charged by the government and ultimately passed on to homeowners through higher mortgage rates. If the guarantee fees do not fully cover the cost of the government's default risk, then this subsidy would be counted as part of the federal budget. In a nationalized system, Fannie and Freddie's current activities could be largely subsumed into a new or existing federal agency such as FHA/Ginnie Mae.

The principal advantage of a nationalized system would be a sure, steady flow of cheap mortgage credit to homeowners both in normal times and in times of stress. The

economic benefit of keeping credit available during stressful periods can be seen in the severe credit crunch that occurred during the recent financial crisis and Great Recession. Mortgage credit was not disrupted nearly as much as were other forms of credit, but only because of the federal government's intervention.

Mortgage rates would also be lower in a nationalized system. The guarantee fee necessary to compensate the government for credit losses associated with a 10% drop in house prices is estimated at 13 basis points (see Chart 8).¹⁷ Fannie and Freddie were charging guarantee fees closer to 20 basis points before the housing market crash, using the same 10% decline scenario as required by their regulator, then known as OFHEO.

Given that the GSEs are now operating in conservatorship, however, those guarantee fees were clearly inadequate to compensate for the risks they took on. It would thus be prudent to consider what fees the government would need to charge under a more severe house price decline scenario. For example, assuming a 25% decline, the government would have to increase its guarantee fees to 41 basis points to be fully compensated for the risk, more than double the amount Fannie and Freddie were charging. A 25% house price decline is comparable to the ultimate peak-to-trough decline expected in the current housing market. Under this assumption, mortgage rates would be higher than they were prior to the crash, even under a nationalized system.¹⁸

A nationalized mortgage system would also make it easier for the government to direct subsidies to specific groups whom

policymakers wish to help with their housing costs. The government could also provide consumer protections, requiring greater transparency in mortgage loan documents for example or encouraging mortgage loan products considered safer for households.

The key disadvantage of a nationalized mortgage finance system is that taxpayers would be on the hook for all the system's credit risk. The government could charge fees to compensate for this risk, but if history is any guide, it would be very tempting for policymakers to subsidize homebuyers by setting fees too low.

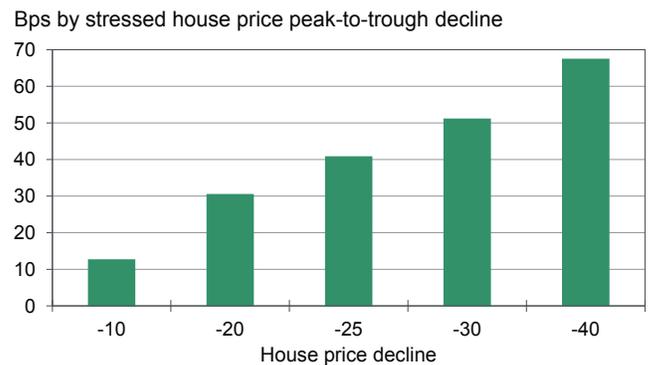
This could have very significant macroeconomic implications, as the residential mortgage market accounts for almost a third of all domestic nonfinancial private debt outstanding.¹⁹ Underpricing risk in such a large part of the credit market could significantly misallocate capital toward housing and away from arguably more productive investments in technology, education or infrastructure. Perhaps this risk could be mitigated at least in part by adopting budget accounting rules that ensure these subsidies are fully accounted for, but the accounting could also be used to mask the subsidies' cost.²⁰

A nationalized mortgage finance system also risks opening a door to increased moral hazard. Since taxpayers in this system bear the cost of credit problems, mortgage originators may not scrutinize loans rigorously. More stringent government requirements regarding the quality of the loans might address this problem, but the mortgage industry's recent problems highlight the difficulty of making this process work efficiently.

¹⁹ According to the Federal Reserve's Flow of Funds, there is more than \$9 trillion in residential first mortgage debt, \$2.5 trillion in other household debt, and \$18.5 trillion in nonfinancial domestic business debt outstanding.

²⁰ Fair-value accounting would include the cost of market risk, in which loans and guarantees are valued based on comparable market prices.

Chart 8: Gfee for Baseline Loan in Nationalized System



Source: Moody's Analytics

There is also a risk that a nationalized system would discourage innovation of new mortgage loan products and limit productivity gains that could lower mortgage transaction costs. Government bureaucracies have fewer incentives than do private financial institutions in the competitive marketplace to change the way they do business.

Privatized system

In a fully privatized mortgage finance system, the government would provide no backstop—implicit or explicit—to financial institutions or to the mortgage securities market. Most privatization proposals retain a role for government, but a much diminished one.²¹ FHA/Ginnie Mae would still operate, but with a much smaller market share, and regulators would still set safety and soundness standards for the system. Successfully winding down Fannie and Freddie would be particularly important to erecting a private system; private capital would not return to the mortgage system until it is clear how the GSEs plan to exit.

The principal advantage of a privatized mortgage system lies in its stronger incentives for prudent mortgage lending. Mortgage originators, issuers, rating agencies and investors understand that if things go badly and defaults rise, they will suffer the financial consequences. Of course these incentives depend on how strongly investors

¹⁷ The guarantee fee calculator used to determine this is described in Appendix A. All of the guarantee fee calculations presented in this paper are based on a typical homebuyer with a 30-year fixed-rate mortgage with an 80% loan-to-value ratio and 750 FICO score. It is assumed that the government requires a risk free return of 4% on the capital it is providing to the mortgage finance system.

¹⁸ Peak to trough, house prices are expected to reach 15% based on the FHFA house price index and almost 35% based on the Fiserv Case-Shiller national index. Under the assumption that qualified mortgages will exclude many of the subprime and alt-A mortgages that underlie homes in the Case-Shiller index, a peak-to-trough decline of 25% is a reasonable assumption for stress losses.

²¹ A good example of a fully privatized system is presented in "Taking the Government Out of Housing Finance: Principles for Reforming the Housing Finance Market," Wallison, Pollock and Pinto, AEI Public Policy Research Paper, January 20, 2011. <http://www.aei.org/paper/100189>

Table 2:

Guarantee Fees in a Privatized System

Basis points

Stressed Peak-to-Trough House Price Decline	Privatized	Nationalized	Difference
-10	57	13	44
-20	108	31	78
-25	137	41	96
-30	166	51	115
-40	208	68	141

Key Assumptions: Private capital requires a 25% ROE; 10-basis point liquidity risk premium in a privatized system; 25-basis point financial market risk premium in a privatized system

Source: Moody's Analytics

truly believe there will be no government intervention, even in bad times. Moreover, sturdy regulatory oversight would still be necessary; the recent collapse of the private-label securities market demonstrates that imprudent risk-taking can occur in a private market, even where enormous losses are possible.

A privatized system would also protect taxpayers by restricting the government's ability to provide subsidies to the mortgage and housing markets. The FHA would still be a potential source of subsidy, but policymakers would not be able to use institutions such as Fannie and Freddie for this purpose. There is thus less risk that the economy's capital would be misallocated toward housing and away from more productive activities.

Without institutions such as Fannie and Freddie, moreover, the systemic risks borne by taxpayers should also be reduced. In a competitive private market, the GSEs' role would presumably be filled by smaller institutions that would not threaten the broad financial system if they were to fail. However, given scale economies in mortgage lending and servicing and historical precedent, it is very possible that the market would become more concentrated with greater too-big-to-fail risks. Private capital is also not limitless, and there are plausible catastrophic scenarios that would completely wipe it out.

At that point, the government would have little choice but to intervene, or the system would collapse.

Indeed, full privatization is much more plausible in theory than it would be in practice. Regardless of what policymakers say, global investors will almost surely continue to believe the U.S. government would backstop a badly foundering mortgage finance system. This is particularly true since, in the wake of the financial panic, the U.S. government came to the GSEs' rescue despite saying it would not for years. After the TARP and the bank bailout, investors believe that if push comes to shove, the U.S. will inevitably act to rescue the broader financial system.²²

A disadvantage of a privatized mortgage finance system would be much higher mortgage rates and a much less stable source of mortgage funding. The 30-year fixed-rate mortgage, the bedrock of mortgage lending since the Great Depression, would likely decline as well.

