STRUCTURED FINANCE ASSOCIATION

Economics of Freddie Mac and Fannie Mae Credit Risk Transfer

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Executive Summary

The U.S. residential mortgage market is a large and complex system with over $13 trillion of outstanding mortgages at the end of March 2021. Two of the largest guarantors of mortgage credit risk remain Freddie Mac and Fannie Mae, who have been in conservatorship since 2008. One of the notable successes of their time in conservatorship has been the use of Credit Risk Transfer ("CRT") to distribute mortgage credit risk throughout the capital and reinsurance markets. Credit risk transfer is a technology that creates efficiencies in the financial sector. Both the issuers and investors benefit from the transactions, both bear risks, and credit risk transfer meets many of the business and public policy objectives of Freddie Mac and Fannie Mae.

Risk transfer transactions are important and widely accepted capital management techniques. Prior policy decisions by the Federal Housing Finance Agency ("FHFA")—particularly the 2020 Enterprise Capital Rule—along with a report[1] from the FHFA did not adequately take into account the utility and cost effectiveness of programmatic CRT issuance by the GSEs. These reports, issued under the leadership of the former FHFA Director, did not properly consider the findings and policy position of previous FHFA leadership. Moreover, ignoring the lessons of modern risk management, risks undoing what has been recognized by market participants and stakeholders as an important tool to enable the GSEs to fulfill their mission of ensuring liquidity for the mortgage market, and enabling access to credit for borrowers throughout the credit cycle, all while protecting the GSEs (and ultimately, U.S. taxpayers) from potential losses.

Importantly, the benefits of CRT have been demonstrated, by industry experts, regulators, and leaders who were tasked with addressing the issues that led to the GSEs being placed in conservatorship a decade ago. Ed DeMarco, former Acting Director of the FHFA, under whose leadership the GSE CRT programs were conceived and implemented, recently stated:

> "We suffered the consequences of concentrating $5 trillion of mortgage credit risk on two balance sheets. But here is a key point. It is not just that Fannie and Freddie's capital requirements were too low - although they clearly were. It was that ***they were allowed to concentrate all that risk on their two balance sheets***, and oversight of the risk management from this arrangement was left to their equity investors.
>
> ***This is what makes the credit risk transfer program essential for the secondary mortgage market going forward***. It is not just that FHFA must increase the GSEs' capital requirements to be on par with other regulated entities holding mortgage credit risk. It is that ***we must diversify those sources of capital and broaden the universe of institutions and investors that serve as bearers of credit risk, organizations that can expand and enhance the monitoring and evaluating of mortgage credit risk*** so we are not reliant upon the risk management judgments of just two companies.[2] [emphasis added]"

Similarly, other market participants, industry stakeholders[3], and thought leaders[4] have written on the benefits of CRT. Indeed, the vast majority of the comments submitted on the 2020 Enterprise Capital Rule strongly urged the FHFA to reconsider its approach to CRT. Therefore, we were pleased to see the September 15, 2021 announcement that the FHFA had undertaken to review the Enterprise Capital

[1] https://www.housingwire.com/articles/crt-protects-gses-taxpayers-from-unexpected-disasters/
[2] https://www.housingpolicycouncil.org/post/ed-demarco-delivers-remarks-on-crt
[3] https://www.housingwire.com/articles/crt-protects-gses-taxpayers-from-unexpected-disasters/
[4] https://www.urban.org/research/publication/fhfas-confused-critique-fannie-and-freddies-transfer-credit-risk

Framework[5], including the capital treatment of CRT "to better reflect the risks inherent in the Enterprises' business models and to encourage the distribution of credit risk from the Enterprises to private investors." We look forward to providing input on that proposed rulemaking.

This paper, in a manner consistent with SFA's own comment letter on the 2020 Enterprise Capital Rule[6], represents an effort to add to the commentary from almost all interested members of the public in support of GSE CRT programs, provides statistics on credit risk transfer securities relative to the performance of the underlying risk itself and highlights the risk-distribution benefit of programmatic issuance of such transactions under a more reasonable capital framework, and will serve as a foundation for SFA's forthcoming response to the FHFA on the Proposed Enterprise Capital Rule.

To help create an efficient CRT market, we suggest that the FHFA adopt a principles-based approach to the Enterprise Capital Rule that achieves the following goals:

- Establishes a stable and predictable capital regime that prioritizes safety and soundness.
- Encourages GSEs to engage in programmatic CRT issuance by providing for meaningful transfer of risk as soon as practicable following loan acquisition.
- Facilitates access to credit by transferring risk on loans targeted to underserved borrowers.
- Evaluates and considers feedback from stakeholders during the rulemaking process, particularly on key questions related to risk transfer and the capital rule's leverage ratio.

[5] https://www.fhfa.gov/Media/PublicAffairs/Pages/FHFA-Issues-Notice-of-Proposed-Rulemaking-to-Amend-the-Enterprise-Regulatory-Capital-Framework.aspx

[6] https://structuredfinance.org/resource-details/sfa-responds-to-fhfa-suspend-implementation-of-proposed-gse-capital-rule/ "*The capital rule unnecessarily penalizes Credit Risk Transfer programs at the enterprises, likely eliminating valid benefits of this diversified, cost-effective risk management tool.*"

Introduction

Outstanding U.S. residential (i.e., single-family and multifamily) mortgage balances were over $13 trillion at the end of March 2021[7]. Of this amount, approximately 50% of the credit risk is guaranteed by Freddie Mac and Fannie Mae (together, the "GSEs"). According to figures obtained from the Federal Reserve Bank of St. Louis, the GSEs held $6.3 trillion of residential mortgage debt as of March 31, 2021. Depository institutions held nearly $3 trillion of residential mortgages, and the remainder of the balance was held by Ginnie Mae ($2 trillion) and private investors (e.g., life insurance companies).

