

Delivering on the Promise of Risk-Sharing

by

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Delivering on the Promise of Risk-Sharing

During the financial crisis, taxpayers stepped up to back the lion's share of the mortgage market. By putting Fannie Mae and Freddie Mac, the government-sponsored enterprises (GSEs), into conservatorship and expanding Federal Housing Administration (FHA) lending to fill the void left by a retreating private label securities market, the government staved off the collapse of the housing finance system and with it the real possibility of an economic depression. But this also put the taxpayer on the hook for most of the credit risk being taken in the mortgage market.

Since that dark time, the FHA and the GSEs have slowly pulled back on the risk they are taking, with much of the reduction occurring through the GSEs' so-called risk-sharing transactions. These deals first began in 2013 when the GSEs were each required by their regulator, the Federal Housing Finance Agency, to share the risk on \$30 billion of mortgage-backed securities. The FHFA increased the requirement in 2014 to \$90 billion and then again in 2015, to \$120 billion for Freddie and \$150 billion for Fannie. This year, taxpayers will likely shoulder about half the credit risk in all the mortgage loans originated (see Chart 1), down from well over three-fourths of the risk at the peak of taxpayers' support in 2010.¹ More tellingly, the GSEs are now sharing risk on about 90% of the balance on newly acquired 30-year fixed-rate loans, their core business.²

While there is a clear consensus that the GSEs should continue sharing the vast majority of their risk, there is much less clarity over what form or forms that risk-sharing should take. To help answer this question, we attempt to clarify what we should be trying to accomplish in risk-sharing and then evaluate the available structures with those objectives in mind.

In our analysis we find no obviously superior structure, but a range of choices that each present different strengths and weaknesses that will only be fully understood when tested in the market. We conclude that it is critical for the GSEs to expand the types of risk-sharing transactions they are engaged in beyond the relatively narrow range done to date. The GSEs should also be more transparent about the terms and pricing of the transactions so that policymakers and stakeholders are in a better position to evaluate the relative merits of the design choices.

Design choices

At the highest level, the GSEs face two key design choices in structuring a risk-sharing transaction:³ which tranches of credit risk to share; and whether they share that risk before purchasing the loan, on the "front end" of the transaction, or after they have purchased it and put it into a pool for securitization, on the "back end."⁴

Mortgage credit risk is generally clarified in three tranches: first loss risk, mezzanine risk, and catastrophic risk.⁵ In taking the first loss risk, the GSEs cover the initial losses on defaulted mortgage loans in a guaranteed pool. In taking the mezzanine risk, they take those losses that are greater than the first loss, but less than the losses that occur only in the most severe economic and housing market downturns, which we call the catastrophic risk.

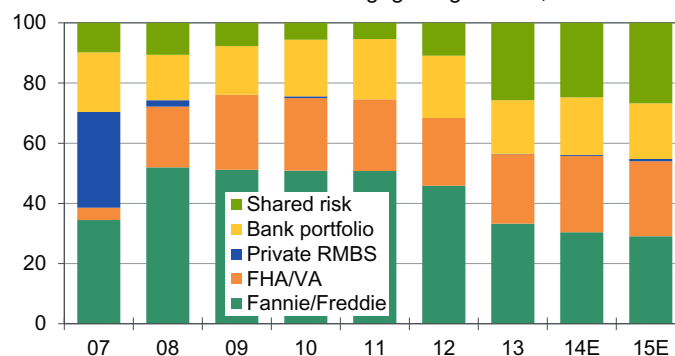
In a back-end transaction, the GSEs transfer some of the credit risk they have assumed on a pool of mortgages to a capital markets investor—typically asset managers or hedge funds—or to a reinsurance company.⁶ The GSEs collect their normal guarantee fees from lenders for covering the entirety of the credit risk, but they pay investors and reinsurers for shouldering some of that risk.

To date most of the GSEs' risk-sharing transactions have been on the back end. Freddie Mac issued the first of these deals in July 2013, selling the mezzanine risk on a pool of loans to the capital markets. Since then, Freddie has issued 15 such deals, through Structured Agency Credit Risk (STACR) structures, covering \$397 billion in notional collateral or 23.4% of their book of business.

