

TESTIMONY OF DR. CHRISTOPHER J. MAYER
BEFORE THE SENATE COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS
SUBCOMMITTEE ON HOUSING, TRANSPORTATION, AND COMMUNITY DEVELOPMENT

HEARING: "NEW IDEAS FOR REFINANCING AND RESTRUCTURING MORTGAGE LOANS"
SEPTEMBER 14, 2011

Good afternoon Chairman Menendez, Ranking Member DeMint, and Members of the Subcommittee. Thank you for inviting me to speak today. My name is Christopher J. Mayer. I am the Paul Milstein Professor of Real Estate at Columbia Business School. I have spent the last 18 years studying housing markets and credit while working at the Federal Reserve Bank of Boston and serving on the faculties of Columbia Business School, the University of Michigan Business School, and the Wharton School of the University of Pennsylvania. I also serve as Visiting Scholar at the Federal Reserve Bank of New York.

Frictions in the mortgage market have restricted the ability of tens of millions of borrowers from refinancing their mortgages, hampering monetary policy, slowing the economic recovery, and leading to excessive numbers of foreclosures. Consumer spending, typically at least 70 percent of GDP, has been slowed as underwater and often over-levered homeowners lack financial ability and confidence.

Existing mortgage delinquencies and defaults are at unacceptable levels which, combined with stagnant labor markets, is leading to another round of falling home prices. More than 4 million mortgages are at least 90 days or more delinquent or in some stage of foreclosure (10.5 months of inventory).¹ And another 3.4 million mortgages will roll from current to 90-days delinquent in the next year at current rates.² Existing efforts to stem new defaults and foreclosures have made only limited progress.

As a result of a weak economy, Federal Reserve policy, and global uncertainty, the 10-year US Treasury interest rates have hovered near 2 percent, as low as they have been since the Great Depression. Nonetheless, few borrowers have been able to take advantage of these low interest rates to reduce their mortgage payments. Unable to refinance their mortgages the way corporations have been able to refinance their debt, consumers are left with weak balance sheets and mortgage payments often above of the cost of renting,

¹ Sources: Lender Processing Services Mortgage Market Monitor (June, 2011, P. 3), Equifax Portfolio Credit Trends (July, 2011, P. 66).

² Source: Equifax Portfolio Credit Trends (July, 2011, author's calculations P. 64).

contributing to excessive delinquencies and foreclosures. These constraints on refinancing have a disproportionate impact on middle-class borrowers with origination balances under \$200,000 and poorer credit and whose employment opportunities have been hit especially hard by the recession.

Historically, low long-term interest rates have led to much higher rates of refinancing. For example, in 2002 and 2003, monthly mortgage rates fell from 7.0 percent to 5.2 percent.³ More than 85 percent of all mortgages outstanding in January 2002 with rates above 7 percent paid off their loan in the next 30 months.⁴ As of June 2011, more than 75% of GSE⁵ borrowers with a 30-year fixed-rate mortgage (FRM) have a rate of 5% or more, despite the fact that bond market-determined mortgage rates have been at or below 5.0% for nearly every month in the past two years and are currently below 4.25%.⁶ Under normal credit conditions we might have expected the bulk of these eligible mortgages to have paid-off as borrowers refinanced or moved, as happened during the last refinancing wave from 2002 to 2003.⁷ This suggests tens of millions of borrowers have not been able to take advantage of what should be an attractive refinancing proposition.⁸

Numerous frictions have contributed to the slow rate of refinancing, including the decision by the GSEs to charge significant upfront fees for mortgages made by moderate credit, 80-125 LTV borrowers. These fees meant millions of borrowers faced a much higher than market determined interest rate. As a strategy for minimizing risks to the GSEs and the taxpayer on new purchase mortgages, such fees may make sense. But this risk

³ Source: Freddie Mac Primary Mortgage Market Survey.

⁴ Authors computations from LPS/McDash data on outstanding 30-year fixed rate mortgages guaranteed by Fannie Mae or Freddie Mac.

⁵ GSEs are the government-sponsored entities Fannie Mae and Freddie Mac.

⁶ Sources: Author's calculations from Lender Processing Services and Freddie Mac's Primary Mortgage Market Survey.

⁷ According to data from HMDA, about 25 million mortgages were refinanced and 10 million more were originated for home purchase in 2002 to 2003, out of a stock of about 47 million mortgages. While some of these mortgages likely overlap, these numbers suggest that upwards of two-thirds of the stock of home mortgages were originated in the last trough of mortgage rates. By comparison in 2010 and the first five months of 2011, fewer than 10 million mortgages were originated according to Lender Processing Services, about one-third the rate of the previous refinancing boom.

⁸ A Morgan Stanley analysis of actual versus predicted prepayment rates for securitized mortgage pools finds that overall prepayment was well below what would have been predicted from earlier periods. (See Appendix Table 1.)

minimization rationale breaks down for refinancings when the federal government already guarantees the underlying mortgage.

I believe that an appropriately structured refinancing program that minimizes closing costs, requires minimal underwriting, and that incentivizes servicers and originators to participate would mimic take-up rates at previous times when rates fell. Such a streamlined refinancing program could benefit 25 million or more borrowers with government-backed mortgages, leading to possible savings of \$70 billion or more per year in lower mortgage payments, or more than \$2,800 per year per borrower. This program is based on work with co-authors Alan Boyce and Glenn Hubbard and is described in detail on our website (<http://www4.gsb.columbia.edu/realestate/research/housingcrisis/>).⁹ I have also attached a copy of the proposal for your convenience today.

In my testimony, I will describe the current barriers to refinancings, how our plan would overcome these barriers, and why this plan is in the interest of taxpayers, the GSEs, and other mortgage service providers. I also discuss possible critiques and implementation issues and how such issues can be addressed. Many elements of such a plan could be enacted by the Administration and the GSEs, though these efforts could be strengthened through legislation. In either case, we believe that our plan would have a positive impact of the Federal deficit.

Finally, I briefly discuss other proposals that might help with the foreclosure crisis, including ideas to address the overhang of non-performing mortgages and previously foreclosed homes that I have developed with Chip Seelig and the possibility of shared appreciation mortgages to help work out underwater borrowers.

The Refinancing Offer

Under our plan, every homeowner with a GSE mortgage can refinance his or her mortgage with a new mortgage at a current fixed rate of 4.20% or less, with the rate subject to change up or down with the price of Agency pass-through Mortgage-Backed Securities (MBS). For borrowers with an FHA or VA mortgage, rates would be higher, but these borrowers should be included in any large-scale refinancing program.¹⁰ To qualify, the homeowner must be current on his or her mortgage or become so for at least three months.

⁹ Alan Boyce is CEO of the Absalon Project; Glenn Hubbard is Dean and Russell Carson Professor of Finance and Economics at Columbia Business School.

¹⁰ FHA and VA mortgages are also guaranteed by the federal government and thus can easily be included in any widespread refinancing program. However, some FHA or VA borrowers pay higher rates than GSE borrowers because their mortgages have greater risk. Under our program, these borrowers would pay the same higher insurance premium to the federal government, but the FHA or VA would facilitate the refinancing of their current mortgage to take advantage of lower bond rates.

This mitigates the current moral hazard problems where many borrowers feel pressured to miss payments in order to qualify for a mortgage modification and encourages borrowers to remain current on their loans.

Other than being current, we would impose NO other qualification or application, except for the intention to accept the new rate (that is, no appraisal, no income verification, no tax returns, etc.). Issuers of new mortgages would be indemnified against any other "reps and warranties" violations since the originators have not verified any borrower information other than being current on the outstanding mortgage. These new refinancings could be accomplished with minimal paperwork, other than what is needed legally to refinance in homeowner's jurisdiction. This program would only refinance existing first-lien mortgage debt and would not allow cash out or rolling multiple mortgages into a single new mortgage. Origination and closing costs would be minimized through the re-issue or substitution of title insurance policies and no need for an appraisal.

