



Housing Finance Reform: Fundamentals of Transferring Credit Risk  
in a Future Housing Finance System

Statement of

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Mr. Chairman, Ranking Member Crapo, and members of the committee, thank you very much for the opportunity to testify today. My name is Laurie Goodman, and I am the director of the Housing Finance Policy Center at the Urban Institute. This is a new center, dedicated to providing data-driven analysis of policy issues relating to housing finance and the housing market. Prior to joining the Urban Institute this past summer, I spent almost thirty years as a mortgage-backed securities research analyst and as head of securitized products research/strategy at several firms, including Amherst Securities Group LP and UBS.

Recently, both Freddie Mac and Fannie Mae have completed deals in which they transferred some of the risk from their guarantor book of business to private investors. As we contemplate a new housing finance system in which private entities take the first loss, backed up by a catastrophic government guarantee, the obvious question arises: to what extent are these deals applicable to a new housing finance structure?

The answer is that there are lessons that can be learned from the recent transactions, but the lessons are not completely transferrable to a new structure. This discussion is divided into four sections. The first looks at the Freddie and Fannie risk-sharing transactions and their impact in the current environment, where efforts are being made to reduce the government footprint. The second section looks at the role of risk-sharing type structures in a guarantor/bond insurance framework. The third section looks at the role of risk-sharing type structures in a capital markets framework. The final section contains my conclusions. To quickly preview my conclusions:

- Regulatory relief through changes in the CFTC commodity-pool rules is necessary to promote the use of credit-linked notes.
- Capital regulation for future guarantors should include stress tests, a base capital ratio of 5 percent, a risk-based capital component, and capital relief for credit-risk transfers, subject to a minimum absolute capital requirement.
- The system must have a guarantor (insurer) execution and not rely solely on the capital markets to lay off credit risk.

### **Freddie and Fannie Risk-Sharing Transactions**

In the absence of Government Sponsored Enterprise (GSE) reform legislation, the Federal Housing Finance Agency (FHFA) has attempted to bring private capital back into the mortgage market. They have employed a number of mechanisms and have contemplated others. These fit into three main categories:

- The FHFA has attempted to decrease the share of originations purchased by the GSEs. They have raised guarantee fees to encourage lenders to use other execution channels, such as holding loans in portfolio or opting for a private-label securitization. Guarantee fees at Fannie Mae have increased from 28 basis points (bps) in the first quarter of 2012 to 58.7 bps in the third quarter of 2013, more than a doubling in an 18-month period. This has not

been sufficient to curb the reliance on the GSEs, but future guarantee-fee increases of 10–20 bps could tip the execution of the highest quality loans to bank portfolios, which could, in turn, result in adverse selection to the GSEs. Private-label securitizations are much more expensive than either GSE or bank executions at the present time, and a considerably larger guarantee fee increase would be required for this execution channel to be used. Reducing loan limits is another lever that the FHFA has considered as a way to reduce the GSE share.

- The FHFA has contemplated vehicles that allow for risk transfer at the point of sale (up-front risk sharing). The GSEs would be permitted to accept loans with more credit enhancement in exchange for lower guarantee fees. This can be done through deep mortgage insurance (MI), through lender recourse, or conceptually by allowing the lenders to arrange their own capital markets transactions, similar to the risk sharing deals that have been recently completed by Fannie and Freddie. The Mortgage Bankers Association has proposed greater use of up-front risk sharing.<sup>1</sup>
- The FHFA has also required Fannie and Freddie to lay off risk that is already on their books (back-end risk sharing). The GSEs have tried three different methods for laying off this risk: (1) capital markets transactions, (2) purchasing mortgage pool insurance, and (3) purchasing reinsurance. Fannie and Freddie have each done deals in which the mortgage credit risk has been laid off via capital markets transactions. There have been three deals to date: Freddie Mac's Structured Agency Credit Risk deals (STACR 2013-DN1 and -DN2), and Fannie Mae's Connecticut Avenue Securities deal (CAS 2013-C01). In August, Fannie Mae announced it had tapped National Mortgage Insurance Corporation to insure a pool of \$5 billion of mortgages already on Fannie's books. And in November, Freddie Mac executed a transaction that transferred to Arch Reinsurance, a global reinsurer, a portion of the credit risk that it had retained on the first STACR transaction. The capital markets transactions, and their applicability to the future state, are the focus of this panel, but a few comments on their applicability in the current state is also in order.