Fannie issued its first back-end deal in October 2013, also selling mezzanine risk. Since then it has issued nine similar deals, through Connecticut Avenue Securities (CAS) structures, covering \$485 billion of collateral or 17.3% of its total book of business. The GSEs share the risk with STACR or CAS for a period of 10 years, after which the risk reverts to the GSEs.

Chart 1: Taxpayers Take Much of Mortgage Risk

Credit risk share of residential mortgage originations, %



Sources: Fannie Mae, Moody's Analytics

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These back-end deals have changed over time, with the GSEs continuing to broaden the footprint of the program, primarily within these two original structures:

- » The first STACR and CAS deals laid off risk on mortgage pools with original loan-to-value ratios (LTV) of 60% to 80%. Beginning in May 2014, they began to lay off the risk on mortgages with over 80% LTVs.
- » The first STACR and CAS deals did not lay off first loss risk. Freddie began to lay off first loss risk through back-end transactions in February 2015, while Fannie has yet to lay off first loss risk through these transactions.
- » The losses on the first STACR and CAS deals were dictated using a pre-set severity schedule rather than actual losses. Freddie did its first sharing of actual loss in April 2015 and Fannie in October 2015.

When Fannie and Freddie share risk through the CAS and STACR deals, they are required to hold at least 5% of the risk in each tranche.⁷ In many cases, the GSEs will hold more and sell it later to a reinsurer. Freddie Mac has done this extensively, with one deal in 2013, three in 2014, and eight in 2015. Fannie has only begun to do this more recently, with the first transaction in December 2014, but has been very active in this space in 2015, with five transactions through late November.

In a front-end transaction, a private mortgage insurer (MI) or lender takes some credit risk prior to the sale of the loan to the GSEs, with the GSEs lowering their guarantee fees to reflect the commensurate reduction in credit risk they assume when purchasing the loan.

The GSEs are already required by their charters to do front-end risk sharing on loans with LTV ratios of 80% or more.⁸ To date they have largely met this requirement by sharing risk with mortgage insurers, sharing more risk the higher the LTV. On loans with an 80% LTV, for instance, the MIs are responsible for 12% of the loss, while on loans with a 97% LTV, they are responsible for 35% of the loss. The GSEs could share even more risk this way, deepening the MIs' coverage or expanding the range of loans subject to MI

coverage. This "deep cover MI" would be a straightforward expansion of current private mortgage insurance. To date neither Fannie nor Freddie has shared risk in this way.

The GSEs can also share risk on the front end by allowing lenders to retain some level of first loss risk in the loans they sell to the GSEs. In these "lender recourse" transactions, lenders agree to sell Fannie or Freddie a certain volume of loans within a certain range of characteristics, retaining a certain level of risk.

Lender recourse transactions to date have taken two forms: those in which the lender holds the risk and those in which the lender lays the risk off in the form of a capital markets transaction. Fannie and Freddie have done a few transactions of the first form, with Redwood absorbing the first 1% of the losses in one such deal and Penny Mac the first 3% or so in another. Fannie has also done lender recourse transactions of the second form, with lenders absorbing the first 4% to 5% of the risk and then laying off most of that risk into the capital markets. To date there have been three of these now-named "L Street Transactions": JP Morgan did the first in October 2014 and Wells Fargo and JP Morgan have each done one in 2015.

It is important to remember that under all forms of risk-sharing, the GSEs are still responsible for ensuring that investors in the mortgage securities they issue and insure receive their principal and interest in a timely way. Risk-sharing does not obviate this responsibility or compromise the security of the MBS investment. It only off-loads some of the costs of that responsibility to other private investors able to take on that risk, and hence reduces the taxpayers' exposure to mortgage credit risk.

Evaluating the risk-sharing options

First, we take it to be important that the GSEs share first loss risk, not only mezzanine risk. As with mezzanine risk, there is substantial demand for first loss risk from a wide range of strong private financial institutions, making it unnecessary for taxpayers to bear it. The taxpayer should take only the risk that the private market cannot bear effectively and safely, which is the risk of catastrophic loss.