Prudent mortgage guarantors (such as Freddie Mac and Fannie Mae), as well as depository institutions[8], engage in a variety of risk management activities to mitigate exposure to mortgage credit losses. Such activities include credit risk underwriting (i.e., evaluating a borrower's ability to repay the debt), ensuring adequate collateral on the mortgages (i.e., evaluating the value of the underlying property), loss mitigation (e.g., forbearance or loan modification), and capital management (i.e., ensuring adequate loss-absorbing capital under a stress event). Capital management refers to the planning of adequate sources and amounts of loss-absorbing capital to cover unexpected losses – the losses that might occur during a stress event. For example, in 9 out of 10 years, a mortgage portfolio may result in only 0.20% of credit losses. However, in the 1 out of 10 years, losses could exceed 2.00%. To ensure a company can operate as a going concern, the company needs to ensure they have enough resources to fund the one year where losses are large.

Capital management includes the amount of equity capital a company holds, the amount of debt or leverage in the company, and the use of financial instruments (such as insurance) to mitigate risk. One common instrument for capital management for mortgage guarantors and insurers is the use of risk transfer securities. Risk transfer securities include funded (e.g., bonds) and unfunded (e.g., insurance or reinsurance) transactions. In any risk transfer security, the primary holder of the risk pays investors or (re)insurers a recurring fee on a portfolio of loans in exchange for reimbursement for losses on the portfolio if losses exceed a certain level. CRT refers to specific risk transfer securities issued (STACR and CAS) and reinsurance programs (ACIS and CIRT) offered by Freddie Mac and Fannie Mae, respectively.

The motivation for risk transfer securities for a guarantor is similar to the motivation for purchasing collision insurance for a car for an individual. The likelihood of an accident is low, and hopefully each year the driver does not have an accident. However, in the event there is an accident, having insurance will cover the cost of the accident and replace the vehicle. For a relatively small, recurring premium, the car owner can avoid a potential large outflow of capital at the time of the event.

[7] https://fred.stlouisfed.org/release/tables?rid=52&eid=1192326

[8] Note that while this paper focuses on CRT at the GSEs, there an emerging market of private sector CRT issued by depository institutions. While this market is currently smaller than that of the GSEs, recent private sector CRT transactions indicate tremendous growth potential. Coordinated efforts to harmonize and streamline the capital treatment of CRT—including domestic capital regulations issued by the OCC and Federal Reserve, as well international Basel standards—will help this market continue to develop. This will enable more capital to be deployed to consumers, increasing access to credit for consumer products, including mortgages. For more information on SFA's efforts on CRT, please see: https://structuredfinance.org/news/sfa-writes-white-paper-overview-of-credit-risk-transfers-crt-transactions/

Background on the GSEs and GSE CRT

The GSEs are not banks, nor are they private insurance companies. Created by Acts of Congress and given specific missions to support housing, they have historically had to balance decisions focused on profit in light of their chartered missions. The GSEs play a central role in the U.S. housing market and economy; the U.S. Government was compelled to place the GSEs in conservatorship during the 2007-2008 Global Financial Crisis given their limited loss absorbing capacity and the mounting financial stress in their portfolios at the time. The GSEs were infused with capital by the U.S. Treasury Department, and as of the writing of this paper, the GSEs remain in conservatorship (13 years later).

Starting in 2012, FHFA, the entity responsible for oversight of the GSEs, set a strategic objective with the GSEs to share mortgage credit risk with private investors. Under conservatorship, the GSEs had significantly reduced levels of capital as a result of credit losses experienced during the 2007-2008 Global Financial Crisis along with the subsequent net worth sweep and sharing credit risk with private investors was deemed the best option to minimize future risk for taxpayers. Freddie Mac and Fannie Mae subsequently created the CRT market by issuing STACR and CAS bonds and purchasing reinsurance through the ACIS and CIRT program. Under the governing capital framework from 2018 through 2020 (referred to as the "2018 CCF" – Conservatorship Capital Framework[9]), CRT was recognized as an efficient tool for capital management, and the value of CRT was recognized by the GSEs, investors, and regulators through a reasonable capital credit. A 2019 progress report from FHFA on CRT[10] showed loans underlying CRT transactions as a percent of total acquisitions increased from 41% in 2013 (the first year of issuance) to 73% in 2018. As of 2019, the progress report calculated CRT resulted in an 84% and 89% capital reduction on newly acquired mortgages by Fannie Mae and Freddie Mac, respectively. From 2012 through 2020, the use of CRT was encouraged by FHFA as a capital management tool, with annual scorecards targeting up to 90% of coverage for most loans acquired by Freddie Mac and Fannie Mae.

However, after a change in leadership at the FHFA, a revised version of FHFA's proposed capital framework was published in 2020, with an explicit preference for equity as the dominant tool for capital management. The revised capital rule effectively penalized the use of CRT with significant haircuts to the loss absorbing capacity of the CRT securities granted under the rule[11]. The revised capital framework[12] resulted in a halt of new CRT issuance from Fannie Mae. Freddie Mac briefly paused new issuance after the start of the COVID-19 pandemic, but given its programmatic approach to CRT in the preceding 8 years, the volume of new acquisitions from mortgage refinance activity and commensurate magnitude of potential risk, and other considerations that will be discussed further, Freddie Mac continued to issue CRT as a capital management tool.