Fannie and Freddie's three capital markets risk-sharing transactions have been very successful. The first deal was priced too cheaply, as one would expect from a new asset class. This, however, had the effect of enticing investors who did not participate in the first deal to take a look at subsequent structures. Since the first deal, there has been a move to tighter spreads as the asset class has gained acceptance. For example, the M-2 tranche of the first STACR deal, priced in July, sold at 715 bps over one-month LIBOR, while the second, priced on November 12, sold at a 425 bps spread. Table 1 shows details for the three transactions, including the spreads at which the securities were sold. At this point there is very substantial private-sector interest, which is critical as policymakers look to the private markets to take more mortgage credit risk.

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<sup>1</sup> See Mortgage Bankers Association "Key Steps on the Road to a Sustainable Secondary Mortgage Market, 9/18/2013.

These risk-sharing transactions, in conjunction with the other actions being contemplated and taken, are a very valuable way to contract the government's footprint in the mortgage market while the GSEs are in conservatorship. They can be done administratively at the direction of the FHFA, and require no legislative action. We expect to see many more of these transactions now that both GSEs have established programs.

#### *A Few Details on the Risk-Sharing Transactions*

Before we delve into the applicability of these transactions in a new, reformed housing finance system, it is important to underscore a few specifics about these transactions.

The transactions are synthetic; that is, they reference the relevant credit risk. The transactions are structured as unsecured general obligations of Freddie Mac (for the STACR deals) and Fannie Mae (for the CAS deal). The return of principal on the notes is tied to the credit risk of a pool of residential mortgage loans (the reference pool) owned or guaranteed by Freddie Mac (Fannie Mae). Freddie Mac (Fannie Mae) is entitled to reduce the principal balance of the notes, at a tiered severity percentage, when the loans in the reference pool became at least 180 days delinquent or when another credit event occurs. This tiered severity ranges from 10 percent to 40 percent in the Fannie deal, and 15 percent to 40 percent in the Freddie deals. Prepayments are generally passed through to the note holders pro rata as a return of principal.

The deals were done as synthetic transactions because of the desire to mimic the credit-risk transfer in a senior/subordinate structure. Using an actual senior/subordinated structure would not be economical because the senior bonds would not be eligible to trade in the "to be announced" (TBA) market and thus would lose a considerable amount of liquidity.

The FHFA has publicly stated that they want to expand the types of deals being done to include senior/subordinated transactions. These types of transactions make sense for collateral that is not eligible for delivery into the TBA market. One of the largest buckets of non-TBA eligible collateral is pools of jumbo loans, which are priced lower than corresponding TBA securities.<sup>2</sup> I expect there to be a senior/subordinated transaction backed by jumbo collateral at some point in 2014.

The structures take the form of debt obligations, not credit-linked notes. During the first half of 2012, as the planning for the risk sharing began, it was expected that the structures would assume the form of a credit-linked note with an embedded swap. In a credit-linked note, the security is issued by a special purpose company or trust. This special purpose vehicle (SPV) takes the initial proceeds of the offerings and invests them in a risk-free instrument, such as US government debt. The SPV simultaneously enters into a credit default swap; under the terms of the credit default swap, the SPV receives an annual fee based on the remaining principal

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<sup>2</sup> Jumbo loans are those over the base GSE limit of \$417,000; in high-cost areas, where the limit is tied to area median prices, it now ranges up to \$625,500, and has been as high as \$729,750. A *de minimus* amount of these loans can be included in TBA pools; the balance must be pooled separately. The collateral for a senior/subordinated deal would be composed entirely from the non-TBA eligible jumbo loan pools.

balance, and makes payment(s) if credit event(s) occur. Thus, investors will receive the interest on the cash investment plus the annual fee. They may receive less than a par return on their cash, depending on whether the level of credit events was sufficient to impact their principal. A credit-linked note structure is a pure bet on the risk being transferred; the credit risk of its sponsor is not a factor.