The choice between front-end and back-end risk-sharing is more complicated. To evaluate it, it is vital to be clear about what it is we are trying to accomplish in risk-sharing and then assess how the choices help meet these objectives. We find six primary objectives of risk-sharing:

- » Reducing risk to the taxpayer
- » Maintaining broad borrower access to credit
- » Maintaining broad lender access to the secondary market
- » Maximizing transparency
- » Minimizing volatility through economic cycles
- » Reducing risk in the financial system

In Table 1, we summarize the results of our analysis.

It is worth noting that we do *not* take the view that it is an objective of risk-sharing that the economics of these transactions be passed on in their entirety to the borrower. While there are benefits of such a dynamic, particularly where the private sector is willing to price the credit more cheaply than the GSEs, there are also costs. It leads to more sensitive risk-based pricing, for instance, which will drive up the cost of credit for those of higher risk and indeed for everyone in times of stress. So it is important to be cognizant of how the economics flow through to borrowers in each of these structures, but it is important only to the degree that it affects how they serve the other objectives, like access to credit and minimizing volatility.

Reducing risk to the taxpayer

There are many ways for the GSEs to reduce taxpayers' risk, including reducing loan limits, raising guarantee fees and tightening underwriting standards. But unlike these alternatives, risk-sharing presents an opportunity to reduce taxpayer risk without significant disruption to the flow of credit. This is because it does not limit taxpayer risk by decreasing the credit risk taken into the system, but by allowing the private sector to take on more of that risk.

The question, then, is which forms of risk-sharing will reduce taxpayer risk most effectively. Back-end risk-sharing reduces

Table 1: Pre-Season Rankings: How Well Do the Alternatives Appear to Meet the Goals?

Goals:	Front-End Risk Sharing		Back-End Risk Sharing	
	Deep Cover MI	Lender Recourse	CAS/STACR	Reinsurance
Reducing taxpayer risk	Poses counterparty risk and risk of GSE-like monoline model, but both can be addressed	Poses modest counterparty risk, but can be addressed	Effective in good economic times; unclear in tough times	Poses modest counterparty risk, but can be addressed
Maintaining broad borrower access to credit	Poses risk of overlays and risk-based pricing, but both can likely be addressed	Poses risk of overlays and risk-based pricing, but both can likely be addressed	Effective	Effective
Maintaining broad lender access to the secondary market	Effective	Only available to larger banks, which will put smaller banks at a disadvantage	Effective	Effective
Maximizing transparency	Effective	FHFA would need to require measures to make transparent	Effective	FHFA would need to require measures to make transparent
Minimizing volatility	Effective	Capital will be less fleeting than the capital markets, but more than MI	Ineffective	Capital will be less fleeting than the capital markets, but more than deep cover MI
Mitigating risk in the financial system	How effective will depend on how counterparty and monoline issues addressed	How effective will depend on how modest counterparty risk is addressed	Ineffective	Effective but structure likely limited in scope

taxpayer risk more cleanly than does front-end risk sharing, because the GSEs do not have counterparty risk to the asset managers, hedge funds, and other capital market institutions that participate. These investors put the capital needed to cover their risk up front when they purchase the bonds issued by the GSEs in the risk-sharing transactions.⁹ And while the GSEs do have counterparty risk to the reinsurers that participate in back-end risk-sharing deals, the reinsurers are large, highly rated multiline insurers, and the mortgage credit risk they have taken on has been quite modest, at least so far.¹⁰

In a front-end risk-sharing deal, the GSE would have some counterparty risk with a lender or private MI unless the latter puts up a pool of capital to cover the risk. The counterparty risk posed by lenders will be mitigated by the capital requirements under Basel III international regulatory standards. The counterparty risk posed by MIs will also be mitigated by a set of recently adopted rules, but has several components, each worth addressing in turn.

First, there is the risk that a given MI will not be able to pay out a required claim. Sec-

ond, there is the risk that the MIs may not be *willing* to pay a claim required of them even when they are able. And third, there is the fact that they are heavily exposed to precisely the same kind of risk to which the GSEs are exposed, making them subject to stress at exactly the time the GSEs will need them most.

Recently adopted policies will mitigate the first two of these risks. The ability to pay risk posed by the MIs will be mitigated by the Private Mortgage Insurance Eligibility Requirements' capital standards that go into effect in January 2016.¹¹ And the willingness to pay risk will be mitigated by the new MIs' Master Policy Agreements with the GSEs, which went into effect in 2015.