We have conducted a detailed pricing analysis of this plan, which I summarize here today. Under our plan, the GSEs would charge a guarantee fee of 40 basis points (0.4 percent) per year for all mortgages refinanced under this plan. This would be much larger than the current guarantee fee of 15 to 25 basis points, allowing the GSEs to earn a premium to cover the costs of implementing this plan. The GSEs would be made whole from any losses from the mortgages and mortgage-backed securities that the GSEs hold in their portfolio and any losses from giving up possible claims for "reps and warranties" violations. In addition to the guarantee fee, our plan would pay servicers 30 basis points per year to cover the costs of originating and servicing new mortgages. The new spread of 70 basis points between the wholesale mortgage rate that bondholders would pay for securities issued under this plan and the retail rate is a bit higher than it would be under normal times, mostly due to the higher guarantee fee payments. The plan should be profitable for new originators and servicers given the streamlined process and low origination costs under our plan.

Given the advantages existing servicers have in working with their own customers and in resolving issues like modifying title insurance and mortgage insurance policies, we believe that existing servicers should have a short period of time to offer this program to their own customers on an exclusive basis. After that time, any mortgage originator should be allowed to offer this program to any borrower who did not take up the program with their existing servicer. Mortgage insurers and title insurers should be required to modify their existing policies to cover the new mortgages no matter whether originated and serviced by the existing servicer or by a new originator or servicer. Second lien holders or home equity lenders should agree to re-subordinate their claims to a newly issued first mortgage. Mortgage insurers, title insurers, and second lien holders who do not participate

should be barred from doing future business with the GSEs and FHA/VA for a period of one year.¹¹

Economic Impact of our Plan

We have made detailed computations based on our plan using a simulated mortgage rate of 4 percent for 30-year mortgages and 3.5 percent for 15-year mortgages with no points or closing costs. We assume that 85% of existing borrowers in pools with average outstanding mortgage rates of 1 percent or more above the offered rate accept the refinancing offer, while take-up rates are 70 percent for borrowers with savings of 0.5-1 percent and 10 percent for borrowers with savings under 0.5 percent. These simulations thus look more like what a normal refinancing wave would look like rather than assuming 100 percent participation. Based on these computations, we expect mortgage payments to fall by about \$70 billion, benefitting about 25 million borrowers (about \$2,800 average savings).¹² About \$3.66 trillion of mortgages would be refinanced based on \$4.5 trillion of outstanding mortgage-backed securities. This effect is a big part of how monetary policy would normally work in this setting. If we scale up the number of borrowers and savings based on missing \$1.5 trillion of outstanding mortgages from our analysis, the estimated number of borrowers helped would be more than 30 million and savings could be up to \$75 to \$80 billion.¹³

This plan would function like a long-lasting tax cut for these 25 or 30 million American families. Empirical evidence suggests that consumers spend a larger portion of permanent increases in income than temporary increases. This increase is accomplished while the plan reduces the deficit modestly by improving the budget position of the GSEs. This program would disproportionately benefit the most disadvantaged borrowers who have been seriously harmed by the recession. These consumers have been unable to take

¹¹ If this plan is pursued with legislation, such participants might be required to participate with no conditions as long as it could be demonstrated that the participants were strictly better off by participating and not holding up the process.

¹² A small portion of these estimated savings come from amortizing existing mortgages over a longer period of time. That is, borrowers with 27 years left on their mortgage will now be spreading payments over 30 years for a new FRM. Given that many households face liquidity constraints, offering the option of an extended amortization period is likely an additional benefit.

¹³ Since many of the mortgages missing from our sample are previously defaulted loans that are repurchased by the GSEs and would thus be ineligible for our program, we think that a much smaller percentage of the up to \$1.5 trillion of missing mortgages would likely take advantage of our program. We are not counting the loans held in whole loan form in bank portfolios nor are we counting the performing loans in Private Label Securitizations (PLS) as neither group currently benefits from an agency guarantee. In the interests of fairness to these homeowners, a similar program with higher fees could be pursued.

advantage of refinancing opportunities (and most likely to increase consumption as a result of lower mortgage payments). More than one-half of all savings accrue to borrowers whose original mortgage was under \$200,000. Since these borrowers tend to have lower incomes and pay lower income tax rates, they would keep a significant amount of the interest savings.

The housing market benefits from our program in many ways. Lower mortgage payments reduce future defaults, helping to stabilize house prices for all homeowners, whether or not they have a GSE/FHA/VA mortgage. The good news about refinancing may help improve consumer confidence, further benefiting the housing market. House prices may start to go up, leaving fewer borrowers underwater, starting a virtuous circle. Finally, reducing pressure on servicers and PMI companies may help the mortgage market start to recover to a more normal level, helping spreads on newly originated mortgages.

Budget Impact on Taxpayers and other Participants¹⁴

It is important that any plan benefits not only the GSEs and taxpayers, but also is attractive to market participants who must administer any plan. Frictions that make current mortgage origination unappealing are a big reason for the failure of the existing HARP program.

The plan would benefit both taxpayers and GSEs and should have a neutral impact on the federal deficit. Under our plan, the GSEs receive an increased guarantee fee that has an up-front value of \$54-\$72 billion. By contrast, our rough calculations suggest that losses on the existing portfolio of mortgage-backed securities could be as high as \$41 billion. Even after these mark-to-market costs, the GSEs should earn appreciable profits, even above any additional costs of refinancings and losses from the right to “put back” legacy mortgages to originators in the event of a default.¹⁵ These computations do not count what are estimated by the Congressional Budget Office as billions of dollars of additional savings from fewer mortgage defaults from borrowers who can more easily afford to make their new and much lower mortgage payments. The computations also do not count losses from the Federal Reserve and the US Treasury that own about \$1 trillion of mortgage-backed securities, although most government-held securities are relatively low coupon mortgages with smaller than average losses.¹⁶

¹⁴ A more detailed analysis is available on our website, above.

¹⁵ GSEs lose the right to “put back” legacy mortgages to servicers in the event of a future default due to a “reps and warranties” violation. However, because we limit the program to borrowers who are current on their mortgage, the potential market value of these “put back” rights is likely quite low. See also CBO p21-22.

¹⁶ See the CBO report, “An Evaluation of Large-Scale Mortgage Refinancing Programs.” In that report, the main cost identified to the federal government was the loss in book value to the Federal Reserve – absent that non-

Existing servicers (two-thirds of mortgages are serviced by largest banks) benefit by lower legal liabilities associated with possible “reps and warranties” violations and safer portfolios of second liens and home equity lines of credit. In return, we would require servicers to meet new service-quality standards. Offsetting these gains, as a group, banks own more than \$1 trillion of existing mortgage-backed securities in their portfolio. These mortgage-backed securities would likely prepay faster resulting in a loss of higher returning assets. Nonetheless, we believe that banks typically hold portfolios with lower coupon bonds, which are held in Available For Sale accounting and would result in little or no mark-to-market losses. When capital-constrained banks have higher coupon bonds trading at a premium, they often liquidate the bonds to book profits and increase capital, replacing them with lower coupon bonds. Banks will also suffer some impairment to their Mortgage Servicing Rights, but this should be minimized by existing hedges, which have performed well in the recent bond market rally. We expect that banks will find participation in this streamlined refinancing to be profitable and result in increased customer satisfaction.

Other participants also benefit from borrowers having lower mortgage rates. Second liens and home equity lines or credit are safer when borrowers have lower first mortgage payments. Mortgage insurers generally benefit from our program by reducing the likelihood of a default that might trigger an insurance payment. However, mortgage insurers may lose the right to pursue some “reps and warranties” violations. If the value of these lost claims is viewed as sufficiently large, the program could allow a small payment to mortgage insurers to cover the costs of such lost claims.