In a fully privatized system, mortgage rates would be 40 to 140 basis points higher than in a nationalized system, depending on the privatized system's capitalization requirements. Assuming the system requires enough capital to withstand

mortgage default losses consistent with a 25% decline in house prices, privatized mortgage rates would be nearly 100 basis points greater than in a nationalized system (see Table 2).

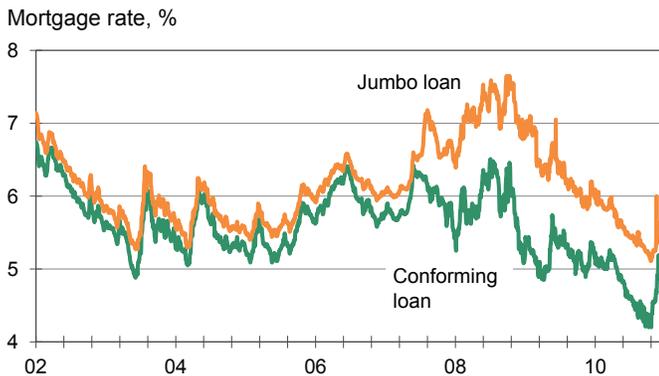
This assessment depends on three important assumptions. First, it assumes that financial institutions providing capital to a privatized mortgage system will require a 30% return on equity. This is greater than the 15% ROE that the private mortgage insurance industry (PMI) has typically obtained during times of normal market conditions with a government backstop, but less than the 30%-plus return that unsecured credit card issuers have traditionally sought. Investors providing capital to a fully privatized system will need a higher return to compensate for greater risks when the government does not have their proverbial backs. To gauge the sensitivity of the results to this assumption, consider that if the ROE required by financial institutions in a privatized system was 15%—same as the PMI industry in normal times—then privatized mortgage rates would be 75 basis points higher than in a nationalized system.

A second assumption is that investors in a privatized market would assess a liquidity risk premium of 10 basis points. A private system will likely feature a greater variety of securities than would a nationalized system, resulting in a smaller, shallower market. The benefit of a deeper market is evident in the interest-rate spread between jumbo and agency-backed mortgage securities, which has ranged from 10 to 30 basis points in normal periods.²³ In times of stress, the spread has been much greater (see Chart 9). If a private securities market were able to gain traction and displace the current agency market with standardized securities, this liquidity premium would presumably decline, but even under the best of circumstances, it would not disappear.

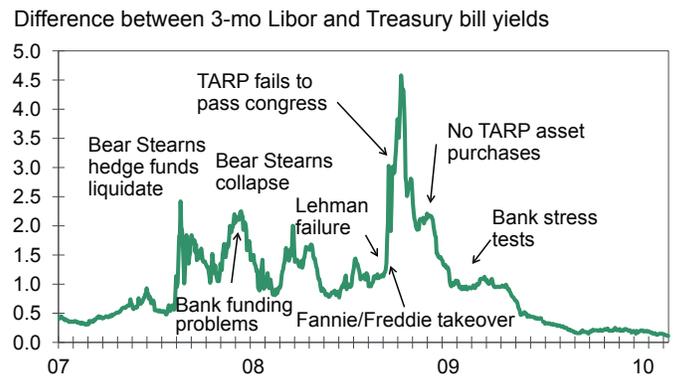
A third assumption is that investors in a privatized market would require a financial

²² The \$700 billion Troubled Asset Relief Program, established during the height of the financial panic in late 2008, committed as much as \$250 billion to provide capital to troubled banking institutions.

²³ See "TBA Trading and Liquidity in the Agency Market," Vickery and Wright, Federal Reserve Bank of New York Staff Report 468, August 2010. http://www.ny.frb.org/research/staff_reports/sr468.pdf

Chart 9: The Mortgage Liquidity Premium

Sources: Bankrate.com, Moody's Analytics

Chart 10: Fan and Fred Takeover Ignited the Panic

Sources: Federal Reserve Board, Moody's Analytics

market risk premium of 25 basis points. Investors will want some compensation for the additional risks of investing without a government backstop. Just how much compensation is difficult to determine, but it is instructive that the TED spread—the difference between three-month Libor and Treasury bill yields—surged from 25 basis points just prior to the financial crisis to a peak of almost 400 basis points at the height of the financial panic, when investors were seriously questioning whether the government would support the financial system (see Chart 10).²⁴ After the TARP and other government interventions, the TED spread came full circle, reflecting the widespread belief that the government will not allow major financial institutions to fail.

To further test this assumption, a vector autoregressive model of the 30-year fixed mortgage rate was constructed.²⁵ The mortgage rate is explained in the model by the 10-year Treasury bond yield, house price growth, and the TED spread. The model was simulated under the assumption that the TED spread narrows by 100 basis points, which is not quite the average TED spread over the model's estimation period back to the mid-1970s. The exercise effectively simu-

lates the impact on mortgage rates of the counterfactual in which the entire financial system is nationalized. Since money-center banks are part of the government in this scenario, they are willing to lend to each other at the risk-free Treasury interest rate. The 30-year fixed mortgage rate narrows by an average of nearly 50 basis points in this simulation. The assumption that investors will require only a 25-basis point financial market risk premium in a fully privatized system seems conservative.

This assessment is also conservative as it does not account for the institutional constraints impacting investor demand in global fixed income markets. Some global institutional investors, mutual funds and pension funds are not able to invest in assets with credit risk due to their charters or even by law. These investors, who are willing buyers of government-backed mortgage securities, would be unable to purchase mortgage securities issued in a fully privatized system. These barriers may or may not come down in the future. To the degree they don't, mortgage rates would be necessarily higher in a privatized system. Given the difficulty in quantifying and categorizing the variety of MBS investors, we recognize the impact these restrictions could have but are unable to measure them at this time.

Looking overseas for guidance to determine the impact on mortgage rates of a privatized mortgage finance system is not very helpful. While few advanced economies provide direct government support to their

mortgage finance systems, many provide substantial indirect support through their banking systems. Mortgage lending is dominated by the banking system, which is generally very concentrated, and as can be seen in Europe, much too big to fail. Also common overseas is the widespread use of prepayment penalties and recourse mortgages with lenders routinely pursuing deficiencies against defaulting borrowers. This keeps mortgage rates much lower compared with rates in the U.S. where such practices are much less common.

A fully privatized mortgage finance system also may not provide stable mortgage funding during difficult financial times. Mortgage securities markets are prone to investor runs, much like the bank runs that occurred before FDIC deposit insurance.²⁶ In an all too familiar refrain, investors are very willing buyers of securities and providers of capital in good times, but will tend to run for the door in bad times. Risk premiums and interest rates spike in times of financial crisis. The only remaining source of credit is lenders making the highest quality loans for their own portfolio. The resulting credit crunch further undermines housing demand, prices and the broader economy, and a vicious cycle is unleashed. Requiring the private market to hold more capital would certainly mitigate

²⁴ Libor is the interest rate large money-center banks charge for borrowing and lending to each other. The TED spread is a very good proxy for anxiety in the global banking system. The 25-basis point TED spread that prevailed just prior to the crisis was a record low, as the period was characterized by substantial euphoria and even complacency regarding global financial conditions.

²⁵ Appendix B provides a detailed description of this VAR model for mortgage rates.

²⁶ See "An Analysis of Government Guarantees and the Functioning of Asset-Backed Securities Markets," Hancock and Passmore, Federal Reserve Board Finance & Economics Discussion Series, 2010-46, August 2010. <http://www.federalreserve.gov/pubs/feds/2010/201046/201046abs.html>

this risk, but there may not be any economically viable amount of private capital that will sufficiently reduce it.²⁷

The 30-year fixed-rate mortgage would likely become much less prevalent in a fully privatized mortgage finance system. Financial institutions have historically found it very difficult to manage the interest rate risk in such mortgages: as the cost of funds changes, the rate received from homeowners remains fixed. The savings & loan industry collapsed largely because of the mismanagement of this interest rate risk during the 1980s, and even Fannie and Freddie got into trouble using inappropriate interest-rate hedging techniques to manage their earnings in the early 2000s.