To further mitigate their counterparty risks on front-end risk-sharing transactions, the FHFA could take any number of steps: requiring counterparties to put up even more capital or other highly liquid assets against the risk being taken on; requiring them to share some of their risk with diversified reinsurers or the private capital markets; and further strengthening the PMIERS or the Master Policy Agreements.¹²

Maintaining broad borrower access to credit

Ensuring broad access to credit for credit-worthy borrowers is central to the purpose of the GSEs. There are two key components of access to credit, availability and cost. Today, the GSEs determine the credit profiles they are willing to guarantee, though lenders typically place somewhat more restrictive credit overlays on the loans they are willing to sell to them.¹³ And the GSEs are able to keep the cost to higher credit risk borrowers down by charging them less than their credit warrants, while charging lower credit risk borrowers more than their warrants.

In back-end transactions this dynamic is left largely unchanged, as the GSEs simply pool loans that have already been sold to them in the normal course of business and then sell off a portion of the credit risk into the capital markets. The purchaser of the risk has no say in which loans make it into the pool or on what pricing terms. What investors are willing to pay for pools will be affected by the credit risk of the loans included, however, which could inform the GSEs' own pricing of loans. So while the back-end

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transactions do not impact the availability and cost of credit directly, over time they could impact it indirectly.

In front-end transactions, the party taking on the first loss risk, the lender or the MI, could directly affect the availability and cost of credit. They could limit the loans they are willing to originate or insure, and price that business in a way that more closely tracks the risks involved. Giving them this kind of discretion could have a significant impact on access to credit, as the parties bearing deep first loss coverage may price higher risk loans in a way that puts them out of reach for many borrowers or not make them at all.

However, there are at least three ways to maintain broad access to credit in front-end transactions. The most straightforward would be for the GSEs to charge guarantee fees sufficient to carry out the amount of desired cross-subsidization. The guarantee fees would thus cover their operating costs, the cost associated with covering catastrophic losses, and the cost involved in cross-subsidizing lending.

A second solution, albeit more complicated, would be for the GSEs to require that lenders or MIs taking first loss risk meet the same affordability goals that the GSEs are required to meet. There could be incentives for MIs and lenders to achieve these goals and penalties for those who do not.

And a third solution, also more complicated, would be to put borrowers who fit within the GSE credit box but the MI companies or recourse lenders will not cover into a high-risk pool. The MIs or recourse lenders would pay a fee based on the loans they do insure that would cover the costs of providing insurance for these borrowers. This approach is similar to how high-risk groups are insured in other insurance markets, like the auto and workers' compensation markets.

Maintaining broad lender access to the secondary market

Maintaining access to the secondary markets for a broad range of lenders, large and small, community-focused and national, is another critical function of the GSEs. The GSEs must take care not to compromise that access for smaller lenders in the name of

risk-sharing structures that give larger lenders a prohibitive competitive advantage.

This is not an issue for front-end deep MI transactions, as lenders of all sizes will simply continue to do business precisely as they do today. Nor is it an issue for back-end transactions with the capital markets, as the GSEs will still aggregate loans from lenders of all sizes before the risk is shared.

However, it could be an issue for lender recourse or L Street Transactions, as these are only practically available to larger lenders, which may use them to gain an advantage over other originators. To mitigate this risk the GSEs must take care not to underprice the guarantee fee charged in these transactions and keep the cash window to the GSEs open for lenders of all sizes.

Maximizing transparency

The terms and pricing of risk-sharing transactions should be completely transparent. This is important for several reasons. First it will open the process up to more competition, which will improve the terms of the deals for the taxpayer and lead to pricing that best captures the market's assessment of the risk involved. Second, it will attract more capital into the space as market participants better understand where the economics warrant additional investment. And finally, it will make clearer the relationship between the economics of these transactions and the fees ultimately paid by the borrower.

In short, transparency will make it easier for policymakers and regulators to ensure that the GSEs are sharing risk in a way that maximizes the interests of taxpayers and borrowers. While transparency is likely to make market estimates of the amount of the cross-subsidization more explicit, transparency is not in itself inconsistent with cross-subsidization.