In May 2021—and in stark contrast to its prior quarterly CRT reports and comments on CRT from 2013 through 2019—FHFA released a report of GSE

[9] https://www.fhfa.gov/Media/PublicAffairs/Pages/FHFA-Issues-Proposed-Rule-on-Enterprise-Capital.aspx

[10] https://www.fhfa.gov/AboutUs/Reports/ReportDocuments/CRT-Progress-Report-2Q19.pdf

[11] https://www.fhfa.gov/SupervisionRegulation/RegulationFederalRegister/Pages/Commentonrule.aspx, search for "RIN-2590-AA95" or see https://economy.com/getlocal?q=298f7a13834466aa81c0b495a99f6bbc&app=eccafile

[12] The proposed capital framework was finalized in November 2020 with limited changes following public comment

CRT programs that aligned with the critical view of these programs previously expressed in the capital rule. This paper was intended to provide an evaluation of the CRT program to-date, but instead the evaluation largely focused on CRT cash flows from 2013 through 2021. This period, despite the pandemic, is a period of extremely favorable housing market conditions with limited credit losses. Interestingly, the paper itself did not discuss capital or the performance of the underlying collateral. Instead, it focuses on actual cash flows from the CRT securities. As others have noted, this approach is analogous to evaluating the cash flows on a collision insurance policy for a car that has been fortunate enough to avoid any collisions and concluding that the costs of insurance were not commensurate with the benefits.

From our review,we believe the FHFA's analysis and its conclusions, as presented in its May 2021 report, did not paint an accurate or complete picture of the CRT program or provide an objective overview of CRT. The following sections provide a thorough discussion of the CRT program and its costs and benefits. The findings discussed in this paper are equally applicable to non-GSE CRT[13] and similar programs issued by depository institutions and private mortgage insurers.

History of CRT

Securitization is a prudent, common, and well-understood financial tool used to: manage risk for lenders, increase funding, and to provide a mechanism to expand the capital base for securitized loans[14]. Securitization has been the dominant source of funding for the United States mortgage market for several decades[15]. CRT is a form of synthetic securitization. With CRT, investors are not funding mortgages directly (that occurs via the pass-through certificates from Freddie Mac and Fannie Mae). Instead, CRT investors are participating alongside Freddie Mac and Fannie Mae through securitization of a portion of the mortgage credit risk retained by the GSEs. Table 1 provides a summary of the cash flows supporting CRT transactions for a single $300,000 loan for one monthly payment. In this example, the "CRT Cash Flow" would be aggregated across thousands of loans to collateralize a CRT transaction.

[13] For examples of bank-issued CRT programs, see https://bpi.com/wp-content/uploads/2021/09/Expanding-Mortgage-Lending-to-Low-and-Moderate-Income-Households-All-it-Takes-Is-to-Recognize-the-True-Risks-of-Securitizing-Those-Mortgages.pdf

[14] Securitization is the process of originating a pool of similar loans (e.g., 100,000 30-year fixed-rate mortgages), aggregating the cash flows produced from the loans, and selling the aggregated cash flows to investors. Securitization (1) increases the amount of capital available to fund loans, thereby providing access to credit, (2) disperses risk among various investors with varying risk appetites to estimate a more reliable stream of cash flow and proportionality share in the credit risk of the entire pool, and (3) results in market feedback and increased transparency for the industry.

[15] The mortgage credit losses and defaults experienced during the Global Financial Crisis were in part driven by mortgage securitization. However, the "non-agency RMBS" that contributed to the Global Financial Crisis were exacerbated by a break-down in item three above. While loan tapes and other documents were provided to investors, investors did not sufficiently perform due diligence on the loans and their risk, and, even if proper due diligence was performed, some of the loan documents themselves may not have been an accurate representation of the risk. This oversight contributed to an overly optimistic assessment of cash flows, which attracted capital and the cycle continued until the system broke down. After the Global Financial Crisis, several reforms were implemented to correct for the lessons learned during the run-up to the Global Financial Crisis including the Dodd-Frank Wall Street Reform and Consumer Protection Act.

Table 1: Representative Example of Cash Flows

Cash Flow Source	Purpose	Amount
Borrower	Principal	$500
Borrower	Interest (3.00% of UPB)	$750
	Total	$1,250
Borrower	Servicing Fee	$100
Borrower	Principal on Pass-through Certificate	$500
Borrower	Interest on Pass-through Certificate (2.00% of UPB)	$500
Borrower	Guaranty Fee (0.6% of UPB)	$150
	Total	$1,250 [$1,232.50]
GSE	CRT Cash Flow (0.15% of UPB; paid from Guaranty Fee)	$37.50

For this representative example, of the $1,250 monthly principal and interest payment from the borrower, approximately $100.00 would be paid to the mortgage servicer, $1,000 to pass-through certificate holders, and $150 to the GSE. Of the $150 paid to the GSE, approximately $37.50 would be passed to CRT investors. While there are costs to facilitate CRT, the majority of the $37.50 dollars ***is not*** an additional cost assessed by the GSEs specifically to support CRT. Rather, the $37.50 is a transfer of risk from one entity (the GSE) to multiple investors who are putting capital at risk to support the housing market. If a loan were in a CRT security, the above simplification of cash flows provides an approximation of the amount of monthly payment that would go towards the CRT security. If a loan were not in a CRT security, the total cash flows would be the same, but the CRT cash flow would be $0 and the entire $150 (along with the entire risk of that loan) would be retained by the GSE.