It thus is not surprising that 30-year fixed-rate mortgages are very uncommon overseas, where the interest rate risk resides with lenders and not in securities markets. Indeed, FRMs are prevalent only in the U.S., Denmark and France.²⁸ FRMs persist in the U.S. because of the government's support of the mortgage finance system; in Denmark, because of that nation's very unique "principal of balance" framework that equates individual mortgages and bonds; and in France, because of restrictions of prepayment (that is, prepayment penalties of 3% of outstanding balances or 3 months interest are typical).²⁹

It seems likely that a privatized U.S. market would come to resemble overseas markets, primarily offering adjustable-rate mortgages. Based on the experience overseas, the FRM share in the U.S. would decline to an average of between 10% and 20% of the mortgage market compared

with a historical average of closer to 75%.³⁰ Reinforcing this likelihood are the limits placed on the use of prepayment penalties in the recently passed Dodd-Frank financial regulatory reform legislation. ARMs are not inherently bad loan products, but they do shift the interest rate risk to homeowners.

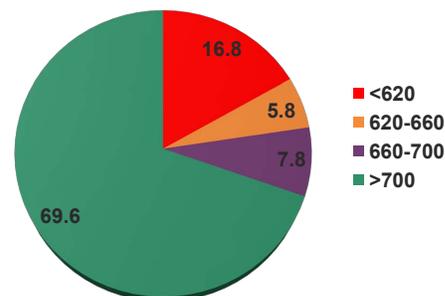
This would be a very significant adjustment for many U.S. homeowners who are not well equipped to handle such risk.³¹

It would also be much more difficult in a privatized system for non-prime households to get mortgage credit or at least get credit at an affordable interest rate. Borrowers with any kind of unusual financial circumstance or blemish could be effectively locked out of getting a mortgage loan. Given the economic turmoil of the Great Recession, this is a sizable share of the population with well over one-fifth of borrowers nationwide currently with credit scores below 660; the traditional demarcation between subprime, alt-A borrowers and prime borrowers (see Chart 11). In some economically-distressed states, such as Arizona and Florida, the current share is closer to one-third. While this may not be an undesirable outcome, it is also important to recognize.

The broader transitional issues of moving from the current government-dominated mortgage finance system to a fully privatized system would also be extraordinarily challenging. It would probably take the better part of a decade from start to finish for private capital to sufficiently fill the void left by government and to give homebuyers time to adjust to higher mortgage rates and chang-

Chart 11: Distribution of Household Credit Scores

% of consumers with credit scores as of Dec 2010



Sources: Equifax, Moody's Analytics

ing loan products. This would probably be best accomplished through a slow, but clearly articulated, reduction in conforming loan limits.³² Private capital is more likely to step into the mortgage market if the government clearly spells out its plans to step out.

The transition would also proceed more quickly if Fannie's and Freddie's assets were sold, liquidated or subsumed within the rest of the government. The GSEs have already begun reducing their sizable portfolios of mortgage loans and securities, but this process would likely have to be accelerated. The government may also want to maintain a small part of the portfolio to provide it the technical infrastructure necessary to quickly re-enter financial markets if conditions demanded it. Of course, this might dilute the benefits of privatization if investors felt it signaled that some government backing continued in the system.

Fannie and Freddie's underwriting and securitization capabilities and relationships with lenders, servicers and insurers are also very valuable and could be spun out to private investors.³³ This would have to be done carefully to ensure that the resulting private market was not overly concentrated, creating a different set of too-big-to-fail risks.

27 This concern is well articulated in "The Future of Mortgage Finance in the United States," a speech given by Bernanke at the University of California Symposium "The Mortgage Melt-down, the Economy, and Public Policy," Berkeley California, October 31, 2008. <http://www.federalreserve.gov/newsevents/speech/bernanke20081031a.htm>

28 A very good survey of mortgage lending internationally is provided by "International Comparison of Mortgage Product Offerings," Lea et. al., Research Institute for Housing America, September 2010.

29 The Danish system allows borrowers to pre-pay their loans when rates fall, as in the United States, and allows them to buy back their bond when rates rise. This feature allows the borrower to adjust to interest rate increases and decreases and facilitates deleveraging when rates rise, reducing the incidence of negative equity.

30 This is based on data from the Federal Housing Finance Administration available since 1985.

31 The implications of this lack of experience are evident in the extraordinarily high default rate on subprime mortgages, most of which were two-year ARMs. According to Equifax credit file data, nearly one-fourth of subprime loans originated in 2005 defaulted when they hit their first payment resets two years later. These defaults ignited the financial crisis and Great Recession.

32 This approach is described in "The Dead Shall Be Raised: The Future of Fannie and Freddie," Wallison, AEI for Public Policy Research, January-February 2010. The conforming loan limit was raised during the financial crisis to allow Fannie, Freddie and the FHA to provide mortgage credit to parts of the mortgage market hurt by the collapse of the private-label mortgage securities market.

33 It is plausible to envisage that the sale of these assets could ultimately recoup much, if not all, of the current costs to taxpayers of capitalizing Fannie and Freddie.

Hybrid system

In a hybrid mortgage finance system, private financial institutions and the federal government share the risks of providing mortgage credit. In most hybrid proposals, private capital takes on most of the risk, with the federal government providing insurance that pays out only when mortgage losses are extraordinarily severe.

Fannie Mae and Freddie Mac would no longer exist in a hybrid system. Some of their operations would be spun out to the private market, while others would be transferred to the government.³⁴ The market-distorting, implicit government guarantees provided to the GSEs would be replaced by government insurance with an explicit price. The hidden cost of Fannie and Freddie's subsidies to homeowners would also be made visible, with the government's books showing any subsidies provided in the hybrid system.

The economic logic underpinning a hybrid system starts with the assumption that under most conditions, well-capitalized private financial institutions should be able to manage the risks involved in mortgage lending. Most of the time, as the economy grows, house prices rise modestly and most homeowners are able to pay their mortgages on time. Mortgage defaults are generally due to individual events such as unemployment, a medical problem, or a divorce. The number of mortgage defaults is thus generally stable and relatively easy to predict.

As recent events have shown, however, there are times when mortgage losses become severe. In a hybrid system, private institutions would be required to hold sufficient capital to withstand losses in all but those extraordinary times, when the government insurance would be needed (see Chart 12).

Even though such times are rare, it would be difficult to attract sufficient private capital into the mortgage finance system without a government backstop,

particularly given recent events. But with the government agreeing to cap their losses, private institutions can quantify their maximum risk exposure while keeping an incentive to underwrite loans prudently and minimize their credit losses.

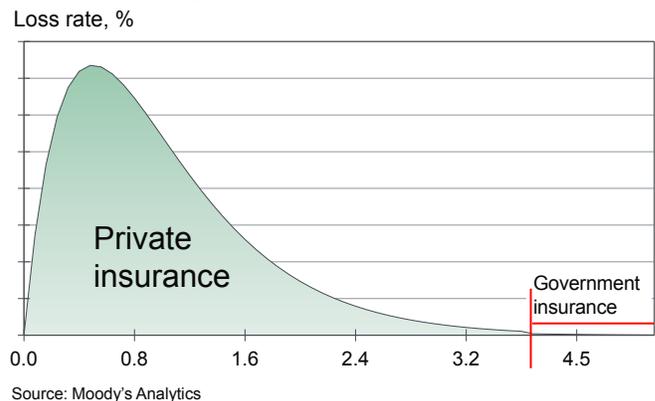
Without a cap, private institutions' risk would be uncertain; they either would not participate in the market—as is the case now—or they would demand an exorbitant risk premium, resulting in high mortgage rates to homebuyers.

This is illustrated by the performance during the housing crash of the private mortgage insurance industry, which insures losses on mortgages with loan-to-value ratios above 80%. Although it has seen large losses, the mortgage insurance industry has survived largely because its potential loss exposure was clearly visible in the contracts it wrote. Knowing this exposure, shareholders and regulators were able to determine an appropriate amount of capital for the industry to hold.