Risk-sharing transactions that are bid in the open market will be inherently transparent. It will take extra steps to ensure transparency in one-off transactions that are negotiated with only a few counterparties. This means that back-end risk-sharing deals with capital markets and front-end deep cover MI deals will lend themselves most readily to

the needed transparency, but the GSEs will need to take additional measures to provide it in back-end deals with reinsurers and front-end deals with lenders.

Minimizing volatility in the cost of sharing credit risk

In their sharing of risk, the GSEs should not over-rely on procyclical sources of private capital, which flood in at low cost in good times and disappear or become prohibitively costly during times of economic stress.

Back-end risk sharing is likely to be more procyclical, because asset managers, hedge funds, and other capital market investors are highly sensitive to shifts in risk tolerance in the financial system. When times are good and credit risk concerns are low, these investors are willing to allocate capital towards credit at a relatively low price. This describes well the current environment, with the Federal Reserve's easy monetary policy, the improving job market, steadily rising house prices, and tight underwriting. With these conditions, capital markets investors are eager to invest in credit risk for even a modest premium.

But perceptions about risk and other market conditions often shift quickly. An instructive example can be found in recent swings in the fixed-income market, including the market for below-investment grade corporate bonds. As investors' perceptions of the risk in these markets changed, the prices they demanded for their investments shot up dramatically. A year ago, the spread between below-investment grade corporate bonds and risk-free 10-year Treasury bonds was close to 350 basis points. Today the spread is over 600 basis points (see Chart 2). Back-end risk-sharing deals, with asset managers and hedge funds bidding on risks rated much as are these corporate bonds, are subject to precisely the same swings in prices.

When their perception of the risk and reward in these investments changes dramatically, the costs to the GSEs of off-loading credit risk will rise significantly. This will leave the GSEs and the FHFA with a difficult choice: have the GSEs absorb the spike in cost, severely cutting into the GSEs' profits

Chart 2: Wild Swings in Fixed Income Markets

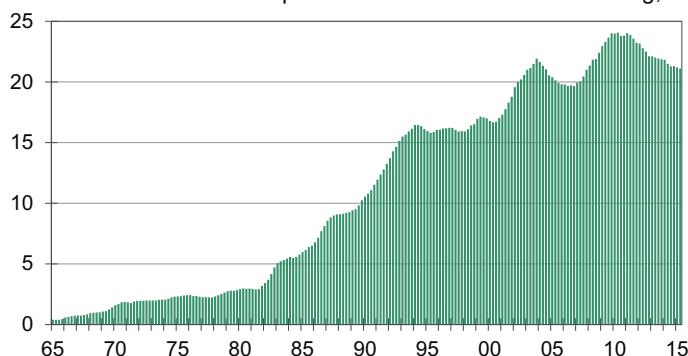
Spread between high-yield corporates and 10-yr Treasuries, bps



Sources: Federal Reserve, Bloomberg, Moody's Analytics

Chart 3: GSEs Are a Large Part of Credit Markets

Fannie & Freddie share of private nonfinancial debt outstanding, %



Sources: Federal Reserve Board, Moody's Analytics

and perhaps driving them into the red; pass that cost on to the borrower in the form of higher guarantee fees, leading to higher mortgage rates or tighter underwriting standards; or suspend the sharing of risk altogether until the period of stress passes.

This risk can be mitigated somewhat by expanding the investor base for back-end transactions. If policymakers can expand the pool of investors that bid on these transactions to include institutions that rely more on equity and are focused on a long-term presence in the market, like Real Estate Investment Trusts and insurance companies, then capital will be available to take credit risk at more reasonable prices deeper into economic cycles.

Front-end transactions with MIs and lenders are least subject to these swings. MIs are in the long-term business of taking mortgage credit risk, so they will not raise their pricing as much in bad times or lower it as much in good times. And lenders are likely to manage some of their risk in times of stress by limiting their lending rather than pulling out of the market altogether.

It is worth noting here that we do not give much credence to the argument that front-end deep cover MI would result in lower costs on average through the economic cycle relative to the current system.¹⁴ The MIs would charge less through a cycle only if their required return on equity or capitalization were lower than that implied by the GSEs in their guarantee fees and loan level pricing adjustments. There is no reason to believe either to be the case.

