Freddie Mac

Economic & Housing Research **Insight**

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A Logical Next Step in Mortgage Finance

September 2008 was an eventful month. Lehman Brothers declared bankruptcy. Goldman Sachs and Morgan Stanley converted to bank holding companies to safeguard their access to capital. Wachovia, the fourth largest bank in the U.S., announced that it would be acquired by Citigroup, a deal that later fell through when Wells Fargo outbid Citigroup in early October. In the largest bank failure in U.S. history, Washington Mutual was seized by the Federal Deposit Insurance Corporation (FDIC) and most of its assets were transferred to JPMorgan Chase & Co. Secretary of the Treasury Henry Paulson proposed a $700 billion Troubled Assets Relief Program (TARP) as part of the government's measures to address the subprime mortgage crisis.

Freddie Mac was not immune to this crisis. Credit losses from its mortgage insurance activities had started creeping up in 2007 and accelerated in 2008 (Exhibit 1, following page). Fortunately, though, Freddie Mac had begun selling off a large part of the credit risk in its guarantee portfolio in the late 1990s. Some of the risk transfer took the form of structured bonds that allowed sophisticated private investors to choose the level of credit risk exposure that matched their investment goals. Additional risk was transferred through reinsurance contracts with some of the largest global reinsurance companies.

As house prices continued to grow at an unsustainable rate in the early 2000s, these credit risk transfer bonds and reinsurance contracts grew riskier, and investors required higher and higher yields to purchase them. This information about private investors' assessment of mortgage credit risk convinced Freddie Mac to hold its guarantee fees at actuarially fair levels despite competitive pressures to lower them.

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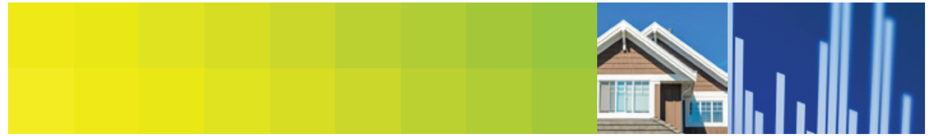
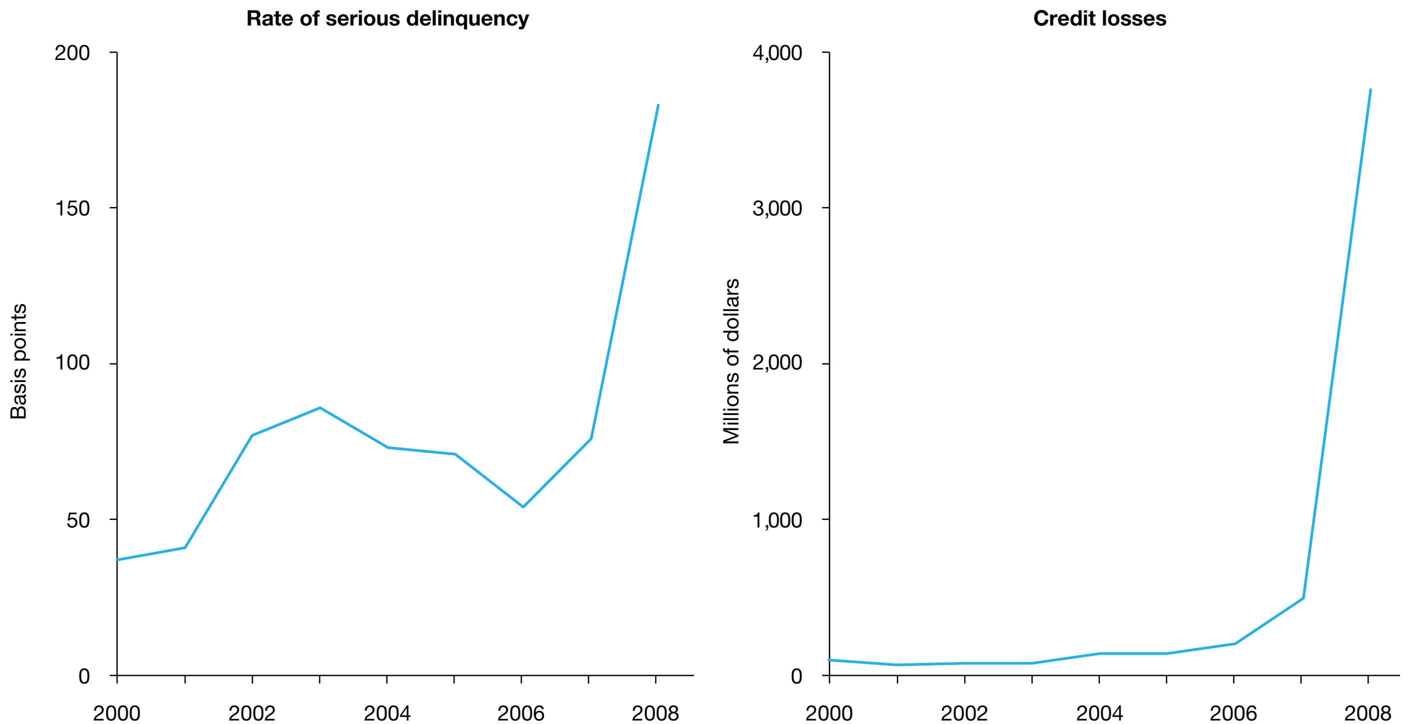