In a hybrid mortgage finance system, private institutions would pay the government a risk-based guarantee fee in exchange for catastrophic insurance. This fee would act much like the insurance premiums paid by depository institutions to the FDIC. Since the FDIC began during the Depression, there have been no bank runs by depositors fearful of losing their money. Providing government catastrophic insurance for the mortgage market would similarly remove the chance of a run by providers of private capital. This would significantly reduce the odds of a credit crunch that would undermine the housing market and a further spiral of mortgage defaults and losses.

A hybrid system would preserve the benefits of both privatized and nationalized systems. Private financial institutions would remain on the hook for the bulk of mortgage losses, keeping incentives in place for prudent mortgage lending and risk pricing. The tax-

Chart 12: Mortgage Bond Loss Distribution



payers' burden would also be lower than in a nationalized system. A hybrid system seeks to attract as much private capital as possible into the mortgage finance system while explicitly acknowledging the need for government participation and appropriate oversight.

By providing a role for government, a hybrid system also ensures measurably lower mortgage rates, standardizes the securitization process, and thus reduces transaction costs, providing greater liquidity and a steadier flow of mortgage credit, especially during tough times.

Mortgage rates in a hybrid system would be approximately 10 basis points higher than in a nationalized system but 87 basis points lower than in a privatized system. This assumes that private financial institutions in the hybrid system require a 15% ROE, are required to hold capital consistent with a 25% decline in house prices, and that the government picks up any mortgage losses after all private capital is exhausted (see Table 3).³⁵ At this level of capitalization, mortgage rates would be just over 30 basis points higher than they were prior to the financial crisis, when the mortgage finance system was capitalized to withstand only a 10% decline in house prices.

Mortgage rates are not especially sensitive to the assumption regarding the required ROE of private financial institutions in a hybrid system. For example, if private capital in the hybrid system required a lower

³⁴ The GSEs' accumulated information and infrastructure make them good candidates to provide the federally backed insurance, providing a rationale for restructuring the GSEs toward a purely public purpose.

³⁵ More precisely, this assumes that private capital is maintained to support a loss limit of 3%, with government capital bearing any additional losses. Government capital is assumed to have a cost of 4% per annum.

Table 3:

Guarantee Fees in a Hybrid System

Basis points

Stressed Peak-to-Trough House Price Decline	Hybrid			Privatized	Nationalized	Difference Between:	
	Private	Government	Total			Hybrid-Nationalized	Hybrid-Privatized
-10	19	0	19	57	13	6	-38
-20	37	7	44	108	31	13	-64
-25	36	15	51	137	41	10	-87
-30	35	22	58	166	51	6	-109
-40	35	34	69	208	68	2	-139

Key Assumptions: Private capital requires a 25% ROE; Government requires a 4% ROE; Private stop loss rate of 3%; 10-basis point liquidity risk premium in a privatized system; 25-basis point financial market risk premium in a privatized system

Source: Moody's Analytics

Table 4:

Guarantee Fees in a Hybrid System Under Different Private Capital ROE Assumptions

Basis Points

Private Capital ROE	Hybrid			Privatized	Difference Between:
	Private	Government	Total		Hybrid-Privatized
10%	31	15	46	137	-92
15%	36	15	51	137	-87
20%	42	15	57	137	-80
30%	44	15	59	137	-78

Key Assumptions: Hybrid and Privatized systems are capitalized to a 25% decline in house prices; In the Hybrid system, government receives a 4% return; In the Privatized system, government receives a 4% return, and there is a 10-basis point liquidity risk premium and a 25-basis point financial market risk premium

Source: Moody's Analytics

ROE of say 10% rather than the 15% assumed, then mortgage rates would be an additional 5 basis points lower and thus a total of 92 basis points lower in a hybrid compared to a privatized system. If instead private institutions required a 25% ROE, then mortgage rates would be an additional 7 basis points higher and thus a total of 80 basis points lower in a hybrid compared to a privatized system (see Table 4).

Under almost any assumptions, the difference between mortgage rates in a hybrid versus privatized system is large enough to have meaningful impacts on the housing market and homeownership. For example, using

the most likely case in which a hybrid system results in mortgage rates that are 90 basis points lower than in a privatized system, there would ultimately be 375,000 more new and existing home sales each year, median existing house prices would increase by almost 8%, and the homeownership rate would be almost one percentage point higher.³⁶

Most versions of a hybrid system maintain some government role in the securitiza-

³⁶ These results are based on simulations of the Moody's Analytic's model of the U.S. macroeconomy under the assumption that the mortgage finance system is reformed and thus the impact on mortgage rates occurs gradually over the next decade ending in 2021.

tion process to encourage standardization and transparency. This keeps transaction costs down and promotes participation by smaller lenders. In a fully privatized system, the securitization process would likely be more fractured, raising transaction costs and thus reducing mortgage lending by smaller financial institutions.

Hybrid systems are also more likely to preserve the important "To Be Announced" market.³⁷ The TBA market allows lenders to cheaply lock in mortgage rates for borrowers

³⁷ The TBA market is a forward market in which lenders promise to deliver loans in the future with preset interest rates that qualify for an agency guarantee.

obtaining GSE or FHA loans as far as three months in advance. This provides an important source of stability to the mortgage and housing markets, particularly in periods of high interest rate volatility. Under current law, the TBA market exists because Fannie and Freddie are exempt from SEC regulations and disclosure requirements. Under SEC Regulation AB, investors in asset-backed securities must have all relevant information about the assets underlying the security at the time of their purchase. This is not possible in the TBA market, since loan pools have yet to be assembled and the underlying loans may not even have been originated. Hybrid systems can be designed in a way that preserves the TBA market; it is difficult to see how this market could survive in a fully privatized system.

A hybrid system with government backing would likely benefit from other regulatory advantages held by Fannie, Freddie and FHA-guaranteed securities. The Federal Reserve would presumably still be able to purchase securities backed by government insurance, as it purchases agency securities. This is an important monetary policy tool and a vital source of liquidity for the mortgage and housing markets. Depository institutions are also able to hold unlimited amounts of agency securities. This benefit may not continue completely in a hybrid system, but depositories should still be able to maintain greater holdings of mortgage securities than they would in a fully privatized system, adding to the hybrid system's liquidity and stability.

Considerable time and cost would be required to move to a hybrid system, but not as much as moving to a fully privatized one. While the 30-year fixed-rate mortgage would likely fade away in a privatized system, it would remain the predominant loan product in most hybrid systems. Some form of government backing is essential to the survival of this popular loan product. A hybrid system also allows the government to more directly and efficiently protect consumers, promote safety and soundness, and provide home purchase subsidies to lower-income and minority households, if policymakers deem that appropriate.

A key transitional question is the structure of the mortgage securities market. Important

issues include the number and types of private financial institutions that should be allowed to participate. At one end of the spectrum is a public utility model, in which a small number of highly regulated private institutions would be permitted to issue securities with government insurance.³⁸

Such a model would ensure broad access to the mortgage securities market to all lenders, big and small. It would also foster a more homogeneous and liquid market. Limiting these institutions to only a few activities would make them more transparent and easier to regulate. However, this model most resembles the previous GSE-dominated system and would have some of the same risks such as regulatory capture³⁹ and creating institutions that are too big to fail. Narrowing the scope of these institutions' activities also raises the odds that they will have trouble in a housing downturn.