Reducing systemic risk

The GSEs remain among the world's largest financial institutions. Together, they backstop over \$4 trillion in U.S. residential mortgages, almost one-fifth of the \$26 trillion in U.S. nonfinancial private sector credit outstanding (see Chart 3). How they share this risk thus has enormous implications for the stability of the entire economy.

Asset managers, hedge funds, and other capital market participants in back-end transactions are more likely to use debt to finance their participation. By passing risk off through these transactions, the GSEs are increasing leverage in the system and with it the risk overall, which is further exacerbated by the lack of transparency over the sources of that leverage.

Well-capitalized reinsurance companies participating in back-end deals are likely to bring more equity capital into the financial system. But their role in these transactions is likely to be constrained by their limited capacity to take on mortgage credit risk.¹⁵

Institutions that do front-end risk-sharing are also more likely to use equity rather than debt to take on the new risk, suggesting that these transactions will not increase systemic risk—unless, that is, they present significant counterparty risk. While we view the PMIERS and Basel III as adequate to addressing this issue in the case of the MIs and lenders, respectively, if the GSEs view these steps as inadequate they are easily strengthened or supplemented.

What should be done?

With the private label securities market still moribund, risk-sharing by the GSEs has been the only way to meaningfully reduce taxpayer risk in the housing finance system. We believe the FHFA and GSEs should continue to move down this path aggressively, but in a manner that better serves the long-term objectives of the effort.

While it is clear that the GSEs should engage in more risk-sharing transactions for both first loss and mezzanine risk, it is less clear whether to share that risk through front-end or back-end transactions as there are strengths and weaknesses in both. Some front-end transactions look better at maintaining broad lender access to the secondary markets and minimizing volatility and risk in the financial system. Some back-end transactions, on the other hand, look better at limiting counterparty risk and maintaining broad access to credit, though front-end transactions could likely meet these objectives with some modest safeguards.

Given these crosscurrents, we would be well-served during this early stage of risk-sharing for the FHFA to require the GSEs to do both back-end and front-end risk-sharing on a significant scale. This will allow us to better judge the costs and benefits of each through different parts of the economic cycle.

To allow for this level of evaluation, though, the GSEs and the FHFA must collect and analyze critical information on each structure used, on everything from the credit risk that is being taken on, to what is paid for the risk, the market appetite for the struc-

ture, its impact on the availability and pricing of credit, and its impact on the broader financial system. As it becomes clear how each structure performs according to the objectives above, the successes should be scaled up and the failures abandoned.

The FHFA should also require the GSEs to be much more transparent in their risk-sharing transactions (see Box: Improving transparency). This includes providing regular and detailed updates on the performance of each risk-sharing structure. This will inform market participants, increasing competition and thus resulting in lower mortgage rates and increased access for mortgage borrowers. It will also help stakeholders and policy-makers understand the direction the FHFA and GSEs are headed and put legislators in a much better position when they do return to the table to discuss what system should replace the current one, if any.

It has been more than seven years since Fannie Mae and Freddie Mac were put into conservatorship and taxpayers on the hook for the bulk of the credit risk in the mortgage market. While unavoidable at first, forcing taxpayers to bear this risk is increasingly unnecessary and undesirable as private capital is willing and able to take it. Fortunately, risk-sharing is an effective means of shifting this risk away from the taxpayer and into the private market in ways that can help the market, borrowers and taxpayers over time. To fulfill that promise, however, the FHFA and GSEs need to be clearer about the long-term objectives of the effort and more resolute in approaching it with them in mind.

Improving transparency

There are several ways to improve transparency in both back-end and front-end risk-sharing deals:

1. Currently in the CAS and STACR transactions the loans are segmented into those with LTVs of 60% to 80% and those that have LTVs >80%. However, loan level pricing adjustments are based on both LTV and FICO scores. Currently, since no information is collected by FICO/LTV cuts it is very difficult to inform pricing on these loan level pricing adjustments.