Nearly all the direct financial gains to mortgage borrowers from this plan come at the expense of investors who understood and accepted the callable nature of mortgage interest rate risk. About two-thirds of GSE bonds are held by the private sector or foreign owners. Nonetheless, bondholders still benefit from the improved economic outlook associated with this refinancing program. Some bondholders, such as Pimco, have publically supported this plan for this reason. Given historical experience, GSE bondholders purchased the bonds at prices that anticipated these bonds being refinanced when mortgage rates fell. Thus, most Agency bondholders have received an unanticipated windfall from the extremely slow refinancing rates, effectively benefitting from unanticipated policies and inefficiencies in the mortgage market at the expense of existing

budget impact, CBO estimates a net gain to taxpayers of \$1.8 billion (p 22: (\$0.6) + \$2.4).¹⁶ The Federal Reserve does not mark to market, so there will be no accounting impact on its balance sheet. The CBO also notes that “...the conclusion that the program has a net fair-value cost to the government overall is robust to a wide set of alternative assumptions.” (P. 20)

homeowners. This shift has occurred for almost three years, benefiting the holders of GSE bonds. Bondholders have also benefitted enormously from government actions during the crisis. In 2008, the government guaranteed GSE bonds against losses. Later the Federal Reserve bought \$1.25 trillion of Agency MBS and the Treasury bought \$225 billion and still held about \$1.15 trillion of Agency MBS as of December 2010. Absent these purchases, Agency MBS prices would be significantly lower, and the attendant losses from a streamlined refinancing wave would also be lower.

Impediments and Questions About Widespread Refinancing

In our more detailed proposal, we address a number of other questions. While some critics have questioned whether such a program would lead to higher future mortgage costs, we believe that such an intervention would be consistent with what bondholders expected when they bought bonds in the first place—that is, bond prices reflected the expectation that if mortgage rates fell, most borrowers would refinance. We also think that when analysts look back on the crisis, they are more likely to believe that bondholders on the whole benefitted from government actions during the crisis rather than having been net losers.

Another concern might come from a recent CBO report suggesting that lowering mortgage rates and reducing barriers to refinancing would result in only 2.9 million new refinancings, amounting to \$7.4 billion per year. Yet the CBO working paper's estimates are at great variance to private estimates from Goldman Sachs, JP Morgan, Moody's Analytics, Morgan Stanley, and our own estimates suggesting an economic stimulus of up to \$25 to \$70 billion or more and helping 18 to 30 million borrowers (See our response to the CBO posted on our website for more details).

Others have expressed concern that a low mortgage rate program might impair labor mobility in the future, especially if mortgage rates rise. We believe that securities could be structured to allow borrowers to repurchase their mortgages out of pools in the event that mortgage rates rise at a discount, similar to what is done in Denmark.

Others have remarked that over 125 LTV loans would not be able to participate. Our more detailed analysis discusses how this program could also apply to these mortgages, with some simple rule changes by the IRS that would not interfere with the original intent of the limitation.

Finally, some have noted that this program would only apply to borrowers whose loans are currently guaranteed by the Federal government through its conservatorship of the GSEs and the FHA. This is a legitimate policy concern, but addressing it would require the assumption of additional liabilities by the taxpayer, and we have not included that idea in our proposal.

Other Ideas for Managing Non Performing Mortgages and Previously Foreclosed Homes

Even as we address the problems of the majority of homeowners who are current on their mortgage and struggling to make it, it is also important to address the problems of borrowers who have been unable to make their mortgage payments, the glut of previously foreclosed homes, and the challenges associated with underwater borrowers who may be stuck in their homes for years to come. I appreciate the efforts the Chairman and the members of this Committee continue to make to explore the full range of options needed. Various proposals have been put forth including interesting and important ideas to address non-performing mortgages and REO inventory, to expand the institutional rental market, and to provide principal reductions in some cases, but ensure that any ensuing appreciation is fairly shared by homeowners and taxpayers. Each of these areas is important, and I am eager to help the members of this Committee and its staff in any way I can to develop these ideas.

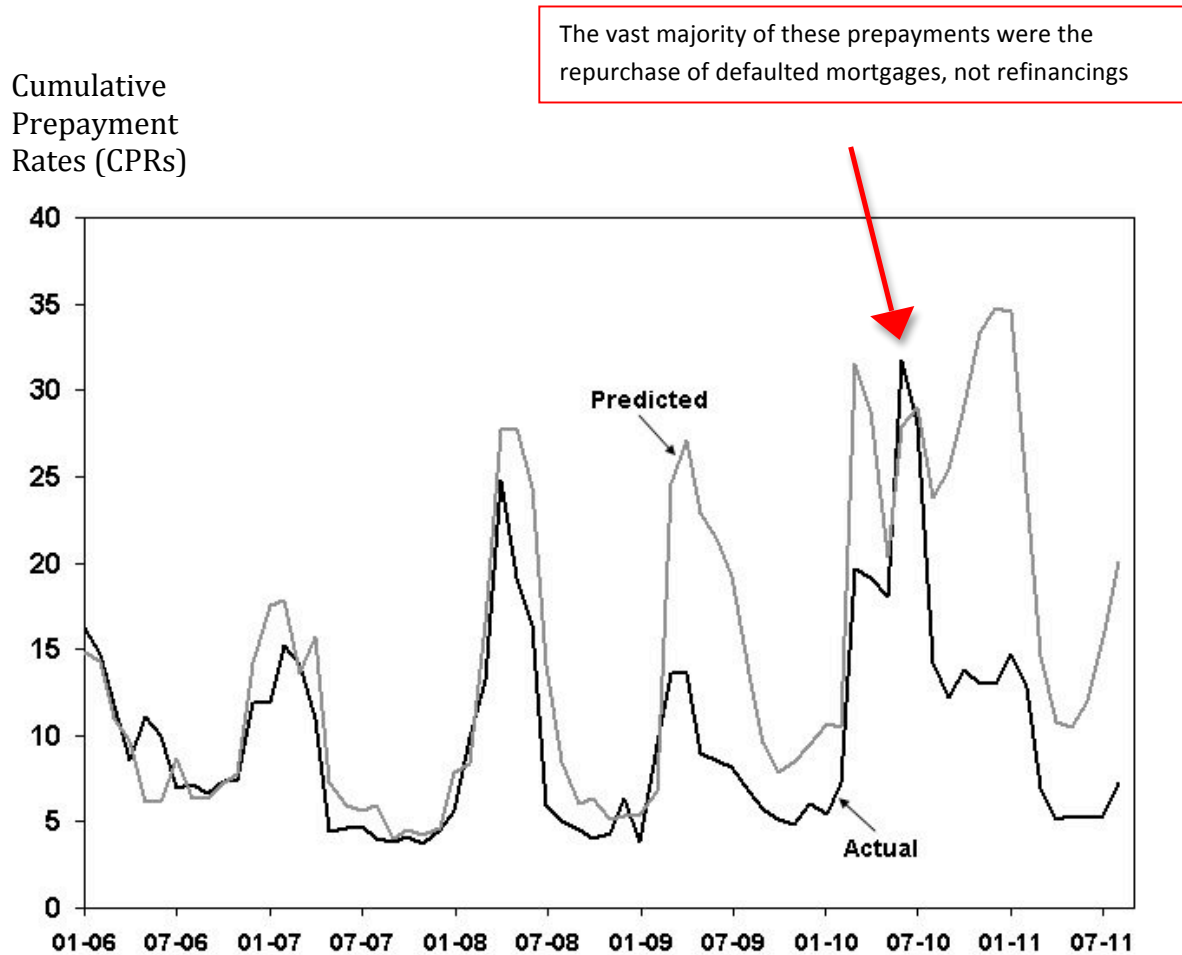
Conclusion

This proposal will make a tremendous difference to families, to the real estate market, and to our economy. Clearly this Committee and our national leadership in the Administration will still, however, have many real estate challenges even if this is implemented. This proposal does not solve the problem of people who cannot afford their existing homes even at lower interest rates. It does not answer the questions of how to permanently restructure the GSEs. It makes both of these issues, however, far more tractable by putting tens of millions of homeowners in a more stable and sustainable position.