In September 2012, the CFTC broadened its definition of “commodity pool” to cover many transactions that include swaps. If the issuance had been done as a credit-linked note, it would have fallen under the broadened commodity pool definition. Commodity pools are subject to reporting and regulatory burdens that I believe are inappropriate for an instrument of this nature. For example, a non-exempt pool operator must not only register as a Commodity Pool Operator (CPO), but the CPO must become a member of the National Futures Association (NFA). Its personnel must register with the NFA and pass an NFA exam. There are also numerous reporting requirements designed to capture information from entities operated for the purpose of trading commodities; it is unclear how many of these can be applied to securitizations, which are passive vehicles containing illiquid assets. This includes periodic reporting concerning the commodity pool’s changes in net asset value, trading strategies, and performance data. It would also require the securitization to name a Commodity Trading Advisor (CTA), and the choice of this entity in a securitization is unclear: it could be the sponsor or the trustee. The commodity pool registration could trigger Volcker Rule prohibitions, making it difficult for banks to own these instruments.

By issuing the obligation as Freddie Mac or Fannie Mae debt, rather than from a SPV, these problems were avoided. The only difference between doing these transactions as GSE debt rather than as credit-linked notes is that the investor was exposed to the credit risk of the sponsor. The STACR and CAS transactions contain exactly the same embedded swap as they would in an SPV structure.

Investors are happy to buy these transactions as a debt issue because they believe Fannie and Freddie are backed by the full faith and credit of the US government, and hence they are making a decision solely on mortgage credit risk, rather than a joint decision on the mortgage credit risk and the strength of the underlying entity. In a market in which the entity laying off the risk was not fully government-backed, the structure used for the STACR and CAS transactions would definitely be more expensive, and might not be viable. Thus, as we move away from a Fannie/Freddie-dominated world, it becomes critical that the CFTC issues some form of regulatory relief so these transactions could be done as credit-linked notes.

The structures reference well-diversified pools of loans. Freddie Mac’s STACR 2013-DN1 deal (see table 1) had the smallest reference pool, at \$22.5 billion. This reference pool included all loans acquired by Freddie Mac between July 1, 2012, and September 30, 2012, that met the following criteria: 1) full documentation, 30-year fully amortizing fixed-rate first-lien loans on one- to four-unit properties; 2) originated on or after April 1, 2012, and securitized in Freddie

Mac PC prior to January 31, 2013; and 3) original LTV between 60 and 80.<sup>3</sup> The other transactions referenced similarly broad groups of loans. The sheer size and diversification suggests that there is little idiosyncratic risk in these pools.

The GSEs are retaining some risk on these deals, giving them “skin in the game.” In the three transactions that have been done to date, the GSEs have retained the first-loss position as well as part of the risk of the subordinate M1 and M2 tranches. For example, in the first STACR deal, total subordination was 3 percent. The first-loss position (B-H) was 30 bps, and the M1 and M2 slices were 135 bps apiece. Freddie retained the entire B-H tranche as well as about 17.8 percent of the M-1 and M-2 slices (the M-1H and M-2H tranches). This is important because the GSEs have substantial control over the servicing practices, and this helps assure investors that these loans will be serviced no differently than anything else in the GSEs’ portfolios.

The timing of these transactions is discretionary. Since these assets are already on the GSEs’ books, the risks can be laid off at any time. If one of the GSEs was thinking of doing a deal, but market conditions changed, it could be pulled until market conditions improved.

### *The Future State of the Mortgage Market*

There is a growing consensus the GSE reform is necessary. There is also a growing consensus on two principles:

- the private sector must play a far greater role in bearing mortgage credit risk; and
- continued government involvement is essential to ensuring that mortgages remain available and affordable to qualified homebuyers throughout the business cycle.