It is important to note that while CRT are bonds, since 2018, CRT bonds are fully collateralized upon sale to investors, bond proceeds are held in a trust, and the cash flows paid to the bondholders are sourced from the bond proceeds and monthly guaranty fee cash flows. CRT bonds do not increase the leverage of the GSEs; they are purely risk management tools[16]. For the reinsurance execution, the premium payments are paid from the monthly guaranty fees collected by the GSE.

In addition to its role as a risk-mitigation tool, an underappreciated benefit of CRT is its role in providing real-time, market-based feedback on the operational effectiveness of the GSEs, enabling timely calibration of guarantee fees and providing a potentially valuable tool to broaden access to credit for more borrowers. As an example, revised underwriting processes from the Enterprises in late 2017 resulted in increased debt-to-income (DTI) ratios for new originations; the average DTI on GSE loans increased from 34 to 38, driven by an increase in the number of loans with DTI ratios in excess of 45 percent, over the subsequent 18 months. CRT investors pushed back on the increases in DTI as this change increased the potential risk of mortgages collateralizing CRT. Following this market feedback, the underwriting guidelines and automated approval process was later refined, resulting in lower DTIs for subsequent originations.[17] This feedback loop provides an important market mechanism to ensure the GSEs operate in a safe and sound manner while fulfilling their public policy purpose.

This type of market feedback benefits all mortgage participants. For consumers, it ensures mortgages remain affordable. For the GSEs it provides multiple layers of independent evaluation by rating agencies, reinsurance companies, and investors on their underwriting process and assessment of risk. For investors, it provides transparency and a level of comfort knowing the GSEs not only receive, but also react, to market feedback. Finally, for taxpayers, it limits the potential risk of future credit losses with continued interest in the CRT market from market participants.

CRT bonds and reinsurance transactions include structural features designed to optimize the use of funds and availability of CRT as a loss absorbing tool. For example, the transactions include deal triggers and other waterfall features which improve the optimization of the credit protection by "turning off" amortization to bond holders during periods of stress while "allowing" amortization during periods of benign credit performance. These types of features are beneficial to the issuer of the security and are created to provide credit protection for potential stress events.

CRT Performance to-date

CRT bonds (i.e., STACR and CAS) are purchased at par at origination. Investors are repaid a combination of principal and interest over the life of the bond; the amount and timing of repayments is dependent upon the performance of the collateral. Bond investors are paid a floating interest rate, which is priced at a spread to a benchmark interest rate. The spread to the benchmark interest rate is funded by the guaranty fee paid to the GSEs, as demonstrated in Table 1. Principal repayments are defined by the security structure. If credit losses exceed the attachment point of a given security, amounts are paid to the GSEs

[16] Initial structures were issued as senior unsecured debt. If 2018, the structures were modified to REMICS, and no debt is issued.

[17] Ramirez, K. (March 2, 2018). Mortgage insurance companies push back against 50% DTI. HW. Retrieved July 15, 2020, from https://www.housingwire.com/articles/42664-mortgage-insurance-companies-push-back-against-50-dti/.

(often called "credit protection payments"), and a corresponding amount of principal otherwise due to the CRT security holders will be written down by the same amount[18]. In such a scenario, the GSEs would collect par (e.g., $100) at issuance and repay an amount less than par (e.g., $70 assuming $30 of credit losses).

For reinsurance (i.e., ACIS and CIRT), reinsurers are paid a monthly premium for the insurance coverage and reimburse the GSEs for losses. The premium is similar to the spread paid to bond investors and is paid to the reinsurers from the guaranty fees collected by the GSEs. The reimbursement from the reinsurers is equivalent to the principal write down. Table 2 summarizes the cost of CRT to the GSEs [19]:

Table 2 : Cost and Benefit of CRT – From the GSEs' Perspective

	Bond Investors	**Reinsurance**
Cost	Interest Spread	Premium
Benefit	Principal write down	Claim payments

The price of CRT varies with each transaction. The bond and reinsurance executions of CRT are priced independently, and the risk profile of the two approaches is different. Bond investors can buy and sell bonds in reaction to changes in fundamentals, market prices, or as part of an overall strategic allocation of capital to different sectors. Reinsurers insure the risk from inception through expiry of the contract. Therefore, reinsurers may take a longer-term view of the risk relative to the capital markets, often evaluating stochastic distributions of potential premium and loss. Table 3 provides a summary of the average initial annual cost of CRT and initial coverage from 2013 through 2021. In this table, the cost is defined as the interest rate spread (bonds) and premium rate (insurance) as a percent of the underlying collateral. Note, while STACR, CAS, and ACIS transactions pay a premium as a function of the principal balance or reinsurance limit, the table below is converted to the coverage collateral to provide a more direct comparison of the CRT cost relative to the average guaranty fee.

[18] In Table 2 and subsequent tables in this paper, the term 'Principal Write Down' refers to the benefit received by the GSEs when the principal balance of a CRT security is reduced due to credit losses. In the event of a principal write down on a CRT security, the GSEs receive a payment from a trust account that is holding the initial principal funds for the transaction, and it is a cash in flow to the GSEs.