We are at a unique and potentially risky time as the nation struggles to recover from the worst recession since the great depression. Until we fix the housing market, it will be hard for the economy to recover. American household's contractual right to prepay their mortgages with no penalty is a significant, and currently missing, driver of how Federal Reserve monetary policy is transmitted to the economy. I appreciate the opportunity to address you today and look forward to answering any questions that you might have.

Appendix Table 1: Comparison of actual and predicted prepayment rates

As is apparent in this chart, mortgage repurchases are much less sensitive to mortgage rate changes after the financial crisis hit and the GSEs were taken over by the government starting in the fall of 2008.



Source: Morgan Stanley estimates of predicted cumulative prepayment rates (CPRs) versus actual prepayment rates, updated to August 2011. Even the spike in prepayments in the summer of 2010 was driven by high defaults and buyouts of defaulted mortgages from pools rather than prepayments, suggesting appreciable barriers to refinancing that have appeared starting in the second half of 2008. See “GSEs need to ‘Buy Out’ loans in MBS – February 9, 2010 and “‘CARP’: A Broad ReFi Program – July 23, 2010 by Harley Bassman/Bank of America Securities-Merrill Lynch (www.convexitymaven.com).

Streamlined Refinancings for up to 30 Million Borrowers¹

By Alan Boyce, Glenn Hubbard, and Chris Mayer²

Executive Summary

Frictions in the mortgage market have restricted the ability of tens of millions of borrowers from refinancing their mortgages, hampering monetary policy, slowing the economic recovery, and leading to excessive numbers of foreclosures. We propose a streamlined refinancing program that may benefit up to 30 million borrowers with government-backed mortgages, leading to possible savings of \$70 billion per year in lower mortgage payments. Below we describe the current barriers to refinancings, how our plan would overcome these barriers, and why this plan is in the interest of taxpayers, the GSEs, and other mortgage service providers. We also discuss possible critiques and implementation issues and how such issues can be addressed.

1) The problem

- a) As of June 2011, more than 75% of GSE³ borrowers with a 30-year fixed-rate mortgage (FRM) have a rate of 5% or more, despite the fact that market-determined mortgage rates have been at or below 5.0% for nearly every month in the past two years and are currently around 4.25%.⁴ Under normal credit conditions we might have expected three times this many eligible

¹ Similar plans are proposed in the House of Representatives by Representative Dennis Cardoza and in the Senate by Senators Barbara Boxer and Johnny Isakson.

² Alan Boyce is CEO of the Absalon Project; Glenn Hubbard is Dean and Russell Carson Professor of Finance and Economics at Columbia Business School; Chris Mayer is Paul Milstein Professor of Real Estate, Finance and Economics at Columbia Business School and Visiting Scholar at the Federal Reserve Bank of New York. The authors would like to thank Daniel Hubbard, Laura Vincent, and James Witkin for excellent research assistance and Achim Duebel, David Scharfstein, Jeremy Stein, Joseph Tracy, Mark Zandi, and Jeff Murphy and his team at SNR Denton for many helpful comments. All opinions are those of the authors and do not represent the views of the Federal Reserve Bank of New York. Other recent reports with a similar themes include Mark Zandi and Chris DeRitis of Moody's Analytics-- "Restraining HARP: The Case for More Refinancing Now," October, 2010 and David Greenlaw of Morgan Stanley—"Slam Dunk Stimulus," July, 2010. See also, Hubbard and Mayer op-ed pieces in the *Wall Street Journal* in 2008 and the *New York Times* in 2010 calling for widespread refinancing programs and Absalon Project reports encouraging enhanced refinancing from in 2010 and 2011. BlackBox Logic, Equifax, Knowledge Decision Sciences, and Zillow provided crucial data for our analysis.

³ GSEs are the government-sponsored entities Fannie Mae and Freddie Mac.

⁴ Sources: Author's calculations from Lender Processing Services and Freddie Mac's Primary Mortgage Market Survey.

mortgages to have been prepaid, as happened during the last refinancing wave from 2002 to 2003.⁵ This suggests tens of millions of borrowers have not taken advantage of a seemingly attractive refinancing proposition.

- b) We believe that inefficiencies in the origination and servicing process, combined with GSE surcharges (so-called loan level pricing adjustments and adverse market delivery charges), falling home values, and conservative appraisals have made refinancing nearly impossible for most Americans.
- c) In addition to blunting refinancing, these mortgage-market frictions are slowing the economic recovery by limiting the benefits of low interest rates for household spending. Unable to refinance their mortgages the way corporations have been able to refinance their debt, consumers are left with weak balance sheets and mortgage payments often above of the cost of renting, contributing to excessive delinquencies and foreclosures. These constraints on refinancing have a disproportionate impact on middle-class borrowers with origination balances under \$200,000 and poorer credit and whose employment opportunities have been hit especially hard by the recession.

2) The Offer

- a) Every homeowner with a GSE mortgage can refinance his or her mortgage with a new mortgage at a current fixed rate of 4% or less, with the rate subject to change up or down with the price of Agency pass-through Mortgage-Backed Securities (MBS). For borrowers with an FHA or VA mortgage, rates would be higher, but these borrowers should be included in any large-scale refinancing program.⁶
- b) The homeowner must be current on his or her mortgage or become so for at least three months.
- c) NO other qualification or application is required, other than intention to accept the new rate (that is, no appraisal, no income verification, no tax returns, etc.).⁷

⁵ According to data from HMDA, about 25 million mortgages were refinanced and 10 million more were originated for home purchase in 2002 to 2003, out of a stock of about 47 million mortgages. While some of these mortgages likely overlap, these numbers suggest that upwards of two-thirds of the stock of home mortgages were originated in the last trough of mortgage rates. By comparison in 2010 and the first five months of 2011, fewer than 10 million mortgages were originated according to Lender Processing Services, about one-third the rate of the previous refinancing boom.

⁶ FHA and VA mortgages are also guaranteed by the federal government and thus can easily be included in any widespread refinancing program. However, some FHA or VA borrowers pay higher rates than GSE borrowers because their mortgages have greater risk. Under our program, these borrowers would pay the same higher insurance premium to the federal government, but the FHA or VA would facilitate the refinancing of their current mortgage to take advantage of lower bond rates.

⁷ Issuers of new mortgages would be indemnified against any other "reps and warranties" violations since the originators have not verified any borrower information other than being current on the outstanding mortgage.

- d) Minimal paperwork, other than what is needed legally to refinance in homeowner's jurisdiction. The Bureau of Consumer Financial Protection may provide a one-page substitute for TILA, RESPA, and HMDA filings to further reduce paperwork and costs.
- e) Homeowners can choose between a 15- or 30-year amortization schedules for newly issued mortgages.
- f) Homeowners may only refinance existing first-lien mortgage debt and cannot cash out or roll multiple mortgages into the new mortgages.
- g) GSEs would be required to issue new MBS in large, highly standardized, transparent, and homogeneous pools, as current Ginnie Mae II Jumbo securities are now issued.
- h) Existing servicers would be relieved of their liability for past "Reps and Warranties" violations as long as the mortgage is current today and is at least a year old.
- i) Existing second-lien holders would be asked to resubordinate to the newly refinanced first mortgage.⁸
- j) Existing mortgage insurance contracts should be rolled to the new first mortgage.⁹
- k) New title insurance policies must be done in a streamlined process and at low cost, likely a few hundred dollars at most.¹⁰

3) **An Example of How the Mortgage Math Works¹¹**

- a) The proposal will break help break through the frictions that are dampening refinancing activity and be profitable for all participants in the mortgage market.
- b) Newly issued 30 year GSE MBS trade between 3.2 and 3.4 percent yields in the bond market

⁸ Second-lien holders strictly benefit from borrowers receiving lower payments on the new mortgage. Second-lien holders who refuse to re-subordinate their second liens on a systematic basis would lose the right to do business with GSEs in the future. This language mirrors a provision in the Boxer Bill.