Thus a number of proposals—including S. 1217 (Corker-Warner); the Bipartisan Policy Council’s Housing Commission (BPC HC),<sup>4</sup> of which I was a part; and a paper coauthored by two of my Urban colleagues, Ellen Seidman and Sarah Rosen Wartell, and by Phillip Swagel and Mark Zandi (SSWZ),<sup>5</sup>—are aligned in proposing that the future state of the mortgage market should consist of mortgage originators and servicers who make the loans, a securitization platform, and a system of private credit enhancement. The securitizer must arrange for the private credit enhancement prior to securitization. There would be a limited catastrophic government guarantee, paid for up front, which would be triggered only after all private capital available to support the mortgages had been exhausted.

The proposals suggest that private credit enhancement could take two different forms: a guarantor (bond insurer) framework and a capital markets framework. Both Corker-Warner and

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<sup>3</sup> There were additional minor restrictions. Loans that were ever delinquent, found to contain underwriting defects, or had prepaid in full were excluded.

<sup>4</sup> See Bipartisan Policy Center Housing Commission, “Housing America’s Future: New Directions for National Policy,” February 2013.

<sup>5</sup> See Ellen Seidman, Phillip Swagel, Sarah Rosen Wartell, and Mark Zandi, “A Pragmatic Plan for Housing Finance Reform,” Moody’s Analytics, the Milken Institute, and the Urban Institute, June 19, 2013.

the BPC HC allow for both mechanisms in the reformed system, while SSWZ allows for the insurer alone. In all cases, the guarantor (insurer) is able to lay off risk through risk-sharing arrangements. I believe the form of the private capital will dictate the use and importance of risk-sharing arrangements in the future state. Moreover, the decision as to what form that first-loss piece takes is quite important and is not obvious; each approach has its strengths and weaknesses.

### **The Guarantor/ Bond Insurance Framework**

In a guarantor framework, the bond insurer (guarantor) is liable for the credit enhancement up to the amount of its capital (as long as it is solvent). We assume GSE reform legislation would permit an insurer to voluntarily decide to lay off some of the risk on its transactions, and use structures similar to that being used in the STACR and CAS deals. The bond insurer would essentially play the role that Fannie and Freddie play in the current environment. This would allow bond insurers to employ these structures when it is cost-effective to do so, so the timing would be flexible. There will be times when the capital markets bid will be lower than what bond insurers require, and guarantors will likely to try to lay off risk under such circumstances. This can be expected to occur when debt financing is trading cheaply relative to equity financing. Guarantors can also choose to lay off only part of the risk. This access to capital markets execution would also allow the bond insurers to do price discovery.

It is very likely that the bond insurer would dictate minimum servicing standards in order to minimize its losses, just as Fannie and Freddie do today. Investors would probably require that the guarantor retain some skin the game, to gain assurance that the mortgage loans in which the risk has been laid off are not treated any differently than those in which the risk has not been laid off.

However, risk sharing by the bond insurers under any of the proposals would be different from the STACR and CAS deals in one important respect. Investors are happy to take mortgage credit risk in synthetic form as embedded in Fannie Mae and Freddie Mac securities, because they believe the underlying entities are backed by the full faith and credit of the US government. If a bond insurer under any of the current proposals were selling the risk, the investor would be making a joint bet on the entity and the mortgage credit risk. The investors that evaluate mortgage credit risk are not necessarily the entities that take corporate credit risk. The result would be poorer execution. I believe the securities would trade at more favorable rates if one could separate the risk of the underlying entity (the corporate credit risk) from the mortgage credit risk, and allow for the issuance of credit-linked notes. This would require that transactions used to transfer mortgage credit risk be exempt from commodity pool rules.

It is possible that the bond insurers would put together pools that are poorly diversified, but I believe the market will be unwilling to accept this. That is, investors are likely to believe that the insurer has better information than they do about any given loan, so if a pool is not a large representative sample, there is some chance the loans have been adversely selected, and the

securities are likely to be priced accordingly. However, as long as the bond insurer itself is adequately diversified, and liable as long as it is solvent, then this is a business decision for a future bond insurers and investors in the securities, and not an issue for a future regulator.