Exhibit 1

Freddie Mac's credit performance (single-family guarantee portfolio, 2000-2008)



Source: U.S. Census Bureau

The housing market collapse in the latter half of the decade generated the largest real estate losses since the Great Depression. The losses to Freddie Mac were severe, but they would have been much worse if Freddie had not transferred a significant portion of the credit risk to a wide array of large private investors in the years prior to the collapse.

Unfortunately, that's not what happened. There were no credit risk transfer bonds or reinsurance contracts in place—the mortgage market had not invented that type of risk transfer yet.[1] Freddie

1 This overstates the case slightly. Freddie Mac had experimented with an early form of credit risk transfer, but that effort had faced challenges. Private mortgage insurance covered some of the credit risk of loans that were originated with down payments less than 20 percent. A market for credit default swaps also had begun to gain momentum. However, none of these tools was designed to play the role of today's credit risk transfer securities.

Mac held the entire credit risk of the mortgages in its guarantee portfolio. And, as the crisis gained momentum, it appeared that Freddie Mac and Fannie Mae were due to suffer crippling losses. This prospect convinced the Federal Housing Finance Agency (FHFA) to place Freddie Mac and Fannie Mae in conservatorship, a decision that was supported by the Treasury and the Federal Reserve.

In conservatorship, the Government Sponsored Enterprises (GSEs) took draws from the Treasury to cover current and expected future losses. Freddie Mac eventually drew $71.3 billion from the U.S. Treasury to cover 1.9 million foreclosures and $50 billion in credit losses. As the crisis passed and housing markets stabilized, Freddie Mac returned to profitability starting in 2012. And, under the sequence of agreements with the Treasury, Freddie Mac has returned over $100 billion to the Treasury so far.

There is almost universal agreement that any future system of mortgage finance should protect taxpayers from the type of credit losses that occurred during the housing crisis.

Nine years on, Congress continues to debate reform of the mortgage finance system while both GSEs remain in conservatorship. On one point, however, there is almost universal agreement—any future system of mortgage finance should protect taxpayers from the type of credit losses that occurred during the housing crisis.

An innovative credit risk transfer (CRT) program pioneered by Freddie Mac in 2013 already has been successful in shifting a significant amount of risk from taxpayers to private investors. Freddie Mac's CRT program has grown rapidly, from an initial offering of $500 million on July 26, 2013 to a handful of investors to today's almost monthly transfers of credit risk through a range of CRT products to over 230 unique investors. Freddie Mac has transferred roughly $22 billion of potential credit losses on over $850 billion of mortgages since 2013, that is, on roughly one-third of the single-family mortgages guaranteed. Freddie Mac continues to innovate, refining the CRT program to build on early successes and to appeal to the broadest-possible group of private investors. Even at this early stage of its development, the CRT program is widely regarded as an essential component of any future system of mortgage finance. As Mark Zandi, the chief economist for Moody's Analytics wrote "our analysis suggests that the risk transfer process holds significant promise as a way to achieve a well-functioning, reformed housing finance system."[2] And in a piece in The American Banker, Zandi stated further that "private investors in the risk transfers are taking on what is approaching one-fifth

2 Zandi, Mark, G. Harris, R. Shi and X. Hu 'Who Bears the Risk in Risk Transfers?' Moody's Analytics, August 2017. https://www.economy.com/mark-zandi/documents/2017-08-02-who-bears-the-risk.pdf

of the credit risk in all single-family residential mortgage loans originated in recent years. This is more than private mortgage insurers, and on par with the risk being shouldered by commercial banks and other depository institutions, and the agencies themselves."[3]

This Insight explains how CRT addresses a key gap in Freddie Mac's pre-crisis business model, and why the CRT program pioneered by Freddie Mac represents a logical next step in mortgage finance.