⁹ Mortgage insurers (MIs) benefit from borrowers receiving lower payments on the new mortgages because the default risk of these borrowers is lower, although the MIs also lose the right to make "Reps and Warranties" claims on these past mortgages. The loss of rights might require small compensation from GSEs as part of the package, maybe an additional 10 basis points. However, failure to participate in the plan and re-endorse policies should result in loss of ability to insure new GSE mortgages for all future mortgage insurance business.

¹⁰ Title insurers strongly benefit from this program through much higher volume of new business. Failure to participate in creating these new policies, which would not involve any additional guarantees beyond those made in the original title insurance policy, should result in loss of ability to provide title insurance for all future GSE mortgages.

¹¹ This example is for GSE mortgages. FHA/VA borrowers would receive a similar benefit, but may pay higher rates as these borrowers have a higher existing risk premium. We have more detailed computations that are available on request that can show the profits and losses for all parties involved, including why we believe that originators can profitably cover all costs of new originations.

- c) GSEs currently receive a guarantee fee of 12.5 to 25 basis points on most legacy mortgages. We propose a new guarantee fee of 40 basis points to compensate the GSEs for their costs of implementing this plan, for any possible revenue lost by giving up some “reps and warranties rights,” and for the loss in value of their retained portfolio. Assuming that the GSEs currently charge guarantee fees of 15bp, they will get 25 basis points of additional revenue.¹² This fee would have a present value of between 1.5 and 2.0 percent of the mortgage amount (the bond market values interest-only payments at a multiple of 6-to-8 times).
- d) Servicers would receive the right to originate/service newly issued mortgages to their existing borrowers at a fixed spread to be determined by the GSEs, likely 25-30 basis points.¹³ Servicers must agree to independently verified, minimum quality standards in order to obtain the right to originate mortgages under this plan.¹⁴ Servicers who do not agree to these terms will be immediately replaced under the direction of the GSEs.
- e) In this example, newly originated refinancings would be originated at 3.8 to 4.1 percent, with no points or costs to consumers.¹⁵
- f) Servicers of newly issued mortgages under this plan would not be responsible for “reps and warranties” violations of past servicers/originators.

4) Large economic benefit for consumers, the housing market, and the economy

- a) According to Appendix Table 1, only about 18 percent of GSE mortgages and 30 percent of FHA/VA mortgages were originated in the last 18 months when there have been two periods of exceptionally low mortgage rates, well below what would have been expected based on previous refinancing waves with low mortgage rates.
- b) About 63 percent of GSE 30-year fixed-rate mortgages have a rate above 5.5 percent, despite large potential savings for these borrowers from refinancing.
- c) For our computations, we turn to an analysis of about \$4.5 trillion of mortgage pools, including almost all Fannie Mae, Freddie Mac, FHA and VA

¹² Our calculations suggest that the GSEs would break even on their losses from their retained mortgage portfolio if they were to have an additional spread of only 15 basis points, so a total GSE spread of 30 basis points instead of 40 basis points would work. Making this “break-even” for the GSEs would reduce the estimated rates to consumers in this proposal by about 0.1 percent.

¹³ Note that origination/servicing on newly originated mortgages today earns a spread of about 35 basis points. With low origination costs and economies of scale, originating and servicing these mortgages would be highly profitable at these spreads.

¹⁴ Servicers who fail to maintain these quality standards would lose their servicing rights to all mortgages originated under this plan.

¹⁵ One exception might be consumers who live in locations where local governments charge a percentage of the mortgage amount to refinance a property. In this case, consumers might pay slightly higher rates.

- mortgage pools as obtained from Knowledge Decision Sciences, representing about 75 percent of the existing universe of potential borrowers.¹⁶ A spreadsheet detailing our computations is available on our website at: <http://www4.gsb.columbia.edu/realestate/research/housingcrisis/>.
- d) For our computations, we use a simulated mortgage rate of 4 percent for 30-year mortgages and 3.5 percent for 15-year mortgages with no points or closing costs. We assume that 85% of existing borrowers in pools with average outstanding mortgage rates of 1 percent or more above the offered rate accept the refinancing offer, while take-up rates are 70 percent for borrowers with savings of 0.5-1 percent and 10 percent for borrowers with savings under 0.5 percent. These simulations thus look more like what a normal refinancing wave would look like rather than assuming 100 percent participation.
 - e) Based on these computations, we expect mortgage payments to fall by about \$70 billion, benefitting about 25 million borrowers (about \$2,800 average savings).¹⁷ About \$3.66 trillion of mortgages would be refinanced. This effect is a big part of how monetary policy would normally work in this setting. If we scale up the number of borrowers and savings based on missing \$1.5 trillion of outstanding mortgages from our analysis, the estimated number of borrowers helped would be more than 30 million and savings could be up to \$75 to \$80 trillion.¹⁸
 - f) This plan would function like a long-lasting tax cut for these 25 or 30 million American families. Empirical evidence suggests that consumers spend a larger portion of permanent increases in income than temporary increases. This increase is accomplished while the plan reduces the deficit modestly by improving the budget position of the GSEs (see below).
 - g) This program would disproportionately benefit the most disadvantaged borrowers who have been seriously harmed by the recession. These consumers have been unable to take advantage of refinancing opportunities (and most likely to increase consumption as a result of lower mortgage payments). About 48 percent of all outstanding balances of GSE loans today

¹⁶ These securities do not include mortgages in pools not in our data or held by the GSEs or Ginnie Mae either because they have not been securitized or they were repurchased from securitizations due to actual or likely default. The data cover 3.88 trillion of outstanding 30-year FRMs and 0.62 trillion of 15-year FRMs and were obtained from Knowledge Decision Sciences.

¹⁷ A small portion of these savings come from amortizing existing mortgages over a longer period of time. That is, borrowers with 27 years left on their mortgage will now be spreading payments over 30 years for a new FRM. Given that many households face liquidity constraints, offering the option of an extended amortization period is likely an additional benefit.

¹⁸ Since many of the mortgages missing from our sample are previously defaulted loans that are repurchased by the GSEs and would thus be ineligible for our program, we think that a much smaller percentage of the up to \$1.5 trillion of missing mortgages would likely take advantage of our program. We are not counting the loans held in whole loan form in bank portfolios nor are we counting the performing loans in Private Label Securitizations (PLS) as neither group currently benefits from an agency guarantee. In the interests of fairness to these homeowners, a similar program with higher fees could be pursued.

went to borrowers whose origination mortgage was under \$200,000. Because these borrowers have been less likely to refinance, they would obtain 54 percent of the total interest savings. Assuming mortgages are about three times income, this means most of the savings would accrue to borrowers whose household income at origination was under \$70,000. (See Appendix Table 2).

- h) The housing market benefits in many ways. Lower mortgage payments reduce future defaults, helping to stabilize house prices for all homeowners, whether or not they have a GSE/FHA/VA mortgage. The good news about refinancing may help improve consumer confidence, further benefiting the housing market. House prices may start to go up, leaving fewer borrowers underwater, starting a virtuous circle. Finally, reducing pressure on servicers and PMI companies may help the mortgage market start to recover to a more normal level, helping spreads on newly originated mortgages.