[19] The GSEs may also earn investment income on the principal paid by investors to purchase CRT bonds. Such investment income is assumed to offset the floating benchmark interest rate liability of the CRT bonds in this analysis.

Table 3: Cost and Coverage of CRT (percent of reference collateral UPB)

	STACR		CAS		ACIS		CIRT	
Issue Year	Interest Rate	Coverage	Interest Rate	Coverage	Premium	Coverage	Premium	Coverage
2013	0.12%	0.3%-3%	0.12%	0.3%-3%	0.12%	0.3%-3%		
2014	0.16%	0.46%-5.19%	0.09%	0.38%-3.17%	0.10%	0.3%-3.95%	0.14%	0.5%-3.5%
2015	0.24%	0%-5.44%	0.14%	0.56%-3.87%	0.21%	0.14%-5.43%	0.14%	0.5%-3%
2016	0.23%	0%-5.18%	0.22%	0.05%-3.96%	0.18%	0.02%-4.79%	0.14%	0.47%-2.86%
2017	0.12%	0.22%-3.83%	0.11%	0.5%-3.93%	0.10%	0.47%-3.77%	0.13%	0.46%-2.76%
2018	0.14%	0.31%-4.16%	0.10%	0.5%-4.24%	0.13%	0.33%-3.81%	0.13%	0.51%-3.31%
2019	0.20%	0.1%-4.27%	0.10%	0.24%-3.18%	0.18%	0.1%-4.07%	0.14%	0.46%-3.49%
2020	0.16%	0.18%-3.79%	0.09%	0.23%-4.15%	0.14%	0.21%-3.59%	0.15%	0.37%-3.66%
2021	0.08%	0.25%-2.71%			0.08%	0.22%-2.77%		
Average	0.17%	0.18%-4.18%	0.12%	0.35%-3.7%	0.14%	0.23%-3.95%	0.14%	0.46%-3.18%

**Source: Freddie Mac, Fannie Mae, Milliman M-PIRe, FHFA*

The annual average spread and premium rate for CRT has averaged approximately 0.15% from 2013 through 2021, and coverage has averaged 0.20% to 4.00% for Freddie Mac and 0.40% to 3.5% for Fannie Mae. For the majority of CRT issuance, the GSEs retain a first-loss layer. This means if credit losses are at or below expected credit losses, the CRT investors will not incur a principal loss or pay claims to the GSEs. The initial attachment point varies by transaction and year of issuance. After the first-loss attachment, CRT issuance generally covers credit losses up to 300 to 400 basis points (the exact amount varies by transaction and transaction year). In the extremely remote circumstance that losses exceed the CRT detachment point (sometimes referred to as "catastrophic losses"), these remote losses are retained by the GSEs. Historically, collateral similar to that underlying recent CRT issuances has not experienced credit losses more than 400 basis points[20]; therefore, CRT structures are designed to cover unexpected (but not "catastrophic") losses in all historically-observed stress scenarios.

[20] https://capitalmarkets.fanniemae.com/media/20926/display

CRT has not yet experienced a significant stress period with elevated credit losses[21]. The tables below summarize the cash flows of CRT to-date, expected cash flows under a baseline scenario, and expected cash flows under a 2007 repeat stress. Results are summarized by issuance year of the transaction.

Table 4: To-date Cost (i.e., interest spread and premium) and Benefit (i.e., principal write-down and claims) ($ Millions)

	STACR		CAS		ACIS		CIRT		Total	
Issue Year	Interest Spread	Write-down	Interest Spread	Write-down	Premium	Claim	Premium	Claim	Cost	Benefit
2013	280	-	146	-	18	-	-	-	444	-
2014	687	-	799	-	108	-	29	-	1,623	-
2015	1,063	18	867	-	449	8	179	-	2,558	26
2016	858	2	1,410	4	403	2	365	-	3,036	9
2017	594	2	843	-	297	2	392	-	2,125	5
2018	595	9	455	-	229	3	250	-	1,529	12
2019	366	-	369	-	140	-	165	-	1,040	-
2020	313	-	61	-	125	-	96	-	595	-
2021	36	-	-	-	34	-	-	-	69	-
Total	**4,791**	**31**	**4,950**	**4**	**1,802**	**16**	**1,476**	**-**	**13,019**	**51**

**Source: Freddie Mac, Fannie Mae, Milliman M-PIRe*

To date, the GSEs have collectively paid $13 billion in interest spread and premium to CRT participants. CRT principal write-downs and claims have been $51 million. In isolation, this might suggest that CRT has resulted in poor returns for the GSEs. However, a fair analysis would note that these sums came during a period (2014 through 2020) when the GSEs together reported comprehensive income under GAAP of over $130 billion. This net income is inclusive of the cost of CRT, and it is reflective of the strong performance of the housing market and limited mortgage credit losses over the same period. In this context, the GSE's spent approximately 10% of their after-CRT income for capital coverage on approximately 50% of their acquisitions during the same period.