Life before CRT

Prior to the growth of the GSEs, access to mortgages varied from place to place. If the banks in your part of the country were short of loanable funds, they might be uncomfortable about tying up their limited funds for several decades in residential mortgages. They might charge a significantly higher rate of interest than banks in other areas that were flush with loanable funds.

> Freddie Mac was intended to provide lenders with a reliable source of liquidity in good times and bad while limiting interest rate and credit risk.

In the legislation that created Freddie Mac, Congress directed Freddie Mac to increase liquidity and provide stability in mortgage markets and to promote access to mortgage credit throughout the nation. The GSE business model of purchasing mortgages from lenders, guaranteeing the loans against default, and combining them in large mortgage-backed securities (MBS) goes a long way towards achieving this mission.

This approach relieves lenders of the illiquidity, credit risk, and interest rate risk of residential mortgages.[4] When lenders sell loans to the GSEs, they receive cash or securities that provide them with funds to make additional loans. As a result, mortgage lenders have a reliable source of liquidity in good times and bad. The GSEs take on the credit risk of the mortgages in exchange for the guarantee fee they charge. The short period lenders hold a mortgage before selling it to the GSEs limits the interest rate risk and credit risk they face.[5]

3 Zandi, Mark 'One part of GSE reform is already working', American Banker August 04 2017, 10:18am EDT https://www.americanbanker.com/opinion/one-part-of-gse-reform-is-already-working

4 Servicers, however, must still manage credit and interest rate risk. The substantially-higher cost of servicing non-performing and defaulted loans represents a form of credit risk to the servicer. In addition, servicers are compensated in part by retaining a slice of the interest payments on the mortgages they service. This cash flow is highly-sensitive to interest rate movements.

5 Lenders bear interest rate risk and credit risk during the several weeks between the origination of a loan and its delivery to the GSEs. They can hedge the interest rate risk by selling the mortgages forward or by purchasing appropriate interest rate derivatives. Lenders bear the limited credit risk of the newly-originated mortgage and earn the full coupon rate of the mortgage for those weeks in exchange.

Historically, GSEs have retained the credit risk while the bulk of the interest rate risk is passed to institutional investors. The MBS created by the GSEs are attractive investments for institutional bond investors. They are large and easily divisible into whatever dollar amount investors want to buy or sell. They trade liquidly in a deep market. Market confidence in the creditworthiness of the GSEs—based initially on an implied government guarantee and, more recently, on the explicit Treasury backstop provided by the Preferred Stock Purchase Agreement (PSPA)—increases stability since investors regard MBS as a safe haven second only to government-issued debt. And the combination of mortgages from across the country into large diversified pools provides uninterrupted access to mortgage credit at rates that vary with borrower creditworthiness rather than borrower location.[6]

> Freddie Mac and Fannie Mae had one major Achillies heel compared to other insurance companies—these Government Sponsored Enterprises retained all the credit risk of the mortgages underlying the mortgage-backed securites.

What was missing?

The GSEs were successful for decades in increasing liquidity and promoting stability in mortgage markets and in promoting access to mortgage credit for borrowers. Nonetheless, the business model of the GSEs had an Achilles heel that became apparent during the housing crisis a decade ago. In contrast to other insurance companies, the GSEs retained all the credit risk of the mortgages underlying the MBS.

Typically, insurance companies hold only a portion of the risks of the policies they write, and *reinsure* the rest; that is, they buy insurance from other companies to cover the portion they don't feel they can prudently cover. In the event of a significant covered event, this reinsurance spreads the losses and makes it less likely that the losses will exceed the capital of any of the individual insurance companies that share the risk.

6 One measure of the success of the GSEs is the convergence of mortgage rates across the nation. Freddie Mac has published a weekly survey of advertised mortgage rates since 1971. For many years, Freddie Mac published both the national average mortgage rates and five regional averages. In 1980, the 30-year mortgage rate differed by an average of 86 basis points across regions with a maximum difference of 3.50 percent the week of March 7, 1980. Since then, however, advertised regional rates steadily converged to the point that Freddie Mac stopped publishing regional averages.