It would be relatively easy to segment tranches by FICO and LTV. For example, the 60% to 80% LTV bucket could be carved into three or four FICO buckets. A potential issue is liquidity—investors might perceive these tranches to be less liquid than earlier deals. This could be overcome if Freddie and Fannie allow the FICO buckets in either the 60% to 80% or the >80% LTV bucket to be recombined into a single security with the appropriate weights. Freddie Mac currently allows this in many collateralized mortgage obligations transactions, in which the tranches are referred to as MACRS (Modifiable and Combinable REMICs).

2. There is currently no price transparency under the front-end risk-sharing arrangements with lenders. Fannie Mae and Freddie Mac pick a lender and negotiate a structure and a price, with the market receiving little transparency into the terms and none into price. A different lender may be willing to strike the GSEs a far better deal, but no one—including the GSEs and FHFA—would know.

The GSEs should instead specify publicly the risk that they are trying to lay off and the criteria for awarding that risk. Items in the term sheet might include the fact that the lender needs to keep the first 1% of the risk, the amount must be fully collateralized, and a breakdown of the characteristics of the loans that are expected to be delivered. Qualified lenders would bid on the front-end risk-sharing transaction, and the GSEs would provide the market information by publishing the cover bid (the second to the highest).

3. Under the back-end risk-sharing arrangements with re-insurers, there is also no price transparency. Again we suggest competitive bidding, with the GSEs publishing the cover bid.

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Endnotes

- 1 This includes the risk in FHA lending and in GSE lending not off-loaded to private investors via the risk-sharing deals. The risk taken in the risk-sharing deals is measured by the face value of the deals.
- 2 This is for 30-year fixed-rate loans with LTVs above 60%. It does not include HARP refinance loans, 15- and 20-year mortgages, adjustable rate mortgages, and loans with very low LTVs acquired by the GSEs. More detail is available in "[Overview of Fannie Mae and Freddie Mac Credit Risk Transfers](#)," FHFA Research Report, August 2015.
- 3 Other related design choices include risk-sharing with entities or via structured transactions and loan-level vs. pool-level credit enhancement.
- 4 A thorough description of the various forms of the GSE credit risk-sharing transactions is available in "[Overview of Fannie Mae and Freddie Mac Credit Risk Transfers](#)," FHFA Research Report, August 2015.
- 5 It is important to clarify what we mean by first loss. On virtually every deal, there will be a certain, often very minimal, level of losses that are eventually incurred. This is better understood as an actual cost than a risk and is arguably best borne by the financial entity with the lowest cost of funds. As the GSEs set their implied capital levels at roughly the level of the private sector institutions with which they would share risk, it does not really matter who bears it from an economic point of view. We are here focused instead on a deeper level of first loss, which is uncertain and thus better considered a risk than a certain cost. When discussing "first loss" in this paper, we mean this deeper tranche of risk.
- 6 According to the FHFA, asset managers have purchased over half of the back-end risk-sharing transactions, hedge funds more than 30%, and banks, sovereign wealth funds and REITs the remainder of the transactions.
- 7 On transactions in which they share first loss risk, the GSEs are retaining substantially more than 5% of the risk.
- 8 HARP refinances on high LTV mortgages are an exception as they do not require credit enhancement.
- 9 There is the caveat that back-end capital market deals done so far also rely on future income from the investment spread to help cover the risk.
- 10 Multiline reinsurers pose counterparty risk in that various assumptions must be made regarding correlations across risks that these institutions are insuring. As demonstrated during the financial crisis, these correlations can change dramatically in stressed environments.
- 11 An analysis of the PMIERS is available in "[Putting Mortgage Insurers on Solid Ground](#)," Mark Zandi, Jim Parrott and Cris DeRitis, Moody's Analytics white paper, August 2014.
- 12 It is important to note that under PMIERS, the MIs are capitalized at a level that appears consistent with the GSEs' implicit capitalization. The MIs thus pose counterparty risk to the GSEs, but taxpayers are equally exposed whether the MIs or GSEs are taking the credit risk. Moreover, MIs have the option of adding more capital to cover losses in excess of what is originally capitalized to. Indeed, some MIs did this during the crisis.
- 13 For more on why see "[Opening the Credit Box](#)," Jim Parrott and Mark Zandi, Moody's Analytics and Urban Institute white paper, September 2013.
- 14 The costs to borrowers under deep cover MI is found to be modestly lower than in the current system in a recent study, "[Analysis of Deep Cover Mortgage Insurance](#)," Milliman Client Report for U.S. Mortgage Insurers, October 2015. The lower costs are largely the result of the cancellation of MI as the loan balance is amortized to 78% as required under HOEPA, while the GSEs continue to charge a guarantee fee.
- 15 The reinsurance industry's capacity to take on mortgage credit risk in the current back-end deals with the GSEs is an estimated \$30 billion in risk-in-force. This estimate is based on the working assumption that one-fourth of the total reinsurance industry, based on total capital, is willing to take some mortgage risk exposure. Given that there is approximately \$500 billion of reinsurance capital (this is a conservative estimate), this translates into \$125 billion of reinsurance capital that is willing to take on some mortgage risk exposure. If we further assume that reinsurers leverage their mezzanine mortgage risk exposure 5 to 1 (given that they are interested in the benefits of some risk diversification), but do not want to allocate more than 5% of their capital to mortgage risk (given that it is not seen as a core line of business), this translates into just over \$30 billion of exposure capacity. Another approach assumes that reinsurers would apply some maximum exposure limit to their mortgage risk exposure. A reasonable assumption is that they would not want to lose more than 10% of their capital after credit for run-rate earnings or two times earnings (based on a 10% baseline return on capital) as a result of a worst-case mortgage loss scenario. This translates into \$25 billion of exposure capacity. These estimates are also consistent with the approximately \$270 billion of industry property catastrophic (cat) limit, which is a core focus of the reinsurance industry. Since mortgage risk is a non-core risk for reinsurers, it is unlikely to amount to more than about 10% of the property cat limit.