### *Sizing Capital Requirements*

There are additional issues that would need to be dealt with in a future state that are not considerations for the GSEs in conservatorship. One of the most important is whether the institutions receive capital relief for risk-sharing transactions. I assume this would be the case, as these transactions would clearly allow the institutions to operate safely with less capital. However, the amount of any relief is more difficult to size than one might think. For example, if the amount of capital relief is fixed, a bond insurer may choose to transfer only its safest loans to the capital markets. The result would be that after the transaction, the bond insurer would be holding less capital than is prudent against a riskier set of loans. This problem could be partially solved by requiring a minimum absolute capital requirement, with a variable amount of capital relief for risk-sharing transactions.

There has been a considerable amount of conversation about how much capital is enough. Corker-Warner suggests 10 percent. The required capital should be sufficient to allow the institution to withstand severe stress. Many, including myself, believe the recent crises should be used to size capital requirements. The data that has been provided in support of the STACR and CAS risk-sharing deals has been invaluable to market participants in assessing mortgage credit risk, and can be used to size capital requirements. The data covers the performance of Fannie's and Freddie's books of business from about 2000 onward. Although it is limited to full-documentation fixed-rate amortizing 30-year mortgages, excluding special affordability products, the structure of the loans is very similar to the business the GSEs are currently doing and are likely to do going forward.

My colleagues and I at the Urban Institute have analyzed this data.<sup>6</sup> We have shown that the 2007 Freddie Mac book of business, because of the subsequent nearly 35 percent drop in home prices nationwide, experienced cumulative "defaults" of 10.9 percent, the highest of any vintage year. A "default," or "credit event," as it is referred to in the risk-sharing transactions, is defined as a mortgage that went 180 days delinquent or was liquidated prior to going 180 days delinquent by short sale, REO sale, or deed-in-lieu. To translate defaults to losses, we assume a severity of 40 percent, the highest number used in the three risk-sharing transactions, and multiply the severity by the default rate to size losses.<sup>7</sup> Freddie's 2007 vintage 10.9 percent default rate translates into a 4.4 percent loss rate. For the Fannie book of business, the cumulative credit event rate was 14.1 percent, which translates into a 5.6 percent loss rate. Thus, it is clear that 5 percent capital would have allowed the GSEs to weather this very adverse

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<sup>6</sup> See Laurie Goodman and Jun Zhu, "The GSE Reform Debate: How Much Capital Is Enough?", Urban Institute, October 2013, for more detail.

<sup>7</sup> The 40 percent severity covers the probability that a loan that goes 180 days delinquent goes on to liquidate multiplied by the severity if the loan eventually liquidates.



environment. This is a conservative estimate in that it applies the worst vintage year to the entire business.

However, this analysis cannot be conducted in the abstract. It cannot be divorced from the question of how many insurers there would be and how to ensure that each one is adequately diversified. For example, for an insurer who insured loans in only one state, even a 10 percent capital requirement might be insufficient. Similarly, if the regulator gave capital “credit” for credit-risk transfers, it would be conceptually possible for an insurer to lay off almost all the risk, keeping a small piece of non-diversified risk, which should demand significantly more capital than would have been needed to support the risk in the initial diversified book.

A regulator is unable to be perfect, and unforeseen events occur. Thus, I suggest that some type of stress testing should be implemented. Certainly, the Federal Reserve’s stress testing of systematically important banks has been a huge success. Stress testing would identify insurers that are non-diversified or have laid off risk in a manner that leaves them exposed. If the insurer failed the stress test, it should be required to take corrective action promptly, including cutting off dividends and raising capital within a well-defined period of time. If the insurer failed to take these actions, or was unable to raise more capital, it would be shut down, with the insurance transferred to another entity (similar to a servicing transfer in the current environment). This transfer could require a government subsidy.