Some examples may make this clearer. In 2005, Hurricanes Katrina, Rita, and Wilma produced about $90 billion of U.S.-insured losses, but non-U.S. reinsurers ultimately paid approximately $59 billion of these losses.[7] Reinsurers indemnified insurers for about 60 percent of the insured losses from the September 11 terrorist attacks, which at the time was the largest insured loss in U.S. history. And approximately 40 percent of the insured loss from Superstorm Sandy was reimbursed through reinsurance.

Freddie Mac had reason to believe that credit losses on their portfolios of guaranteed loans were unlikely to threaten the viability of the firm. In 2007, credit losses more than doubled from the prior year but still represented only 0.03 percent of the guarantee portfolio, and Freddie Mac remained profitable.

Freddie Mac's guidelines support the credit quality of the mortgages it insures and serve to limit credit losses. The requirement of a significant down payment or, alternatively, private mortgage insurance also provides a meaningful buffer against the defaults that do occur. And natural disasters such as Hurricane Harvey trigger federal flood insurance payouts and layers of disaster assistance that shield Freddie Mac from much of the impact.

Nonetheless, Freddie Mac was conscious of the burden of retaining all the credit risk on its guarantee portfolio. And in 1998, Freddie Mac issued a pathbreaking security called Mortgage Default Recourse Notes (MODERNs), the first credit risk transfer effort by a GSE. However, this deal failed to gain investor acceptance and the MODERNS initiative was discontinued. One of the key obstacles was the lack of publicly-disclosed information on the current and historical performance of the underlying mortgages. Without this type of information, investors were unable to assess the risk of the MODERNS structure.[8]

Last decade's housing collapse finally convinced all stakeholders—investors, regulators, and the GSEs—of the need to spread mortgage credit risk more widely. However, the challenges faced by the MODERNs deal highlighted the difficulties of creating a stable market for mortgage credit risk. Working with the its conservator, the Federal Housing Finance Agency (FHFA), Freddie Mac finally issued its first CRT security in 2013. Since then, Freddie Mac has transferred a portion of the credit risk on more than $850 billion in residential mortgages.

7 The examples in this paragraph are taken from "The Breadth and Scope of the Global Reinsurance Market and the Critical Role Such Market Plays in Supporting Insurance in the United States," Federal Insurance Office, U.S. Department of the Treasury, December 2014.

8 For more information, see "Credit Derivatives: Hedging Closer to Happiness," Secondary Mortgage Markets, December 1999, Volume 16, No. 2 and https://www.fhfa.gov/PolicyProgramsResearch/Policy/Documents/Securitization-Infrastructure/12.03.2012.Five_Bridges_Advisors_White_Paper_Comment_Letter_20121203.pdf

How does CRT work?

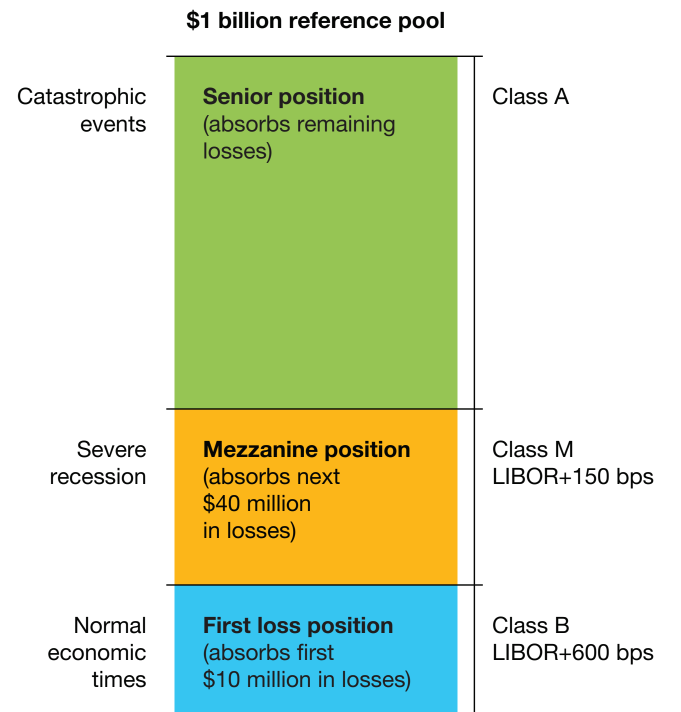
Freddie Mac currently employs multiple tools for credit risk transfer. At present, Structured Agency Credit Risk (STACR®) securities are one of the primary tools. The structure of STACR securities continues to evolve as Freddie Mac reacts to market feedback. However, the essential features of all types of STACR issues can be illustrated by a generic example of a STACR-like structure.[9]