Additionally, under an economic capital framework, CRT is a more efficient form of capital when compared to equity, and CRT results in a higher return on capital. For the guaranty business of the GSEs, the guaranty

[21] The COVID-19 pandemic did result in a large increase in the delinquencies. However, it is expected that realized losses will be low for most CRT transactions.

fee is collected and paid over the life of a transaction, and it takes time to build equity capital. For example, a 4% capital requirement on $6 trillion of mortgages would equate to $250 billion of required capital. As stated above, together the GSEs reported income of $130 billion over the past 6 years under favorable housing market conditions. Assuming similar conditions and volume over the next several years, it would take another 6 years to generate sufficient retained earnings to support the business that is on the books today. Alternatively, under CRT, the GSEs transfer risk to CRT investors immediately upon the execution of the CRT transaction– reducing the need to build up the capital through a multi-year period of full earnings retention.

CRT issuance achieves **two benefits:** 1) the GSEs receive the capital benefit upon execution of the CRT transaction for any transferred risk, protecting taxpayers from future losses soon after the risk was initially assumed and 2) it results in a higher return on capital for investors. The table below provides a simplified view of the return on capital, under an economic view of capital (i.e., the 2018 CCF) and the existing capital framework (i.e., the 2020 Capital Rule), for loans underlying GSE CRT as of May 2021 (see the appendix for details on the calculations underlying this table).

Table 5: Return on Capital for Loans Underlying CRT Transactions Under Alternative Capital Estimates ($ Billions)

	2018 CCF		2020 Capital Rule[22],[23]	
	Without CRT	With CRT	Without CRT	With CRT
Outstanding Mortgage Amount	1,912	1,912	1,912	1,912
Estimated Capital Requirement without CRT	31	31	40	40
Estimated CRT Capital	0	24	0	10
Estimated Equity Capital	31	7	40	30
Estimated Guaranty Income	26	14	26	14
Return on Capital	**9.1%**	**16.3%**	**7.4%**	**5.4%**

The table shows that with economic recognition of CRT, return on capital increases for equity investors. This is demonstrated by the return on capital calculations under the 2018 CCF framework, which has higher returns on capital relative to the 2020 Capital Rule, which introduces several redundant haircuts to the capital credit for CRT.

In the absence of new CRT transactions, the GSEs (and, by extension, the taxpayers) would be solely responsible for potential credit losses on an

[22] https://www.fhfa.gov/SupervisionRegulation/Rules/Pages/Enterprise-Regulatory-Capital-Framework.aspx

[23] These results do not take into consideration recently published amendments to the 2020 Capital Rule. The amendments remove some of the haircuts to the capital credit for CRT, and these amendments are currently being evaluated.

approximately combined $6 trillion portfolio of mortgages (with only $2 trillion having coverage from existing CRT transactions). After transferring a relatively small amount of the guaranty fee to a large investor pool, the GSEs are instead able to efficiently allocate the capital required to support such large portfolios of mortgages amongst a diverse capital base, all while receiving market-based pricing feedback on other risk mitigation tools being employed.

The figures in Table 4 are the to-date values for CRT. Most CRT transactions have a contractual period of 10 years or greater, with optional call features allowing the GSEs to call the transaction early with favorable performance and economics. Therefore, in performing an analysis of CRT it is important to evaluate the transactions through term, not just to-date performance. As these are capital transactions, it is also important to evaluate the transactions under a baseline and stress scenario to see the impact of a stress scenario on ultimate performance. Tables 6 and 7 provide these statistics looking at ultimate (historical plus forecast) performance under a baseline economic scenario and a 2007 replay scenario. In each scenario, economic cancellation logic is assumed where the GSEs will call the transaction if it is beneficial to the GSEs.

Table 6: Baseline Cost (i.e., interest spread and premium) and Benefit (i.e., principal write-down and claims) ($ Millions)

	STACR		CAS		ACIS		CIRT		Total	
Issue Year	Interest Spread	Write-down	Interest Spread	Write-down	Premium	Claim	Premium	Claim	Cost	Benefit
2013	311	-	160	-	20	-	-	-	490	-
2014	770	-	917	-	124	-	33	-	1,844	-
2015	1,393	39	1,021	-	597	17	179	-	3,190	55
2016	1,267	11	2,143	25	602	11	377	-	4,389	47
2017	1,200	19	1,661	-	435	6	470	-	3,767	25
2018	1,742	209	1,135	-	424	10	336	-	3,637	219
2019	1,461	94	1,147	298	338	1	283	-	3,229	393
2020	2,342	103	242	-	659	-	321	-	3,564	103
2021	1,124	5	-	-	1,125	8	-	-	2,249	13
Total	11,609	480	8,424	323	4,324	52	2,000	-	26,357	855

**Source: Freddie Mac, Fannie Mae, Milliman M-PIRe*

Table 7: 2007 Replay Cost and Benefit (i.e., interest spread and premium) and Benefit (i.e., principal write-down and claims)
($ Millions)

	STACR		CAS		ACIS		CIRT		Total	
Issue Year	Interest	Principal Write-down	Interest	Principal Write-down	Premium	Claim	Premium	Claim	Cost	Benefit
2013	310	-	159	-	19	-	-	-	488	-
2014	763	1	910	-	124	0	32	-	1,829	2
2015	1,446	84	1,031	-	564	19	179	-	3,221	103
2016	1,278	42	2,324	113	572	23	377	-	4,552	178
2017	1,378	79	1,914	-	459	35	469	-	4,219	114
2018	2,027	946	1,300	68	476	112	330	-	4,133	1,127
2019	1,696	934	1,569	1,016	361	112	299	87	3,926	2,149
2020	2,186	2,119	427	267	753	400	390	388	3,756	3,174
2021	857	2,237	-	-	751	1,745	-	-	1,607	3,983
Total	11,940	6,442	9,634	1,465	4,080	2,447	2,077	475	27,731	10,829

**Source: Freddie Mac, Fannie Mae, Milliman M-PIRe*

Under a baseline economic scenario, the total cost is estimated to be $26.4 billion with a benefit of approximately $0.9 billion. Under this scenario, the GSEs income would be similar to that in the prior several years, and the cost of CRT would be a relatively small percent of expected income. The future loss estimates on the CRT securities are predominately from more recent issue years and are a function of the elevated delinquency rates caused by the COVID-19 pandemic. The models used in this analysis do factor in a benefit for COVID-19 forbearance and loss mitigation assistance by reducing the default rate for loans in COVID-19 forbearance relative to a delinquent loan not in forbearance.