5) Profits for other participants

- a) GSEs receive cash flow that has an up-front value of \$54-\$72 billion
 - i) They earn 1.5-2.0 percent profit for originating new mortgages; with total refinancings of \$3.6 trillion, this amount translates to a profit of \$54 to \$72 billion.
 - ii) GSEs have about \$580 billion of bonds on their balance sheet.¹⁹ Assuming a weighted average market price of 107, the bonds have a mark-to-market premium of \$40.6 billion. Even after these mark-to-market costs, the GSEs should earn appreciable profits, which can be used to cover costs of refinancings, possible future losses, and eventually returning some of the estimated \$150 billion owned to taxpayers.
 - iii) GSEs have lower costs of future defaults due to lower payments for current borrowers. Reduced defaults might be about \$25 billion; we are working further on this estimate.
 - iv) GSEs lose right to “put back” legacy mortgages to servicers in the event of a future default due to a “reps and warranties” violation. However, because we limit the program to borrowers who are current on their mortgage, the potential market value of these “put back” rights is likely quite low.
- b) Existing servicers (two-thirds of mortgages are serviced by largest banks) benefit by lower legal liabilities and safer portfolios of second liens; must now meet new service-quality standards.
 - i) Banks get rid of reps-and-warrants liability for the bulk of outstanding mortgages, helping to resolve legal uncertainty weighing down their share prices and legal reserves.

¹⁹ See Appendix Table 2 for a list of the holders of GSE bonds and mortgages as of December, 2010.

- ii) Lower payments on first mortgages make the existing portfolio of HELOCs and second liens less risky, helping to shore up bank balance sheets.
- iii) In return, banks must agree to re-subordinate existing second liens to newly refinanced mortgages at no cost to existing homeowners.
- iv) The banks have about \$1.07 trillion of agency MBS in their portfolio, so they will see some prepayments as well.²⁰
 - (1) Banks typically hold portfolios with lower coupon bonds that would have smaller-than-average mark-to-market losses. When capital-constrained banks have higher coupon bonds trading at a premium, they often liquidate the bonds to book profits and increase capital, replacing them with lower coupon bonds.
 - (2) Most of Banks' mortgage loans are categorized as "held to maturity" assets and thus are marked at amortized cost. Their holdings in Agency MBS typically are categorized as "available for sale," so the change in mark-to-market values is not reported on the income statement but does change the equity capital account. Thus a large prepayment wave will not result in large mark-to-market losses.
- v) Servicers must conform to new independently verified customer service guarantees or lose the mortgage servicing relationship to a competitor.
- vi) Existing servicers should have a short period of time (60 or 90 days) to offer this program to their existing borrowers on an exclusive basis. Afterwards, any servicer should be able to approach GSE borrowers to offer this program.
- c) Taxpayers benefit: they will receive higher payments from Fannie and Freddie and lower future losses from mortgage defaults; lower mortgage interest deductions may also reduce the deficit.
 - i) GSEs must pay back taxpayers for their losses to the extent possible, so profits from managing this program translate to a lower deficit
 - ii) Lower homeowner mortgage payments reduce deductions from mortgage interest, raising net tax collections and further lowering the deficit.
- d) Bondholders are paying the bulk of the cost of this program
 - i) Bondholders benefit from the improved economic outlook associated with this refinancing program.
 - ii) Nearly all the gains to mortgage borrowers from this plan come at the expense of investors who understood and accepted the callable nature of mortgage interest rate risk. Appendix Table 3 lists the major groups of bondholders for GSE MBS as of December, 2010. About two-thirds of GSE bonds are held by the private sector or foreign owners.
 - iii) Given historical experience, GSE bondholders purchased the bonds at prices that anticipated these bonds being refinanced when mortgage rates fell. Thus, most Agency bondholders have received an unanticipated

²⁰ See Appendix Table 3 for a list of the holders of GSE bonds and mortgages as of December, 2010.

windfall from the extremely slow refinancing rates, effectively benefitting from unanticipated inefficiencies in the mortgage market at the expense of existing homeowners. This shift has occurred for almost three years, benefiting the holders of GSE bonds.

- iv) Some GSE bonds are held overseas, where there are no costs to the US economy from increased prepayments.
- v) Agency bondholders have also benefitted enormously from government actions during the crisis. In 2008, the government guaranteed GSE bonds against losses. Later the Federal Reserve bought \$1.25 trillion of Agency MBS and the Treasury bought \$225 billion and still held about \$1.15 trillion of Agency MBS as of December 2010. Absent these purchases, Agency MBS prices would be significantly lower, and the attendant losses from a streamlined refinancing wave would also be lower.
- vi) The Federal Government through the Federal Reserve and US Treasury and thus will suffer some economic loss from their portfolio from the prepayment of high-coupon Agency MBS. But, the Federal Reserve does not mark-to-market and bought the GSE MBS for the express purpose of lowering mortgage rates and stimulating the housing market, which is what this plan accomplishes.
- e) Private Mortgage Insurers
 - i) The Agencies should ask Mortgage Insurers (MIs) to re-endorse existing policies for the newly refinanced mortgages.
 - ii) With lower mortgage rates, default rates would be lower, so MIs would get large benefits from this plan.
 - iii) Mortgage Insurers lose the possibility of pursuing reps and warranties violations on mortgages and may require some additional compensation, which might cost no more than 10 basis points, if needed at all.
- f) Title Insurers
 - i) New title insurance policies under this program should require minimal additional work, but simply insuring against any adverse claims prior to the origination of the previous mortgage.
 - ii) A modified title insurance policy should be available for several hundred dollars at the most. With 20 million new mortgages, this policy would generate substantial new revenue for title insurers for little new effort.

6) Other important questions and responses:

- a) Wouldn't a mass refinancing program interfere with markets in a way that might cause a loss in confidence by investors and future mortgage rates to rise?
 - i) As we note above, the government and the Fed have already undertaken unprecedented interventions, but most of these have positively impacted Agency bondholders, not so much homeowners. These interventions did not have the intended consequence of assisting homeowners in exercising their contractual right to refinance when interest rates fell.
 - ii) Historically, most bond prices already anticipated widespread refinancing when mortgage rates fell, just like occurred in 2002-2004,

when the majority of outstanding mortgages refinanced to take advantage of mortgage rates that fell below 5 percent.

- iii) Nonetheless, if this issue were a continuing concern, the Agencies could add an additional covenant in future MBS guaranteeing that the Agencies would never again pursue a mass refinancing program (or limiting the scope of such a program). Such a provision would be a legally binding contract and require compensation for bondholders in any future mass refinancing program.
 - iv) This streamlined refinancing proposal is meant to reduce or eliminate frictions that have limited households' ability to exercise their contractual right to refinance when interest rates fell.
- b) Restrictions on securitizing new mortgages with an LTV over 125 percent can change the type of securitization required, but such mortgages can be included in our program.
- i) High LTV mortgages (greater than 125% LTV) cannot be placed into REMICs based on current IRS tax rules. One of the requirements for an agency MBS is that it be REMIC eligible. Thus, 125+ LTV loans are ineligible to be securitized into TBA MBS. However, these mortgages can still be securitized through non-TBA deliverable, single-class pass-thru securities and will trade at a lower price in the market. While these single-class securities cannot be tranching like REMICs can, the GSEs have issued such securities in the past and could do so again under this program. We believe that automated appraisals can be used to determine LTVs for the decision of which mortgages to place in normal or high LTV pools.
 - ii) Securities backed by high LTV mortgages present trade-offs to investors. On one hand, high LTV, low FICO, low loan balance mortgage loans are much less likely to efficiently exercise their option to prepay, which significantly increases their value. On the other hand, if such MBS contain >125 LTV loans, they will be ineligible for use in REMIC structures. We believe that such high LTV, low loan balance MBS will improve the TBA market and be material to this program, especially given that mortgages above 125% LTV are a minority of all outstanding mortgages
 - iii) TBA rules are negotiated rather than legislated or subject to SEC regulation. We believe that SIFMA retains broad discretion to allow the placement of high LTV mortgages into bonds. The intent of the TBA deliverability requirement is to preserve and improve liquidity. There is no requirement that such bonds be relatively homogeneous, as the expectation is that TBA means "cheapest to deliver." Historically, TBA good delivery requirements are negotiated, with SIFMA acting as the honest broker to ensure an orderly operation the MBS market.
 - iv) Current trading data and option adjusted spread models (OAS) show that high LTV/low credit score/low loan balance mortgage pools trade at premiums to TBA eligible pools. While seemingly counterintuitive, pools with relatively risky borrowers are attractive to many investors because of their relatively slow prepayment speeds.