This hypothetical example begins with a large, diversified reference pool of mortgages purchased by Freddie Mac. A STACR-like structured security is created with multiple tranches, each of which corresponds to a hypothetical tranche in the reference pool. Investors in the tranches of the STACR-like security receive payments and bear the risk of loss based on the performance of the mortgage loans in the reference pool.

Exhibit 2 displays a structure with three tranches: Class A, Class M, and Class B. These tranches correspond to equivalent reference tranches in the reference pool of mortgages. The Class A tranche is not issued to investors; it is a reference class only. In practice, the Class M and Class B tranches typically are subdivided into multiple tranches. For example, the Class B tranche in Exhibit 2 might be comprised of a B-1 and a B-2 tranche. Nonetheless, the simplified Exhibit 2 highlights the important features of this structure.[10]

Exhibit 2

A hypothetical STACR-*like* security



9 This example does not represent any specific STACR issue. Complete descriptions of actual STACR securities are found in the offering circulars. To make the discussion in this section intelligible, words in this section carry their ordinary English meanings as much as possible. However, in securities issues and reinsurance contracts, words have legal meanings spelled out in the offering circular or contract. The Appendix at the end of this article, provides more precise explanations of some of the features of Freddie Mac's CRT offerings.

10 In effect, there are two parallel sets of tranches, one set in the reference pool, which contains actual mortgages, and another set in the STACR-like security. The tranches in the STACR-like security are derivatives; the payments to those tranches are based on the performance of the mortgages in the reference pool. In this section, it may sometimes sound as though that mortgage performance—normal paydowns, prepayments, and defaults—is taking place in the STACR-like tranches, but remember that all actual mortgages—and actual mortgage performance—take place only in the reference pool.

Credit losses[11] in the reference pool reduce the claims of investors to payments (in effect, reduce the principal amounts of their investments). However, credit losses are applied sequentially, in reverse order, to the reference tranches. Credit losses reduce the principal of the Class B tranche first, and, if losses continue to grow, the Class M and Class A reference tranches, in that order, are reduced.[12]

The Class B tranche is the first loss tranche in this STACR-like example; it bears the most credit risk. Because the Class B tranche bears the first credit losses, investors require a higher yield for this security—in this example, 600 basis points above LIBOR.

Each tranche above the Class B tranche bears successively less credit risk. In Exhibit 2, credit losses in the reference pool would have to exceed one percent of the initial balance of the pool before the Class M reference tranche would bear credit losses. Losses would have to exceed five percent of the initial balance of the reference pool—a catastrophic level of loss—before the Class A reference tranche would be affected.[13]

This sliding scale of exposure to credit risk allows investors to choose the amount of risk they wish to bear.[14] The yield of each STACR-like tranche reflects investors' assessments of the likely amount and timing of credit losses and, thus, the cash flows investors expect to receive.

To date, Freddie Mac has not sold STACR securities that represent the entire reference pool to private investors. Instead, Freddie Mac retains a portion of each reference tranche. Freddie Mac's retention of a portion of each tranche assures investors that Freddie Mac has an incentive to monitor and manage the performance of the servicers of the mortgages in the reference pool.

Benefits of CRT

Freddie Mac's CRT programs have several benefits. First and foremost, CRT takes taxpayers at least partially off the hook in the event of severe credit losses of the magnitude suffered a decade ago. Second, the use of CRT brings Freddie Mac into alignment with best practice in the insurance industry, where reinsurance is routinely employed to avoid an excessive concentration of risk. Reducing concentrated risk is especially important to a firm as important to the housing sector as Freddie Mac. Financial distress at Freddie Mac would spread rapidly to other financial firms.

11 Mortgage defaults take time to play out, and it can be difficult to identify the moment when default is certain and final. Indeed, ambiguities about the definition of a default event has sometimes led to lengthy litigation in the market for credit default swaps. STACR securities avoid this problem and increase transparency and certainty by including in the offering circulars precise definitions of the credit events that cause a credit loss in the reference pool.