Thus, when sizing the capital requirements, it seems clear that any new system relying on insurance should include the following:

- a 5 percent base capital requirement;
- additional risk-based capital requirements to cover inadequate diversification or an unusually risky book of business (e.g., an unusually high concentration of high-LTV or low-FICO loans on the part of the insurer);
- capital relief for risk-sharing transactions, subject to a minimum capital requirement; and
- stress testing of insurers, with corrective action required if there is a stress test failure.

Because sizing capital cannot be divorced from diversification, the ideal system should have a moderate number of well-diversified insurers that compete with each other. Too few institutions would limit competition and raise “too big to fail” concerns; too many are likely to be insufficiently diversified and operationally inefficient. I do believe it is necessary to have minimum diversification requirements.

The design of a new system must also consider the role of traditional MI providers. By statute, Fannie and Freddie are required to lay off the risk on any mortgage greater than 80 LTV; that is, they are not permitted to bear this risk. Thus, a mortgage insurance industry has been established to take the risk on all mortgages over 80 percent LTV. Under Corker-Warner, the mortgage insurers would stay largely as they are, though they would cover loans down to about

70 percent LTV, and they could not also be bond guarantors. In my opinion, if one is remaking the system, it should not be taken as a given that the mortgage insurance industry remains as is. Both the bond insurers and the mortgage insurance companies would be assuming the same mortgage credit risk, hiring people with similar skills, and developing models to evaluate the credit risk. It may make more sense to combine the functions. However, if the functions were combined, it would be prudent to require bond insurers to hold more capital than in a system in which these functions remain separate.

In short, the guarantor model can easily employ the risk-sharing techniques used in the STACR and CAS transactions, but the capital credit that is given for doing so cannot be divorced from the question of how capital requirements should be sized for the guarantors in a future system.

### **The Capital Markets Framework**

Under a capital markets framework for a new housing finance system, each security would require credit enhancement at the time of the securitization via a senior/subordinated bond market transaction or a synthetic alternative like Freddie and Fannie are using. The transactions would be more natural in non-synthetic form. However, since there is no insurance entity, the transaction could not be done as a debt issuance; it would have to be a credit-linked note structure, with the originator as the deal sponsor. This, in turn, creates the problem that the deal is considered a commodity pool, an issue discussed earlier.

Any capital markets solution must be combined with an insurance solution for several reasons. First, a pure capital markets solution relies on only one source of capital (the debt markets), with no flexibility to also rely on equity capital to take mortgage credit risk. Second, it requires the pricing of the credit enhancement to occur simultaneously with the securitization. There may be times when the pricing is quite unfavorable, and the originator would be forced to take that pricing, leading to more volatile mortgage rates for borrowers. Third, this structure is not kind to small lenders, who will have trouble aggregating a large enough pool of loans to obtain the required enhancement. That is, a small pool is almost by definition non-diversified and would command unfavorable pricing. Additional concerns include regulatory efficiency and effectiveness, the viability of the mortgage market during times of market stress, and ensuring broad-based credit availability. As a result, none of the GSE reform proposals advocate exclusively a capital markets solution. Corker-Warner allows for both capital markets and guarantor arrangements, as does the BPC HC proposal. The SSWZ proposal does not allow for capital markets execution except in allowing an insurer to lay off some risk.

If the capital markets solution is meant to coexist with the guarantor solution, the capital markets structure must either 1) use synthetic structures, or 2) if one were to use cash structures, the market must agree the senior bonds in the senior/subordinate structures are eligible for TBA delivery. This would require the market to simultaneously accept, as TBA, mortgages that reflect the full cash flow stream, as well as those in which the subordinated cash flows are not included. I am not sure the market will allow for this degree of flexibility.