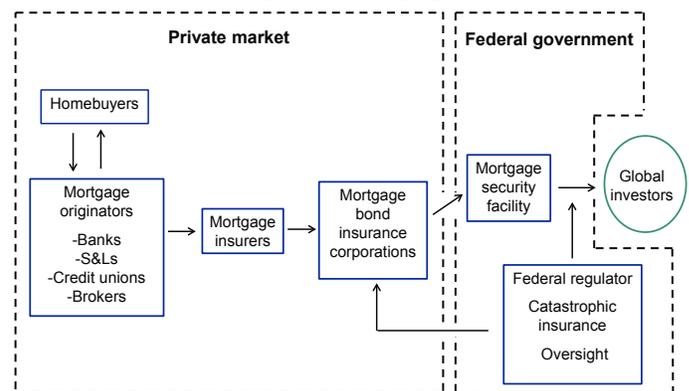
At the other end of the spectrum, any private institution could be allowed to issue securities with government insurance as long as they satisfy certain regulatory requirements.⁴⁰ In this model, mortgage securities pricing would be determined by competition, ensuring that the benefits of government support go to borrowers rather than to the shareholders and employees of these institutions. Systemic risks would also be much lower given a larger number of institutions in the market. Yet the greater the number of institutions issuing securities, the more likely the market will become fractured and less liquid, raising costs for borrowers. It is also possible that smaller lenders could be locked out of the market

³⁸ A detailed description of these different models, their advantage and disadvantages is provided in "Fannie Mae, Freddie Mac, and the Federal Role in the Secondary Mortgage Market," CBO study, December 2010.

³⁹ Regulatory capture occurs when regulators become more responsive to the goals of the regulated entities than to the interests of the general public.

⁴⁰ For example, these requirements could include capital standards and restrictions on certain activities.

Chart 13: Future Hybrid Mortgage Finance System



if larger institutions are unwilling to buy mortgages from them.

Striking the appropriate balance between the public utility and competitive models will be vital to determining the success of a hybrid mortgage finance system.

The Future Mortgage Finance System

A hybrid mortgage finance system holds out the most promise for delivering consistent, affordable access to prudent mortgage loans to homeowners, while minimizing costs to taxpayers. In this system, private institutions would provide the bulk of the capital underpinning the system, and would also originate and own the underlying mortgages and securities. The federal government would insure the system against catastrophe, standardize the securitization process, regulate the system and provide whatever subsidies policymakers deem appropriate to disadvantaged households.

The proposed mortgage finance system would include five types of institutions (see Chart 13):

- » Mortgage originators: Private institutions creating mortgages for homeowners.
- » Mortgage insurers: Private institutions insuring against mortgage loan defaults.
- » Mortgage bond insurance corporations (MBICs): Private institutions buying and securitizing mortgages, and insuring those mortgage securities.
- » A mortgage securitization facility: A federal institution providing administrative services to mortgage securities created by MBICs.

- » Federal regulator: An agency to oversee MBICs and maintain a reserve fund to provide catastrophic insurance on mortgage securities issued by MBICs.

Mortgage Bond Insurance Corporations

A key to this proposal is the creation of Mortgage Bond Insurance Corporations, privately capitalized, federally chartered institutions that would:

- » Purchase conventional mortgages from mortgage originators.
- » Package these mortgages into mortgage securities.
- » Guarantee the payment of interest and principal on these securities.
- » Charge mortgage originators a fee (a so-called “gfee”) for this guarantee.

MBICs would be private and thus not backed, either explicitly or implicitly, by the federal government. They would be federally chartered and supervised much like national banks and savings and loans. The federal regulator overseeing MBICs would set their capital and liquidity requirements and any other prudential standards, and determine underwriting standards and loan limits for the mortgages they would be permitted to include in securities they issue and insure.

The federal government would provide catastrophic insurance on the MBICs’ securities, with the MBICs paying a guarantee fee to the government for this. Such “gfees” would be held in a reserve, similar to the FDIC deposit insurance reserve. The federal government could make the gfees actuarially fair—setting them so that the net present value of all expected future gfee income covers the outlays to lenders of the cost of any mortgage defaults. Thus, they would have no impact on the federal government’s budget.⁴¹

MBICs would not be permitted to hold portfolios of mortgages or mortgage securities for investment. Small portfolios should be permitted for specific purposes such as warehousing loans before securitization, purchasing loans from smaller banks, developing new products, supporting certain loans for

⁴¹This is the same budgetary treatment given to the FHA and Ginnie Mae; fees paid for their federal guarantees generally cover the claims on those guarantees and other operational expenses.

which there are limited markets such as multifamily mortgages and for loss mitigation and REO disposition.⁴²

The organization and governance of the MBICs would be determined by the private investors that establish them.⁴³ Somewhere between five and ten MBICs would be appropriate. Too few MBICs would leave the system without enough competition and vulnerable to too-big-to-fail risks. It is difficult to know how many MBICs would be necessary to sufficiently mitigate the too big to fail risks, but it seems likely that if there were five well-capitalized MBICs operating without government support (resulting in stronger market surveillance) and without lending goals, the odds are much higher (but still not a certainty) that some would have survived and policy makers would have had more options to let the others fail. Too many MBICs could lead to prohibitively high transaction costs especially for smaller lenders. Given the complexity of the contracts, data exchange, accounting, and underwriting systems that would make up a relationship between lenders and MBICs, more than ten MBICs is probably more than lenders would be able to support.

A return on equity between 10% and 20% should attract sufficient private capital to establish an appropriate number of MBICs. The private mortgage insurance industry has historically required a 15% ROE and survived the housing market crash largely intact. MBIC equity investors could require less of a return given the liquidity support provided by the government’s catastrophic guarantee. These entities might be better able to recapitalize through continuing operations in situations where other entities might fail. Investors should be willing to pay some premium for this reduced volatility versus the returns required from a traditional bond insurer. However, some investors might feel they are taking a certain

⁴²There have been times such as during the 1990s Asian financial crisis or after 9/11, when liquidity temporarily dried up and the GSEs’ portfolios helped restart markets. However, it is clear from recent events that the Fed can use its own balance sheet to backstop the financial system so that large additional sources of liquidity are unnecessary.

⁴³The MBIC regulator would evaluate the structure of the MBIC and its investors when determining whether to grant the MBIC a federal charter.

amount of government risk and could demand a higher return.

Mortgage securitization facility

Another important element of the proposal is the creation of a single mortgage securitization facility by the federal government. The MSF would provide administrative services related to mortgage securities issued by the MBICs, including processing payments to investors and administering the federal catastrophic guarantee on the MBIC securities. The services provided by the MSF to the MBICs would be like those Ginnie Mae provides to the FHA—indeed, the MSF could very well be created within Ginnie Mae.

The MSF would standardize the securitization process; all MBICs would be required to adopt the same form of mortgage security with the same legal structure, terms and conditions regarding repayment and other conditions. A standard for mortgage securities would increase the liquidity of the market; the performance and value of Fannie and Freddie securities differ because of varying underwriting standards and the treatment of delinquent loans in their pools. Standardization would certainly have supported policy efforts to address the current mortgage crisis by facilitating mortgage modification and refinancing. A standard mortgage security structure would neither inhibit the type of mortgages originated nor limit the loans included in a mortgage security to a single lender.

With the MSF controlled by the federal government, MBIC-issued mortgage securities should be exempt from SEC registration requirements, thus preserving the all-important TBA market. As previously discussed, the TBA market allows mortgage borrowers to lock in an interest rate before a loan closes, and permits mortgage lenders to hedge their corresponding interest-rate risk.

Federal regulator

For the proposed hybrid mortgage finance system proposed to succeed, it requires a strong and independent federal government regulator. The regulator would:

- » Charter MBICs.
- » Establish prudential standards, capital and liquidity requirements.
- » Determine underwriting standards and loan limits for mortgages included in MBIC securities.
- » Determine the appropriate size and purposes for MBIC portfolios.
- » Audit and monitor MBICs and resolve those that get into financial trouble.
- » Administer the federal catastrophic insurance fund, levying gfees on MBICs and making payments in case of catastrophic losses.

The recently formed Federal Housing Finance Agency already performs many of these functions for the GSEs and would be a good candidate to assume the role of federal regulator in the future mortgage finance system. Fannie and Freddie's extensive experience setting gfees on their insurance could be used by the FHFA.