12 If there are multiple M and B tranches, credit losses are applied first to the highest-numbered tranches. For instance, credit losses would reduce the notional principal in a B-2 tranche before the B-1 tranche was affected.

13 As noted above, the Class A tranche is a reference class only. It is not offered to investors. Thus, Freddie Mac retains the exposure to catastrophic losses, that is, losses far in excess of any historical experience.

14 By subdividing the Class M and Class B reference tranches into multiple tranches, investors may fine tune their exposure to credit risk.

Third, investors' willingness to purchase CRT securities provides a useful reality check on Freddie Mac's guarantee fee pricing. By offering structured securities with varying levels of exposure to mortgage credit loss to a wide range of private investors, Freddie Mac gains information about the assessments of sophisticated investors with deep experience in analyzing and pricing different types of credit risk. Analysis so far indicates the guarantee fee price implied by the pricing of STACR securities is broadly consistent with Freddie Mac's actual guarantee fee.

Limitations of CRT

Freddie Mac forgoes potential income in order to induce private investors to share the credit risk of mortgages purchased by Freddie Mac. As a result, Freddie Mac must strike a balance. Too little issuance of CRT securities would leave Freddie Mac with concentrated credit risk. Too much issuance would leave Freddie Mac short of income.[15]

In addition, credit risk transfer transactions have to make economic sense. Market opinions of risk can change over time, sometimes in ways that don't appear realistic. For instance, events unrelated to Freddie Mac—the failure of a large financial firm, a jump in defaults on auto loans, an unexpected jump in the unemployment rate—might temporarily spook credit investors and lead them to require unrealistically high yields in order to purchase CRT securities. In these circumstances, Freddie Mac might reasonably decide to defer CRT issues until the market

CRT—It's not just for Multifamily anymore

Freddie Mac's Single Family Division has garnered a lot of attention for its pathbreaking CRT initiatives. However, Freddie Mac Multifamily's credit risk transfer programs beat Single Family to the punch. Multifamily transfers risk through a range of offerings, and its signature security—the K-Deal—was introduced back in 2009, four years before the 2013 introduction of STACR®.

K-Deals are structured securities backed by multifamily mortgages. Generally, the securities are comprised of guaranteed senior bonds and unguaranteed mezzanine and subordinate bonds. Multifamily also transfers credit risk through its Small Balance (SB) Deals. Freddie Mac currently securitizes about 90 percent of the multifamily mortgages it purchases through the K- and SB-Deal programs. Since 2009, the K- and SB-Deal programs have transferred most of the credit risk on more than $216 billion in multifamily loans to approximately 600 unique investors.

Multifamily continues to innovate in their CRT offerings. In January 2017, Freddie Mac introduced a risk transfer transaction for loans awaiting securitization (KT-Deals). And in June, Multifamily introduced the first-ever securitization of a tax-exempt loan portfolio, which helps provide affordable rental housing for lower-income families. Together Freddie Mac Single Family and Multifamily CRT activities have transferred a significant portion of credit risk on more than $1 trillion in mortgage loans.

15 For the same reason, insurance companies don't reinsure all of their risk exposure. But they do make sure to transfer enough risk to prevent their companies from failing as the result of a covered event.

settles down. Similarly, market opinion may make certain structures—or certain tranches within a structure—more or less economically sensible.[16]

A short history of CRT

All good ideas seem obvious in retrospect, and CRT is no exception. But, as the experience with the MODERNs initiative shows, the right idea at the wrong time can still fizzle out.

Wall Street's image of creativity and fast-paced change can be deceptive. Introducing something new—or even reintroducing something old that has fallen out of favor—can be difficult. New types of securities, futures contracts, and the like are rolled out regularly with much publicity, but many of them last for one or two deals before disappearing.

Freddie Mac faced these same challenges in convincing investors to participate in something new when it introduced STACR. While the goal of reducing Freddie Mac's concentration of mortgage credit risk was appealing, the market's appetite for this type of risk was at an all-time low following the large losses investors had suffered on credit-sensitive, private label securities (PLS) in the financial crisis. Nonetheless, discussions of CRT within Freddie Mac started all the way back in 2011. Formal discussions with FHFA also began in 2011. FHFA also had concerns about the concentration of mortgage credit risk at the GSEs and was considering ways to lessen that concentration. Discussions continued inside Freddie Mac, but the CRT proposals failed to gain much traction.