Under a 2007 style replay, the benefit received from CRT is significantly higher at $10.8 billion (compared to $0.9 billion in the baseline scenario). This result is expected as CRT is, by design, a capital management tool. For a relatively low cost, the GSEs can obtain capital relief from investors who are willing to incur credit losses in a severe, low probability stress event[24].

[24] The cost of CRT is greater in a stress scenario as it would not be economic for the GSEs to cancel transactions where there are future principal write-downs or insurance claim payments. Therefore, these securities are extended to full maturity, and the cost is greater at $31 billion.

Looking at results by issuance year, the majority of the benefit from CRT under a stress scenario comes from issuance years 2018 through 2021. From inception to-date, all loans in reference pools to CRT transactions have experienced considerable home price appreciation – averaging approximately 6% per year. Strong home price environments, historically, have a high correlation with low levels of credit loss. Additionally, most prior issuance years have experienced considerable amortization. Fast amortization of the transactions has occurred due to declines in the primary mortgage rate from 2013 to 2021 – leading to refinance incentives for many of the mortgages underlying the CRT bonds. Note, for 2021 CRT transactions (i.e., new transactions), the cost under a stress scenario is much less than the anticipated benefit. Specifically, the costs are estimated to be $1.6 billion, and the benefit is estimated at $4.0 billion.

At issuance, there is greater uncertainty on the future performance of a transaction, and the likelihood of incurring losses is greater. As a transaction seasons and if the housing market is strong, the probability of credit losses to the CRT transaction declines. It is difficult to accurately predict when a stress event will occur or to "time" when to issue and when not to issue CRT. If a CRT is issued after the start of a stress event, investors may be unwilling to participate or demand a high interest rate (or premium) to participate. However, if there is programmatic issuance, the GSEs will have greater CRT coverage at a lower average cost through the cycle. Therefore, it is important for the GSEs to have programmatic issuance of CRT.

Transaction at Issuance

Looking at total CRT issuance to-date is not the best way to evaluate the economics of CRT. A better way to evaluate CRT is to look at a new issuance deal – one that has not benefited from hindsight and favorable economics.

This section looks at the economics of a new transaction, including an estimate of the guaranty fee collected by the issuer, and the "pre" and "post" cash flows of the issuer.

Table 8 provides a summary of the economics for a CRT transaction at inception under the following assumptions:

- Original UPB: $1,000,000,000
- Guaranty Fee[25]: 56 basis points
- Guaranty Fee (net of operating expenses and payroll tax): 31 basis points
- Collateral and structure similar to STACR 2021-DNA3 [26](Low LTV loans; CRT bonds cover losses in excess of 25 basis points up to 250 basis points)

Table 8: Illustrative example on net cash flows for a new CRT transaction ($ millions)

	Moody's Baseline	10% HPI down	20% HPI down	30% HPI down	2007 Stress Replay
Pre-CRT Cash Flows					
Guaranty Fee (net of expenses)	20.9	19.7	18.6	18.7	18.9
Loss Amount	2.3	4.3	11.7	23.5	17.4
G Fee - Loss	*18.5*	*15.4*	*7.0*	*(4.8)*	*1.5*
CRT Cash Flows					
Interest	9.1	8.5	6.6	4.1	3.9
Principal Write-down	-	1.4	8.0	17.1	13.8
Post-CRT Cash Flows					
Guaranty Fee-Interest	11.8	11.2	12.0	14.6	15.0
Loss Amount - CRT Write-down	2.3	2.9	3.6	6.3	3.6
Net Cash Flows	*9.4*	*8.3*	*8.4*	*8.3*	*11.5*

[25] https://www.fhfa.gov/AboutUs/Reports/Pages/Fannie-Mae-and-Freddie-Mac-Single-Family-Guarantee-Fees-in-2019.aspx - see appendix for calculation

[26] https://crt.freddiemac.com/securities/deal-documents

In the example in Table 8, the GSE would collect guaranty fees (net of expenses) of $20.9 million in the baseline scenario and incur credit losses of $2.3 million. The net cash flow would be $18.5 million to the GSE. In a more stressful scenario such as a 30% home price decline, the GSE would collect guaranty fees (net of expenses) of $18.7 million and incur losses of $23.5 million, resulting in net cash flow of negative $4.8 million[27].

The post-CRT cash flow for the GSE is reduced in the baseline scenario from $18.5 million to $9.4 million; however, the post-CRT cash flow across all scenarios is generally consistent and around $9.0 million. Therefore, not only does CRT reduce the risk to the GSEs, but it also results in more stable and predictable cash flows across varying economic scenarios. Furthermore, this benefit is provided to the GSE at a cost of approximately 43% (43% = 9.1 / 20.9) of the guaranty fee, net of operating expenses and the payroll tax, in the baseline scenario and even less in more severe scenarios. With the transaction in the example, the GSEs have lower average income, but also less uncertainty and positive cash flows across severe stress scenarios.