Benefits to homeowners, taxpayers, and the financial system

In this future hybrid mortgage finance system, homeowners would benefit from stable, affordable mortgage credit. The federal government's catastrophic backstop should ensure that credit flows through good times and bad. Mortgage rates would be only modestly higher in this system than they were before the housing crisis, and that is only because the previous system was undercapitalized. Capital was sufficient to withstand peak-to-trough house price declines of only 10%. If the future system is capitalized to withstand a 25% decline in house prices, which seems more realistic, mortgage rates will be approximately 30 basis points higher.⁴⁴

Compared with a fully privatized system, mortgage rates in this future system would be almost 90 basis points lower. The monthly principal and interest payment for a typical borrower taking out a \$200,000 loan for 30 years at a 6% interest rate is \$1,199 under the hybrid system. With a 90-basis point premium, the monthly pay-

ment increases to \$1,317, a difference of \$118 or nearly 10%. The difference in payments under the two systems would likely be even greater for borrowers with less than stellar credit or who are seeking loans with higher loan to value ratios. The greater the risk, the greater the rate premium under the privatized system.

Homeowners would also benefit from the preservation of the 30-year fixed-rate mortgage. Catastrophic government backing and the continuation of the TBA market are important to the survival of the 30-year fixed-rate mortgage, which at least partially insulates households from interest rate risk—something many are ill-equipped to manage on their own. The 30-year fixed-rate mortgage would likely quickly fade in a fully privatized system.

This future hybrid mortgage finance system would make future taxpayer bailouts unlikely and would create a mechanism to recover costs if one should prove necessary. Homeowners and private financial institutions would be required to put substantial capital in front of the government's guarantee, including:

- » Homeowners' mortgage down payments.
- » Private mortgage insurance or other credit enhancements on mortgage loans.
- » MBICs' shareholder's equity.
- » A reserve, funded by the MBICs in return for the government's catastrophic guarantee.

Much as in the FDIC system, MBICs could also be charged special assessments to compensate taxpayers if all these private resources were exhausted and the federal government were required to make good on its catastrophic guarantee.

This future financial system will also benefit taxpayers by remaining budget-neutral for the federal government, assuming the fees for federal catastrophic insurance are actuarially fair. There would be a budget impact if policymakers decided to subsidize homeowners by lowering the gfee, but this subsidy would be explicit and transparent, unlike those in the current system.

A hybrid mortgage system would make the broader financial system more stable as

well. The too-big-to-fail risks posed by Fannie and Freddie would be eliminated as the GSEs are replaced by better capitalized and regulated MBICs. Standardizing the securitization process will ensure that securitization markets are more liquid and open to smaller institutions, reducing the market power of larger institutions and thus mitigating too-big-to-fail risks throughout the financial system. Establishing a clear resolution process if MBICs stumble would also reduce the odds that the mortgage system will be the source of another global financial panic.

Affordable housing

The mortgage finance system should continue to be sensitive to policymakers' efforts to promote homeownership and support affordable housing. Historically, subsidies were provided to lower-income households and minority groups through Fannie and Freddie. While these efforts were a well-intentioned attempt to channel some of the profits earned by the GSEs because of their implicit government guarantee, they often created perverse incentives and unintended consequences.

To minimize future conflicts of interest, MBICs should not be subject to specific affordable housing goals. These institutions should focus exclusively on providing liquidity to the mortgage finance system and properly measuring and pricing credit risk. The FHA is best situated to provide any housing subsidies policymakers deem appropriate in a clear and transparent manner.

That said, policymakers may require MBICs to pay an explicit fee to help fund specific housing goals. For example, the GSEs set aside approximately 0.04% of the mortgages they acquire to support programs that produce and rehabilitate housing for low-income households.⁴⁵ This may be a good guide for fees on the MBICs.

The FHA may also benefit from the establishment of MBICs. Rather than issuing Ginnie Mae securities that keep 100% of the FHA's risk exposure on the government's books, the FHA could require MBICs to provide bond in-

⁴⁴ The basis for and assumptions underlying this estimate of the impact on mortgage rates were previously described in this paper on page 9.

⁴⁵ This was stipulated as part of the 2008 Housing and Economic Recovery Act.

insurance. Under this structure, the FHA would subsidize part of the mortgage market by lowering the cost of its insurance, but would benefit by transferring some of its risk exposure to private financial institutions.

Transition costs

The current mortgage finance system is effectively nationalized, dominated by the GSEs and FHA. Moving to the proposed future hybrid system, with MBICs and a much smaller FHA, will be less arduous than moving to full privatization but will still involve major transitional issues and costs.

The principal goal of the transition process should be to ensure a steady flow of reasonably priced mortgage credit. This is critically important until the housing market is healthy again, which, given the still very high number of mortgage loans in the foreclosure process, will take a number of years.⁴⁶

The transition will involve simultaneously winding down and distributing Fannie's and Freddie's operations and assets, raising the costs of utilizing the FHA, and ramping up the MBICs, their regulator and the new mortgage securitization facility. The following steps will be required:

- » Steadily reduce the GSE's retained portfolios.⁴⁷ This process is already under way, as under conservatorship the GSEs must reduce their mortgage assets 10% annually until each portfolio is no greater than \$250 billion. At their current size, the GSEs should reach this target by 2020.
- » Steadily reduce the conforming loan limits for the GSEs and FHA. The current loan limits, set during the financial crisis, will expire this fall. This is probably premature given the state of the

housing market; policymakers should extend the higher limits through 2012. After that, they should be consistently scaled back, so that by 2020 they will have returned to their precrisis limits adjusted for house price growth.

- » Phase in the definition of a qualified residential mortgage loan (QRM) with the implementation of the hybrid mortgage finance system. Under the Dodd-Frank financial regulatory reform legislation, issuers of mortgage securities backed by mortgage loans that do not meet the QRM standard must retain a 5% financial stake in the security.⁴⁸ A too narrowly defined QRM standard would likely incent more mortgage borrowers into FHA loans that by Dodd-Frank satisfy QRM, increasing the already very outsized FHA share of originations. This problem could be addressed by tightening FHA underwriting standards and increasing its insurance premiums, but this would require additional legislation, which may be difficult to pass in a timely way. Too broad a QRM standard would make it ineffective as mechanism to better align the incentives of mortgage originators, securitizers, and investors in mortgage securities.
- » Transfer the GSEs' credit enhancement functions to the MBICs' new regulator (the reconstituted FHFA). Assign that agency the job of determining appropriate fees for the federal catastrophic insurance. The GSEs' extensive data, models, and information systems are well suited to this.
- » Place the GSEs' securitization functions within the new mortgage securitization facility (the reconstituted Ginnie Mae). Give that agency the task of establishing a single securitization process for MBIC securities. The MSF will ensure that all MBICs adopt the

same mortgage security format, with the same legal structure, repayment terms and other features. The MSF will also allow for continuity within the TBA market.

- » Charter the MBICs. The FHFA would evaluate the organizational structure, management, and capital positions of private investors applying for an MBIC charter. The process would resemble chartering a commercial bank or savings and loan. Banks would be likely sources of capital for MBICs, given their reliance on the securities market. MBICs could be formed by individual banks or consortiums of banks. Mortgage and bond insurers are other possible sources of capital.
- » Move the GSEs' affordable housing goals to the FHA. A fee levied on MBICs could be used to fund any subsidies that the FHA provides to lower-income or minority groups requiring help with their housing needs.

Conclusions

Even after the housing crash, the financial panic, and Great Recession, the residential mortgage finance system is working. Mortgage credit remains reasonably ample and at generally affordable rates because the federal government stepped into the breach left by the collapse of the private residential mortgage securities market. The FHA has dramatically expanded its lending and Fannie Mae and Freddie Mac, even in conservatorship, continue to provide mortgage credit.

The mortgage finance system has been mostly nationalized. There is little private lending save for large jumbo mortgage loans to borrowers with high credit scores and substantial equity. The return on capital demanded by private investors translates into mortgage rates well above those offered by either the FHA or the GSEs. This is even before considering the new requirements placed on issuers of mortgage securities under the Dodd-Frank financial regulatory reform law.

The current mortgage finance system is not sustainable. Fannie and Freddie cannot remain in conservatorship forever, and no one is comfortable with the FHA's outside

⁴⁶ There are approximately 4 million first mortgage loans 120 days and over delinquent or somewhere in the foreclosure process, according to Equifax credit file data. There are some 50 million first mortgage loans outstanding.