Momentum for CRT picked up when Don Layton became CEO of Freddie Mac in 2012. Don is a seasoned financial markets executive, and he saw the potential in this type of approach. Further discussions between Don and an informal CRT team refined the proposal to increase the likelihood of market acceptance. Eventually FHFA determined the time was right to add an obligation to its GSE scorecard for both Freddie Mac and Fannie Mae to launch the initial credit risk transfer deals.

Freddie Mac offered its first STACR security, 2013-DN1, on July 26, 2013.[17] This STACR security was a sequential structure backed by a reference pool[18] of $22.6 billion of mortgages acquired by Freddie Mac in the third quarter of 2012. Freddie Mac bore the risk of any initial losses up to 30 basis points of the reference pool. Freddie Mac also bore the risk of all losses in excess of three percent of the original balance of the reference pool. Given the novelty of the STACR structure, Freddie Mac did not ask for these first securities to be rated, which prevented some investors from participating and depressed the prices of the bonds somewhat. Nonetheless, 50 different investors purchased parts

16 For instance, Freddie Mac initially experimented with selling the first 100 basis points of credit loss to investors. However, market feedback indicated that the selling of the first 50 basis points is especially costly. As a result, Freddie Mac now retains the first 50 basis points of credit loss in most transactions.

17 Fannie Mae offers a CRT security that is similar to STACR and is called CAS (Connecticut Avenue Securities). The first CAS offering took place on October 24, 2013.

18 In the initial STACR issues, losses were determined by a 'fixed severity' approach. Later issues were so-called "actual loss" deals, in which losses were calculated based on the actual performance of the specific mortgages backing the issue.

of the deal and the issuance was increased by $100 million.[19]

Freddie Mac observed how each of the first few deals fared in the market, and talked to investors—those who participated and those who passed—to find what worked and what didn't. The credit risk transfer market is still maturing, but as of today Freddie Mac has transferred a significant portion of credit risk on approximately $850 billion of single-family mortgages to more than 230 unique credit investors, a remarkable achievement for a market this young.[20]

Final thoughts

The introduction of CRT securities and reinsurance contracts brings the GSEs into alignment with best practice in the insurance industry. By transferring a significant portion of the credit risk on the mortgages Freddie Mac guarantees to a broad spectrum of private investors, Freddie Mac reduces taxpayer exposure to credit events and lessens the probability that any one firm—including Freddie Mac—will suffer a loss large enough to threaten the viability of the firm. By attracting private investors to this market, Freddie Mac can validate its own estimates of mortgage credit risk against the calculations of other sophisticated investors. These benefits explain why CRT is a logical next step in mortgage finance.

In the opening of this article, we speculated how Freddie Mac might have weathered the financial crisis if a mature, active CRT market had been in place. Of course, it's impossible to replay history, but the experience of the highly-destructive hurricanes that struck the United States this year is a real-world reminder that risk sharing makes the financial system more resilient even in the face of unthinkably-severe shocks.

Appendix

Freddie Mac currently employs multiple tools for credit risk transfer. At present, the primary tools are Structured Agency Credit Risk (STACR) securities and Agency Credit Insurance Structure (ACIS®) contracts. In STACR transactions, investors receive principal payments and are allocated losses based on a hypothetical structure of reference tranches deemed to be backed by a pool of mortgage loans. Each tranche represents a different level of potential loss on the mortgage pool. STACR securities typically represent a portion of each tranche of the hypothetical structure. ACIS contracts cover a portion of the hypothetical structure not represented by the STACR securities. In addition, Freddie Mac retains a portion of each tranche in the hypothetical structure thereby retaining some of the risk of loss on the mortgage pool.

Freddie Mac's CRT program also includes STACR SPI®, in which two participation interests are

19 http://www.ifre.com/structured-finance-house-and-americas-structured-finance-house-credit-suisse/21120260.fullarticle
20 http://freddiemac.mwnewsroom.com/press-releases/freddie-mac-further-expands-crt-program-with-stacr-otcqb-fmcc-1323108

created for each mortgage loan. One of the participation interests is then deposited into a PC, in which principal and interest are guaranteed by Freddie Mac, and the other participation interest is deposited into an SPI trust. If a participation interest in the PC were removed from the PC as a result of certain specified events, then the participation interest would be deposited into the SPI trust. Investors in the SPI trust bear the risk of loss on any mortgage loan backed by one or more participation interests held in the SPI trust.

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