- c) Wouldn't a mass refinancing program lock homeowners into their homes, impairing labor market mobility, home sales, and future economic growth?
 - i) Any time interest rates rise, homeowners have a reduced incentive to move. Of course, the larger issue is that underwater borrowers already have reduced ability to move which is reducing labor mobility and increasing unemployment.
 - ii) Under this plan, the United States should mimic the Danish mortgage system and give mortgage borrowers the right to purchase their mortgages out of these pools at market prices. Under such a plan, performing borrowers, through their servicer, broker, banker, or other financial intermediary, could purchase bonds at market prices. The bonds would be presented to the trustee which would accept its' liability and thus allow borrowers to pay off their mortgages. Because these bonds would trade at a discount to par value when rates rise, borrowers would earn a "profit" by paying off their mortgage below par. In fact, if rates rose, borrowers might be able to use such profits to help offset the impact of lower house prices, effectively stabilizing the mortgage market and the economy.²¹
- d) Aren't the originators getting "too much" by eliminating reps and warranties liability on future mortgages?
 - i) Reps and warrants claims on mortgages that are current on their payments are likely to be worth relatively little.
 - ii) Servicers believe that the current exercise of reps and warranties is far in excess of the intent of the original contract clause. In fact, they believe loans are being putback for small clerical errors.
 - iii) If this issue is a continuing concern, the Agencies could demand that issuers carry over any some limited liability to the newly issued mortgages. Previous originators would still benefit in that consumers with lower payments are less likely to default, thus reducing potential liability.
- e) The program is "unfair," in that it does not cover all borrowers
 - i) It is not possible to help borrowers whose loans are not currently guaranteed by the GSEs, FHA or VA without appreciable taxpayer funds or increased risk in lending.
 - ii) To help remaining borrowers, the government should work to further reduce retail mortgage rates and develop a privately funded mortgage market.
 - iii) This program could be extended to include borrowers whose loans fit the GSE conventional loan guidelines at the time of origination, but for some reason were not pooled with a GSE guarantee. This would need to be done at higher cost to the borrower, as the GSEs would be taking on incremental risk.

²¹ For more detail, see the following presentation: <http://absalonproject.com/wp-content/uploads/2011/08Time-to-Fix-the-US-Mortgage-Market-8-22-11.pdf>

- iv) In addition, the government should endeavor to cover some HARP borrowers who agreed not to refinance again as part of their HARP mortgage. Such restrictions did not envision a low-cost mass refinancing program being undertaken at lower mortgage rates.

Appendix Table 1: Distribution of Mortgage Rates and Origination Year for Outstanding Government-Backed Mortgages as of June, 2011

(NOTE: McDash is missing about 10 million mortgages or 20 percent of outstanding mortgages, so these counts likely understate the number of potential beneficiaries)

Percent of Borrowers with 30-yr FRM

	GSE	FHA	VA
Below 4%	2.4%	0.4%	0.3%
4-5%	21.4%	23.1%	29.6%
5-5.49%	16.9%	28.2%	24.0%
5.5-5.99%	21.7%	17.9%	17.5%
6-7%	29.8%	22.3%	20.1%
above 7%	8.0%	8.2%	8.6%
Total number in McDash	15,555,981	5,488,159	1,125,248

Percent of Borrowers with 30-yr FRM

Date of origination	GSE	FHA	VA
2007 or earlier	57.7%	30.5%	38.9%
2008-2009	26.0%	40.9%	29.0%
2010-2011	16.4%	28.6%	32.1%

Percent of Borrowers with 15-yr FRM

	GSE	FHA	VA
Below 4%	6.9%	3.7%	1.8%
4-5%	38.6%	43.6%	31.6%
5-5.49%	21.0%	15.1%	20.9%
5.5-5.99%	17.7%	14.1%	24.3%
6-7%	13.3%	15.8%	16.5%
above 7%	2.6%	7.9%	5.0%
Total number in McDash	6,187,831	342,577	96,989

Percent of Borrowers with 15-yr FRM

Date of origination	GSE	FHA	VA
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2007 or earlier	62.1%	37.8%	67.4%
2008-2009	14.7%	27.7%	10.6%
2010-2011	23.2%	34.5%	22.1%

Appendix Table 2: Distribution of Benefits Origination Balances as of June, 2011

Origination Balance	% Outstanding Balances	% Interest Savings
Under \$100,000	14%	18%
\$100,000-199,999	33%	36%
\$200,000-299,999	27%	25%
\$300,000-399,999	17%	15%
\$400,000-499,999	6%	4%
\$500,000-599,999	2%	1%
\$600,000-699,999	1%	1%

Source: Lender Processing Services and authors' calculations

Notes: % **Outstanding Balances** represents the portion of total outstanding GSE mortgage balances broken down by the origination amount. So 47 percent of all outstanding GSE balances are for borrowers with an origination mortgage under \$200,000. % **Interest Savings** represents the portion of the total interest savings that accrue to borrowers in each category. So 54 percent of all interest savings go to borrowers whose origination amount was less than \$200,000. The reason that a disproportionate share of the interest savings go to borrowers with the lowest origination balances is that these borrowers also have the highest mortgage rates and were the least likely to refinance to take advantage of low rates.

Appendix Table 3: Ownership of GSE Bonds and Mortgages as of December, 2010

Owner	Dollars Outstanding	Percent
US Treasury/Federal Reserve	\$1,148	21.5%
Commercial Banks	\$1,071	20.1%
Foreign Investors	\$770	14.4%
Mutual Funds/Private Pension Funds	\$705	13.2%
Fannie Mae/Freddie Mac	\$583	10.9%
Public Pension Funds/State & Local Govt	\$280	5.2%
Savings Institutions/Credit Unions	\$262	4.9%
Insurance Companies	\$208	3.9%

Other	\$301	5.6%
Total	\$5,328	100%

Source: Inside Mortgage Finance, "The 2011 Mortgage Market Statistical Annual – Volume II," P. 293.