## *Diversification*

The biggest problem I see with the capital markets solution, which is often overlooked, is that the interaction between the required capital and diversification is quite complicated, and hard to get right. Let us assume we fix the capital requirements at Corker-Warner's 10 percent. As discussed in the previous section, our work at Urban has shown that under most circumstances a 5 percent capital requirement is more than enough. A 5 percent capital requirement would have been sufficient to cover, for their entire book of business, the losses Fannie and Freddie incurred on the 2007 origination activity, a vintage that experienced 35 percent home price declines. However, in a capital markets execution, even if you require 10 percent capital, it is easy to construct pools where inadequate diversification due to either size or geography means that is not nearly enough. For example, we looked at 1,000 randomly selected pools of 2,500 Freddie Mac loans from the 2007 vintage and found the mean default rate would have produced losses in the 4.0 percent to 4.5 percent area, with default rates on individual pools up to 1 percent higher and lower.<sup>8</sup> But a pool of only Arizona loans had a much higher default rate than the nation as a whole; the mean loss rate, using 40 percent severity, was in the range of 9.0 percent to 9.5 percent. When we looked at 1,000 randomly selected pools of 2,500 loans, the loss rates ranged from 8 percent to 10.75 percent. When we looked at 1,000 randomly selected smaller pools of 100 loans, the loss rates of the pools ranged from 4.4 percent to 16 percent. Clearly, individual pools will be smaller than all the loans in a given Fannie or Freddie vintage, and the government should want more first-loss capital to come before its guarantee when pools are small, non-geographically diversified, or non-diversified in other ways. In contrast, the STACR and CAS securities were large, well-diversified pools, eliminating any non-systematic results.

Thus, if a reformed system mandates a fixed amount of capital for capital markets transactions, it must also mandate diversification requirements. The new regulator would set the diversification requirements, but these requirements will be very hard to calibrate.

Instead of a fixed capital standard, a risk-based approach could be used. One can imagine a system in which the originators enter the loan-by-loan composition of a proposed pool into a system provided by their regulator, and the system tells them the capital necessary to support that pool. It's the equivalent of buying tomatoes at the supermarket, then bringing them to be weighed. It is cumbersome, and creates some pricing uncertainty. It also means that different pools will have different amounts of credit enhancement, and the redesigned TBA market must be willing to accept this.

These diversification issues are further compounded for smaller originators. It is not clear how they get the number of loans needed for a capital markets offering. Even if they could get a

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<sup>8</sup> Laurie Goodman and Jun Zhu, "The GSE Reform Debate: How Much Capital is Enough?", Urban Institute, October 2013. In this article, we expressed the numbers as default rates, we have converted to severities for the purpose of this exercise.

critical mass of loans, those loans are apt to represent insufficient diversification. It is unlikely smaller lenders could utilize a capital markets solution without an aggregator. If there is a parallel guarantor execution vehicle, this issue is still difficult, although less critical. In short, the interaction between required capital (subordination) and diversifications is complicated, and there is no silver bullet.

## **Conclusion**

The STACR and CAS transactions have clear applicability in any new housing finance system. If a guarantor structure is used, the guarantor plays the role of Fannie and Freddie. The largest issue relating to risk transfer in this model is what credit the guarantor will receive for laying off these risks on the capital markets. I definitely believe credit should be given, as transferring risk allows the guarantors to operate safely, with less capital.

If the new housing finance regime allows for both a guarantor execution and a capital markets execution, the big issue with risk transfer is how to ensure adequate diversification to protect the government. If a fixed capital requirement is mandated, the regulator must ensure adequate diversification on each individual pool. If a risk-based capital requirement is used, it requires substantial calibration on the part of the regulator, as well as some uncertainty for the lender, as the lender does not know the capital requirement until the pool is final.

More generally, three conclusions emerge from this analysis:

First, it is important to resolve the commodity pool issue so that synthetic structures using credit-linked notes, which allow for separation of the risk of the sponsoring entity from the credit risk on the mortgages that are being transferred, can be used.

Second, in any future state, capital regulation for guarantors should include stress tests, a base capital ratio of 5 percent, a risk-based component, and capital relief for credit-risk transfer, subject to a minimum absolute capital requirement.

Third, in the future state, the system must have a guarantor (insurer) execution, and not rely solely on the capital debt markets to lay off credit risk. This is necessary in order to promote the TBA market, allow for the presence of small lenders, assure broad-based credit availability of credit, and be resilient during periods of market stress.