⁴⁷ Before they were put into conservatorship, GSEs benefited from an implicit government guarantee whenever they issued corporate debt at favorable rates and used the proceeds to buy both agency and nonagency mortgage-backed securities with higher coupons. (Portfolio managers at the institutions may have been interested in other investments, but their federal charters limited them to U.S. residential real estate.) For many years, the earned interest rate spread provided the lion's share of their income, with the credit guarantee business helping facilitate creation of additional securities for investment.

⁴⁸ Under Section 941 of Dodd-Frank, the Treasury and regulators have until April 2011 to propose a QRM definition, which must begin to take effect in spring 2012. Treasury recently released a study of the risk retention rule, "Macroeconomic Effects of Risk Retention Requirements," January 2011. [http://www.treasury.gov/initiatives/wsr/Documents/Section%20946%20Risk%20Retention%20Study%20%20\(FINAL\).pdf](http://www.treasury.gov/initiatives/wsr/Documents/Section%20946%20Risk%20Retention%20Study%20%20(FINAL).pdf)

share of mortgage lending. Since there is no appetite for a return to the pre-crisis, GSE-based system, several broad approaches to reform have been proposed.

Arguably the most straightforward approach, involving the lowest transition costs, would be complete nationalization. Fannie and Freddie would be placed into permanent receivership and the bulk of their assets would be assumed by the federal government. The chief benefit would be a steady flow of credit in good and bad economic times at a relatively low interest rate.

On the downside, nationalization would saddle the federal government with significant new risks, as well as with Fannie's and Freddie's debts, which would be added to an already mountainous federal debt load. There are also legitimate concerns that in the long run, such a system would stifle innovation and productivity. Policymakers could be tempted to increase subsidies to the mortgage and housing markets, misallocating the nation's limited savings. It would be disquieting to have the government control such a large part of the nation's credit markets.

A second approach to reforming the mortgage finance system would be to fully privatize it. The government would provide no backstop, either implicit or explicit, to financial institutions or to the mortgage securities market. Most privatization proposals retain a role for government, but a much diminished one, and Fannie's and Freddie's operations would be wound down and spun out to the private market.

A privatized system would provide stronger incentives for prudent mortgage lending. Mortgage originators, issuers, rating agencies and investors would understand that if defaults rose, they would suffer the consequences. A privatized system would also protect taxpayers, by restricting government's ability to provide subsidies to the mortgage and housing markets, and reducing the risk that the economy's resources would be misallocated toward housing and away from more productive activities. Without institutions such as Fannie and Freddie, the too-big-to fail risks borne by taxpayers would also be lower.

Full privatization is more plausible in theory than in practice, however. Regardless of what policymakers say, global investors would continue to assume that the U.S. government would backstop a foundering housing market. More importantly, a privatized mortgage finance system would feature significantly higher costs for borrowers, and would be a much less reliable source of credit. The 30-year fixed-rate mortgage, the bedrock of mortgage lending since the Great Depression, would likely fade away.

A hybrid mortgage finance system, with private institutions and the federal government sharing the risks, holds out the most promise for delivering consistent, affordable credit on prudent terms to borrowers, with minimal costs to taxpayers. In this system, private institutions would provide the bulk of the system's capital and would also originate and own the securities and their underlying mortgages. The federal government would

insure the system against catastrophe, standardize the securitization process, regulate the system, and provide whatever subsidies policymakers deem appropriate.

Some of Fannie's and Freddie's operations would be turned over to the private market, while others would be transferred to the government. The market-distorting, implicit government guarantees provided to the GSEs would be replaced by government insurance with an explicit price. The hidden cost of Fannie and Freddie's subsidies to homeowners would also be made visible on the government's books.

This hybrid system would preserve the key benefits of both a nationalized and a fully privatized system. Private investors would remain on the hook for most mortgage losses, keeping incentives in place for prudent lending and risk pricing. The government's involvement, however, means that mortgage rates will be lower, the securitization process will be standardized—lowering transaction costs and raising liquidity—and mortgage credit will flow more freely, especially during difficult times.

Policy decisions about the future of the mortgage finance system in the coming months will affect U.S. homeowners and the broader economy for decades. Success will depend on striking the appropriate balance between the benefits of the private market and the backstop of the federal government. Finding the right balance will result in a stronger housing market, a more stable financial system, and a healthier economy.

Appendix A.

Description of Guarantee Fee Model⁵¹

Guarantee fees are determined through a net-present-value computation of cash flows, in order to meet conditions for both solvency and return on equity.

Under the solvency condition, the capital held by the insurer plus the guarantee fee (or premium) income paid by the insured entity must be greater than or equal to a specified level of stress losses:

$$\sum_{t=1}^T \beta^t UPB_t^S \times \frac{\phi}{1200} + K = \sum_{t=1}^T \beta^t SL_t$$

Where

$$\beta^t = \left(\frac{1}{1+r_t} \right)^t$$

t = age of loan in months

T = term of loan in months (for example, 360)

r_t = discount rate at time t (for example, Libor)

UPB_t^S = unpaid principal balance at time t (in stress loss case)

UPB_t^E = unpaid principal balance at time t (in expected loss case)

K = initial capital

φ = annualized guarantee fee

EL_t = expected loss at time t

SL_t = stress loss at time t (selected loss capitalization level)

ROE = pre-tax return on equity demanded by insurer (providers of capital)

tax = marginal tax rate of insurer

Investors in the insurance company provide capital to guard against stress losses, demanding a certain return on equity to compensate them for their risk. The guarantee fee must cover expected losses as well as this cost of capital:

$$\phi = K \times \frac{ROE}{(1 - tax)} + \frac{\sum_{t=1}^T \beta^t EL_t}{\sum_{t=1}^T \beta^t UPB_t^E}$$

Models for expected and stress losses can be estimated based on the historical default performance of previous mortgages. Expected losses may be derived based on the historical distribution of losses or, alternatively, may be simulated based on the distribution of economic drivers in the loss models (for example, house prices, interest rates, unemployment, etc.). A level of

stress losses must be chosen, against which the insurer must capitalize. This selection may be guided by historical experience or through simulation exercises, but neither of these processes ensures that they represent the true underlying distribution of losses. If the realized economic draw exceeds the stress loss assumption, the insurer will have capital reserves insufficient to cover losses and become insolvent.

Given parameterization of r_t, ROE and tax along with expected and stress loss estimates, the guarantee fee is derived by iterating on a solution that meets both criteria.

The structure may be generalized to the case where there are two insurers, as in the proposed hybrid model, where an MSIC covers a first-loss position and the government covers losses beyond a pre-specified stress level. In this case, the overall solvency condition is written as:

$$\sum_{t=1}^T \beta^t UPB_t^S \times \left(\frac{\phi_P}{1200} + \frac{\phi_G}{1200} \right) + K_P + K_G = \sum_{t=1}^T \beta^t SL_t$$

The conditions for the private and government insurers are, respectively:

$$\sum_{t=1}^T \beta^t UPB_t^S \times \left(\frac{\phi_P}{1200} \right) + K_P = \sum_{t=1}^T \beta^t SL_t \times D_t^{SP}$$

$$\sum_{t=1}^T \beta^t UPB_t^S \times \left(\frac{\phi_G}{1200} \right) + K_G = \sum_{t=1}^T \beta^t SL_t \times (1 - D_t^{SP})$$

Where

α = prespecified stop loss level ("attachment point") covered by private insurance

K_P = initial capital held by private insurer to cover losses up to α

φ_P = annualized guarantee fee for private insurance

K_G = initial capital held by the government to cover losses up to SL level

φ_G = annualized guarantee fee for government

D^{SP}_t = 1 if $\sum_{t=1}^T \beta^t SL_t \leq \alpha$
= 0 otherwise

The return conditions can similarly be expanded for the private and government insurers as:

$$\phi_P = K_P \times \frac{ROE_P}{(1 - tax_P)} + \frac{\sum_{t=1}^T \beta^t EL_t \times D_t^{EP}}{\sum_{t=1}^T \beta^t UPB_t^E \times D_t^{EP}}$$

$$\phi_G = K_G \times ROE_G + \frac{\sum_{t=1}^T \beta^t EL_t \times (1 - D_t^{EP})}{\sum_{t=1}^T \beta^t UPB_t^E \times (1 - D_t^{EP})}$$

Where:

ROE_P = pre-tax return on equity demanded by private insurer

tax_P = marginal tax rate of private insurer

ROE_G = pre-tax return on equity demanded by the government

D^{EP}_t = 1 if $\sum_{t=1}^T \beta^t EL_t \leq \alpha$
= 0 otherwise

Given analogous parameterization of the discount rates and returns on equity, the guarantee fee for the private and government insurers may be derived by iterating on a solution that meets the criteria.