About the Authors

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Laurie Goodman is the director of the Housing Finance Policy Center at the Urban Institute. The center is dedicated to providing policymakers with data-driven analyses of housing finance policy issues that they can depend on for relevance, accuracy, and independence. Before joining Urban in 2013, Goodman spent 30 years as an analyst and research department manager at a number of Wall Street firms, including Amherst Securities Group, LP and UBS. Goodman was inducted into the Fixed Income Analysts Hall of Fame in 2009. Laurie currently serves on the board of directors of MFA Financial, a Real Estate Investment Trust, is an advisor to Amherst Capital Management, and is a member of the Bipartisan Policy Center's Housing Commission, and the Federal Reserve Bank of New York's Financial Advisory Roundtable. She has published more than 200 journal articles and has co-authored and co-edited five books. Goodman has a BA in mathematics from the University of Pennsylvania and an MA and PhD in economics from Stanford University.

Jim Parrott

Jim Parrott is a senior fellow at the Urban Institute and owner of Falling Creek Advisors, which provides financial institutions with strategic advice on housing finance issues. Jim spent several years in the White House as a senior advisor on the National Economic Council, where he led the team of advisors charged with counseling the cabinet and president on housing issues. He was on point for developing the administration's major housing policy positions; articulating and defending those positions with Congress, the press and public; and counseling White House leadership on related communications and legislative strategy. Prior to his time with the NEC, Jim was counsel to Secretary Shaun Donovan at the Department of Housing and Urban Development. He has a JD from Columbia University School of Law, an MA from the University of Washington, and a BA from the University of North Carolina.

Mark Zandi

Mark is chief economist of Moody's Analytics, where he directs economic research. Moody's Analytics, a subsidiary of Moody's Corp., is a leading provider of economic research, data and analytical tools. He is a cofounder of Economy.com, which Moody's purchased in 2005. He is on the board of directors of MGIC, the nation's largest private mortgage insurance company, and The Reinvestment Fund, a large CDFI that makes investments in disadvantaged neighborhoods. He is the author of *Paying the Price: Ending the Great Recession and Beginning a New American Century*, which provides an assessment of the monetary and fiscal policy response to the Great Recession. His other book, *Financial Shock: A 360° Look at the Subprime Mortgage Implosion, and How to Avoid the Next Financial Crisis*, is described by the New York Times as the "clearest guide" to the financial crisis. He earned his B.S. from the Wharton School at the University of Pennsylvania and his PhD at the University of Pennsylvania. He lives with his wife and three children in the suburbs of Philadelphia.