**Table 1. Risk-Sharing Transactions**

| Date     | Agency      | Deal                  | Class                            | Amount                  | Tranche Thickness | Credit Enhancement | Rating                         | Initial Spread |
|----------|-------------|-----------------------|----------------------------------|-------------------------|-------------------|--------------------|--------------------------------|----------------|
| 7/24/13  | Freddie Mac | STACR Series 2013-DN1 | A-H                              | \$21,906,830,673        | 97%               | 3%                 | NR                             | n/a            |
|          |             |                       | M-1, M-1H                        | \$304,888,881           | 1.35%             | 1.65%              | NR                             | 340            |
|          |             |                       | M-1                              | \$250,000,000           | 1.26%             |                    |                                |                |
|          |             |                       | M-1H                             | \$54,888,881            | 0.09%             |                    |                                |                |
|          |             |                       | M-2, M-2H                        | \$304,888,881           | 1.35%             | 0.30%              | NR                             | 715            |
|          |             |                       | M-2                              | \$250,000,000           | 1.26%             |                    |                                |                |
|          |             |                       | M-2H                             | \$54,888,881            | 0.09%             |                    |                                |                |
|          |             |                       | B-H                              | \$67,753,085            | 0.30%             | 0%                 | NR                             | n/a            |
|          |             |                       | <b>Total Reference Pool Size</b> | <b>\$22,584,361,520</b> | <b>100%</b>       |                    |                                |                |
| 10/24/13 | Fannie Mae  | CAS 2013-C01          | A-H                              | \$25,953,684,593        | 97%               | 3%                 | NR                             | n/a            |
|          |             |                       | M-1, M-1H                        | \$361,211,074           | 1.35%             | 1.65%              | BBB-sf (Fitch)                 | 200            |
|          |             |                       | M-1                              | \$337,500,000           | TK                |                    |                                |                |
|          |             |                       | M-1H                             | \$23,711,074            | TK                |                    |                                |                |
|          |             |                       | M-2, M-2H                        | \$361,211,074           | 1.35%             | 0.30%              | NR                             | 525            |
|          |             |                       | M-2                              | \$337,500,000           | TK                |                    |                                |                |
|          |             |                       | M-2H                             | \$23,711,074            | TK                |                    |                                |                |
|          |             |                       | B-H                              | \$80,269,128            | 0.30%             | 0%                 | NR                             | n/a            |
|          |             |                       | <b>Total Reference Pool Size</b> | <b>\$26,756,375,869</b> | <b>100%</b>       |                    |                                |                |
| 11/12/13 | Freddie Mac | STACR Series 2013-DN2 | A-H                              | \$34,267,497,133        | 97%               | 3%                 | NR                             | n/a            |
|          |             |                       | M-1, M-1H                        | \$370,936,825           | 1.05%             | 1.95%              | Baa1 (Moody's), BBB-sf (Fitch) | 145            |
|          |             |                       | M-1                              | \$245,000,000           | 0.69%             |                    |                                |                |
|          |             |                       | M-1H                             | \$125,936,825           | 0.36%             |                    |                                |                |
|          |             |                       | M-2, M-2H                        | \$582,900,724           | 1.65%             | 0.30%              | NR                             | 425            |
|          |             |                       | M-2                              | \$385,000,000           | 1.09%             |                    |                                |                |
|          |             |                       | M-2H                             | \$197,900,724           | 0.56%             |                    |                                |                |
|          |             |                       | B-H                              | \$105,981,950           | 0.30%             | 0%                 | NR                             | n/as           |
|          |             |                       | <b>Total Reference Pool Size</b> | <b>\$35,327,316,632</b> | <b>100%</b>       |                    |                                |                |

Sources: Freddie Mac, Fitch Ratings and Urban Institute.

Note: Classes A-H, M-1H, M-2H, and B-H are reference tranches only. These classes are not issued or sold. The risk is retained by Freddie Mac and Fannie Mae.