We note that the discounted cash flow approach taken in this analysis is highly simplified and stylized. A more complete analysis would consider a wide variety of mortgage products in a portfolio subjected to multiple economic stress environments. That said, the approach is similar to that taken by the FHFA in regulating the GSEs and can provide meaningful comparisons of the relative magnitude and impact of the proposed models of housing finance. In the spirit of full disclosure and transparency, we enumerate the assumption of the model below:

- » The approach considers the pricing of a new, single loan (or pool of homogenous loans) rather than considering a portfolio of loans of varying quality and age.
- » The approach considers an instantaneous shock in house prices without consideration for house price movement before the shock. A relatively benign interest rate environment is assumed across scenarios with attention focused on house price shocks.
- » The approach does not consider shocks to other economic factors such as unemployment, assuming these to be correlated and perfectly captured by house price movements.
- » The approach assumes that the vector of outstanding balances is equivalent under both stress and expected economic scenarios. That is, a similar stream of guarantee fee income is assumed under both scenarios, al-

⁵¹ The gfee model used in this analysis is a modified version of a model constructed by Deutsche Bank's RMBS Global Markets Group.

though incurred losses are allowed to vary substantially.

- » The model assumes that the MSIC would continue to receive guarantee fee income once the stop loss level has been reached. As catastrophic insurance is applied exclusively to securities, under certain scenarios, the MSIC may continue to be solvent and functioning even though it may no longer be covering losses on a given

bond. Alternatively, one could assume that any paid premiums received after the stop loss is reached would be forwarded to the catastrophic insurer.

- » The model computes the amount of capital required initially to insure solvency of the MSIC and the government insurance fund up to the prespecified stress levels. A more complex version of the model may consider solvency conditions at vary-

ing points in time and provide for the release of capital as collected guarantee fee income exceeds the amount of capital needed to insure solvency.

- » The model is based on the assumption that the level of stress losses is known and predetermined. Should the economy deteriorate beyond the specified catastrophic level, collected premiums will be insufficient to cover incurred losses.

Appendix B.

Description of VAR model of fixed mortgage rates

A vector autoregressive model of the Freddie Mac 30-year fixed mortgage rate was constructed to quantify the impact on mortgage rates of eliminating the federal backstop for the financial system. The model was estimated on monthly data from 1977 to 2010 and includes the 10-year Treasury yield, TED spread (the difference between three-month Libor and three-month Treasury bill yields), the difference between current 10-year Treasury yields and a five-year moving average of 10-year Treasury yields to capture the impact of prepayment risk, and house price growth (see Table 5).

Table 5:

Vector AutoRegressive Model of Fixed Mortgage Rates

Dependent variable is the Freddie Mac 30-year fixed-rate mortgage

Model is estimated on monthly data from 1977 to 2010

Explanatory Variable	Coefficient	t-statistic
Constant	2.320	2.27
10-year Treasury yield	1.034	9.74
TED spread	0.231	6.87
Difference between 10-year Treasury yield and 5-year MA of 10-year Treasury yield	-0.440	3.99
House price growth	-1.315	-1.88
AR(1)	0.972	77.93
MA(2)	-0.204	-1428.97

Source: Moody's Analytics

About the Authors

Mark Zandi

Mark Zandi is chief economist of Moody's Analytics, where he directs research and consulting. Moody's Analytics, a subsidiary of Moody's Corporation, is a leading provider of economic research, data and analytical tools. Mark is the author of *Financial Shock*, an exposé of the financial crisis. His forthcoming book, *Paying the Price*, provides a roadmap for meeting the nation's daunting fiscal challenges. He is on the board of directors of The Reinvestment Fund, a Philadelphia non-profit that marries public with private capital to make investments in inner cities, and MGIC, a publicly traded firm that is the nation's largest private mortgage insurer. Dr. Zandi received his PhD at the University of Pennsylvania, where he did his research with Gerard Adams and Nobel laureate Lawrence Klein, and received his B.S. from the Wharton School at the University of Pennsylvania.

Cristian DeRitis

Cristian deRitis is a director in the Credit Analytics group at Moody's Analytics, where he develops probability of default, loss given default, and loss forecasting models for firms and industries; contributes to forecasts and analysis for CreditForecast.com; and writes periodic summaries of the mortgage and consumer credit industries. In his previous work at Fannie Mae, Dr. deRitis supervised a team of economists who developed models of borrower default and prepayment behavior. He has published research on consumer credit and credit modeling as well as on the costs and benefits of community mediation. He received a PhD in economics from Johns Hopkins University, where he focused on the impact of technology on labor markets and income inequality. His bachelor's degree in economics is from the Honors College at Michigan State University.

About Moody's Analytics

Economic & Consumer Credit Analytics

Moody's Analytics helps capital markets and credit risk management professionals worldwide respond to an evolving marketplace with confidence. Through its team of economists, Moody's Analytics is a leading independent provider of data, analysis, modeling and forecasts on national and regional economies, financial markets, and credit risk.

Moody's Analytics tracks and analyzes trends in consumer credit and spending, output and income, mortgage activity, population, central bank behavior, and prices. Our customized models, concise and timely reports, and one of the largest assembled financial, economic and demographic databases support firms and policymakers in strategic planning, product and sales forecasting, credit risk and sensitivity management, and investment research. Our customers include multinational corporations, governments at all levels, central banks and financial regulators, retailers, mutual funds, financial institutions, utilities, residential and commercial real estate firms, insurance companies, and professional investors.

Our web and print periodicals and special publications cover every U.S. state and metropolitan area; countries throughout Europe, Asia and the Americas; and the world's major cities, plus the U.S. housing market and other industries. From our offices in the U.S., the United Kingdom, and Australia, we provide up-to-the-minute reporting and analysis on the world's major economies.

Moody's Analytics added Economy.com to its portfolio in 2005. Its economics and consumer credit analytics arm is based in West Chester PA, a suburb of Philadelphia, with offices in London and Sydney. More information is available at www.economy.com.

© 2011, Moody's Analytics, Inc. and/or its licensors and affiliates (together, "Moody's"). All rights reserved. ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY COPYRIGHT LAW AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT. All information contained herein is obtained by Moody's from sources believed by it to be accurate and reliable. Because of the possibility of human and mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. Under no circumstances shall Moody's have any liability to any person or entity for (a) any loss or damage in whole or in part caused by, resulting from, or relating to, any error (negligent or otherwise) or other circumstance or contingency within or outside the control of Moody's or any of its directors, officers, employees or agents in connection with the procurement, collection, compilation, analysis, interpretation, communication, publication or delivery of any such information, or (b) any direct, indirect, special, consequential, compensatory or incidental damages whatsoever (including without limitation, lost profits), even if Moody's is advised in advance of the possibility of such damages, resulting from the use of or inability to use, any such information. The financial reporting, analysis, projections, observations, and other information contained herein are, and must be construed solely as, statements of opinion and not statements of fact or recommendations to purchase, sell, or hold any securities. NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER. Each opinion must be weighed solely as one factor in any investment decision made by or on behalf of any user of the information contained herein, and each such user must accordingly make its own study and evaluation prior to investing.

CONTACT US

For further information contact us at a location below:

U.S./CANADA
+1.866.275.3266

EMEA
+44.20.7772.5454

ASIA/PACIFIC
+852.3551.3077

OTHER LOCATIONS
+1.610.235.5299

Email us: help@economy.com
Or visit us: www.economy.com

Copyright © 2011, Moody's Analytics, Inc. All Rights Reserved.