State	Senator	Party	Senator	Party	Population (2010)	Savings (millions)	Mortgages Eligible	Savings Per Refi	Refi count/ population	Refi value/ population	Housing Units with Mortgage (2009)	Share of 2009 mortgages refi'd	AVG Credit Score	
Alaska	AK	Begich, Mark	D	Murkowski, Lisa	R	710,231	\$178	63,712	\$2,792	9%	\$250	104,790	0.61	674
Alabama	AL	Sessions, Jeff	R	Shelby, Richard C.	R	4,779,736	\$863	421,326	\$2,049	9%	\$181	779,325	0.54	676
Arkansas	AR	Boozman, John	R	Pryor, Mark L.	D	2,915,918	\$402	229,824	\$1,748	8%	\$138	435,512	0.53	668
Arizona	AZ	Kyl, Jon	R	McCain, John	R	6,392,017	\$2,061	829,443	\$2,485	13%	\$322	1,076,371	0.77	659
California	CA	Boxer, Barbara	D	Feinstein, Dianne	D	37,253,956	\$11,355	3,582,530	\$3,169	10%	\$305	5,226,588	0.69	672
Colorado	CO	Bennet, Michael F.	D	Udall, Mark	D	5,029,196	\$1,936	767,789	\$2,521	15%	\$385	971,804	0.79	674
Connecticut	CT	Blumenthal, Richard	D	Lieberman, Joseph I.	ID	3,574,097	\$958	343,879	\$2,786	10%	\$268	659,299	0.52	694
District of Columbia	DC					601,723	\$246	68,131	\$3,611	11%	\$409	87,382	0.78	677
Delaware	DE	Carper, Thomas R.	D	Coons, Christopher A.	D	897,934	\$327	121,362	\$2,691	14%	\$364	168,711	0.72	684
Florida	FL	Nelson, Bill	D	Rubio, Marco	R	18,801,310	\$5,399	2,082,451	\$2,592	11%	\$287	3,093,098	0.67	673
Georgia	GA	Chambliss, Saxby	R	Isakson, Johnny	R	9,687,653	\$2,618	1,146,692	\$2,283	12%	\$270	1,655,875	0.69	668
Hawaii	HI	Akaka, Daniel K.	D	Inouye, Daniel K.	D	1,360,301	\$414	102,325	\$4,042	8%	\$304	177,529	0.58	688
Iowa	IA	Grassley, Chuck	R	Harkin, Tom	D	3,046,355	\$442	264,130	\$1,673	9%	\$145	559,814	0.47	700
Idaho	ID	Crapo, Mike	R	Risch, James E.	R	1,567,582	\$421	188,995	\$2,225	12%	\$268	278,102	0.68	688
Illinois	IL	Durbin, Richard J.	D	Kirk, Mark	R	12,830,632	\$3,225	1,311,979	\$2,458	10%	\$251	2,251,649	0.58	684
Indiana	IN	Coats, Daniel	R	Lugar, Richard G.	R	6,483,802	\$1,179	640,648	\$1,841	10%	\$182	1,223,347	0.52	676
Kansas	KS	Moran, Jerry	R	Roberts, Pat	R	2,853,118	\$481	256,340	\$1,875	9%	\$168	486,683	0.53	682
Kentucky	KY	McConnell, Mitch	R	Paul, Rand	R	4,339,367	\$625	331,362	\$1,886	8%	\$144	724,517	0.46	677
Louisiana	LA	Landrieu, Mary L.	D	Vitter, David	R	4,533,372	\$683	326,816	\$2,091	7%	\$151	651,071	0.50	663
Massachusetts	MA	Brown, Scott P.	R	Kerry, John F.	D	6,547,629	\$1,708	582,794	\$2,932	9%	\$261	1,155,696	0.50	703
Maryland	MD	Cardin, Benjamin L.	D	Mikulski, Barbara A.	D	5,773,552	\$2,257	753,784	\$2,995	13%	\$391	1,102,684	0.68	688
Maine	ME	Collins, Susan M.	R	Snowe, Olympia J.	R	1,328,361	\$246	102,705	\$2,399	8%	\$185	263,918	0.39	699
Michigan	MI	Levin, Carl	D	Stabenow, Debbie	D	9,883,640	\$2,034	1,017,268	\$2,000	10%	\$206	1,882,846	0.54	679
Minnesota	MN	Franken, Al	D	Klobuchar, Amy	D	5,303,925	\$1,574	713,992	\$2,204	13%	\$297	1,096,579	0.65	707
Missouri	MO	Blunt, Roy	R	McCaskill, Claire	D	5,988,927	\$1,210	633,111	\$1,911	11%	\$202	1,078,256	0.59	683
Mississippi	MS	Cochran, Thad	R	Wicker, Roger F.	R	2,967,297	\$292	143,275	\$2,039	5%	\$98	427,313	0.34	668
Montana	MT	Baucus, Max	D	Tester, Jon	D	989,415	\$220	104,504	\$2,102	11%	\$222	150,921	0.69	701
North Carolina	NC	Burr, Richard	R	Hagan, Kay R.	D	9,535,483	\$2,141	996,713	\$2,148	10%	\$225	1,661,351	0.60	667
North Dakota	ND	Conrad, Kent	D	Hoeven, John	R	672,591	\$69	44,495	\$1,545	7%	\$102	101,911	0.44	706
Nebraska	NE	Johanns, Mike	R	Nelson, Ben	D	1,826,341	\$296	173,493	\$1,706	9%	\$162	310,747	0.56	712
New Hampshire	NH	Ayotte, Kelly	R	Shaheen, Jeanne	D	1,316,470	\$370	141,759	\$2,607	11%	\$281	257,807	0.55	703
New Jersey	NJ	Lautenberg, Frank R.	D	Menendez, Robert	D	8,791,894	\$2,987	951,698	\$3,138	11%	\$340	1,488,050	0.64	693
New Mexico	NM	Bingaman, Jeff	D	Udall, Tom	D	2,059,179	\$513	217,962	\$2,354	11%	\$249	310,823	0.70	663
Nevada	NV	Heller, Dean	R	Reid, Harry	D	2,700,551	\$955	347,089	\$2,750	13%	\$353	440,311	0.79	655
New York	NY	Gillibrand, Kirsten E.	D	Schumer, Charles E.	D	19,378,102	\$4,186	1,344,655	\$3,113	7%	\$216	2,579,280	0.52	686
Ohio	OH	Brown, Sherrod	D	Portman, Rob	R	11,536,504	\$1,990	1,035,361	\$1,922	9%	\$173	2,108,697	0.49	685
Oklahoma	OK	Coburn, Tom	R	Inhofe, James M.	R	3,751,351	\$620	329,659	\$1,880	9%	\$165	572,509	0.58	666
Oregon	OR	Merkley, Jeff	D	Wyden, Ron	D	3,831,074	\$1,267	482,977	\$2,624	13%	\$331	655,589	0.74	686
Pennsylvania	PA	Casey, Robert P., Jr.	D	Toomey, Patrick J.	R	12,702,379	\$2,412	1,103,232	\$2,187	9%	\$190	2,205,428	0.50	696
Rhode Island	RI	Reed, Jack	D	Whitehouse, Sheldon	D	1,052,567	\$239	87,815	\$2,722	8%	\$227	186,002	0.47	692
South Carolina	SC	DeMint, Jim	R	Graham, Lindsey	R	4,625,364	\$1,004	457,955	\$2,192	10%	\$217	769,352	0.60	665
South Dakota	SD	Johnson, Tim	D	Thune, John	R	814,180	\$108	66,139	\$1,629	8%	\$132	126,093	0.52	710
Tennessee	TN	Alexander, Lamar	R	Corker, Bob	R	6,346,105	\$1,249	614,035	\$2,033	10%	\$197	1,085,291	0.57	679
Texas	TX	Cornyn, John	R	Hutchison, Kay Bailey	R	25,145,561	\$5,056	2,362,989	\$2,140	9%	\$201	3,428,275	0.69	651
Utah	UT	Hatch, Orrin G.	R	Lee, Mike	R	2,763,885	\$825	337,577	\$2,443	12%	\$298	455,691	0.74	683

Virginia	VA	Warner, Mark R.	D	Webb, Jim	D	8,001,024	\$2,760	991,916	\$2,782	12%	\$345	1,475,470	0.67	689
Vermont	VT	Leahy, Patrick J.	D	Sanders, Bernard	I	625,741	\$126	53,124	\$2,370	8%	\$201	121,554	0.44	706
Washington	WA	Cantwell, Maria	D	Murray, Patty	D	6,724,540	\$2,456	882,999	\$2,781	13%	\$365	1,195,537	0.74	691
Wisconsin	WI	Johnson, Ron	R	Kohl, Herb	D	5,686,986	\$910	439,924	\$2,068	8%	\$160	1,074,592	0.41	699
West Virginia	WV	Manchin, Joe, III	D	Rockefeller, John D., IV	D	1,852,994	\$170	84,855	\$1,998	5%	\$92	274,517	0.31	679
Wyoming	WY	Barrasso, John	R	Enzi, Michael B.	R	563,626	\$116	50,559	\$2,289	9%	\$205	93,297	0.54	690
							<u>\$76,176</u>	<u>30,730,147</u>				<u>50,747,854.00</u>		