Evaluation of Criticisms of the CRT program

Under the former Director, the FHFA raised a number of critiques of CRT – and this section addresses those, recognizing the need for ongoing fine-tuning and adjustments of GSE CRT programs.

Critique #1: High prepayments erodes the expected balance of credit protection versus the cost of CRT.

As a financial product there is always room for innovation and ways to better align the structure with the underlying exposure. Some criticisms of CRT can be addressed through structural adjustments of the securities. For example, the high rate of loan refinancing in recent years has resulted in certain senior CRT paying down quickly given the fast prepayment speeds of the underlying collateral. At the same time, the credit risk of the remaining collateral pool deteriorates. Structural changes could be made to CRT securities to change the speed of amortization such that the amount of remaining CRT is commensurate with the remaining risk.

Critique #2: CRT investors interest may wane during economic downturns.

Some point out the fact that CRT is untested through a full credit cycle. While the CRT market was disrupted during the COVID-19 pandemic, along with every market and business , the disruption was temporary given the significant government support. In kind, both reinsurers and bond investors demonstrated an appetite to participate in CRT, executing new CRT transactions in June 2020, after having last executed transactions in March 2020.

Even if, similar to most markets, investor demand declines and/or issuance cost rises for new CRT during downturns in the economic cycle, this does not eliminate the benefits of issuing these bonds during the full economic cycle. This risk can and

[27] If this result appears counterintuitive given the large losses experienced by the GSEs during the Global Financial Crisis, it is because the average guaranty fee is 2007 was 0.22% (before expenses) compared to the 0.56% guaranty fee (before expenses) assumed in the table. Additionally, underwriting quality in much stronger today, both quantitatively in terms of average credit score and number of high-risk attributes as well as qualitatively in terms of verification processes by mortgage originators and the GSEs themselves.

should be managed through sound balance sheet management that incorporates complementary types of capital – CRT, equity and forward capital commitments.

For example, reinsurers have executed forward transactions to commit capital to an exposure in advance of the mortgages being written. It is common for reinsurers to enter into forward commitments with the PMI industry as well. This type of participation demonstrates a "through the cycle" mentality and a long-term interest in participating in mortgage credit exposure.

Critique #3: There is counterparty risk exposure or "wrong way" risk with reinsurers.

Reinsurers are financial companies that operate by being able to efficiently allocate capital across a variety of exposures. Reinsurers are heavily regulated and have developed sophisticated risk management strategies to minimize risk. Across reinsurers who participate in CRT, concentration in mortgage CRT is, on average, less than 5% of their total capacity. In addition, reinsurers are conservative with asset allocation and typically do not invest in mortgage credit risk or high-risk assets. Therefore, there is very limited "wrong way" risk with reinsurers. From a counterparty risk perspective, actual reinsurance defaults have been low and reinsurers have a strong track record of paying claims after covered events such as natural disasters, which generate sizeable claims.

This risk is and should continue to be further mitigated through sound counterparty mitigation tools, including limiting counterparty exposure based upon credit quality, diversifying types of capital and applying hedging techniques.

Critique #4 CRT is not as strong of a source of capital as equity capital.

As outlined throughout this paper, CRT provides a strong source of capital that can be used to transfer credit risk in a more cost effective and targeted manner than equity capital. However, it is not meant to completely replace the flexibility provided by equity capital. Instead, it is a complement where the size of each should be carefully calibrated to take advantage of the benefits of each source of capital while mitigating the associated costs and risks.

A programmatic CRT program provides a consistent, through the cycle source of capital or loss absorbing capacity for unexpected losses. Furthermore, CRT structures clearly define mechanisms for quantifying loss to investors. Unlike equity capital, CRT imposes losses on investors when realized losses on underlying collateral are calculated.

Conclusion

The COVID-19 pandemic was a timely reminder that economic stress can manifest out of unexpected events. These are the exact types of events that demonstrate the need for strong capital management. Capital management can come from a variety of sources, including equity capital and other financial tools designed to mitigate future, uncertain risks. CRT, and other structured products, are great examples of financial tools that can provide loss absorbing capacity and assist with capital management.

CRT can be an effective capital management tool to:

- Reduce mortgage credit risk to the issuer of the transaction (and ultimately, the taxpayers) while the GSEs remain in conservatorship;
- Provide market feedback in real time on the GSEs' underwriting criteria and internal assessments of risk;
- Attract a diverse source of capital to support the housing market;
- Increase the return on capital for the GSEs and their investors; and
- Provide for more predictable and consistent earnings across economic cycles.

It is important to evaluate all benefits and multiple metrics when evaluating CRT. The above analysis demonstrates that, when viewed holistically, CRT provides many net benefits to the GSEs, and the Enterprise Capital Rule should reflect those benefits. While previous iterations of the Enterprise Capital Rule reflected the benefits of CRT and afforded appropriate capital relief, the 2020 Enterprise Capital Rule perversely incentivizes the concentration of risk at the GSEs and restricts their ability to provide access to credit for the housing market.

SFA believes that revisiting the Enterprise Capital Rule in a targeted manner—with full input from market stakeholders on threshold questions relating to credit risk transfer—is the best way to ensure that CRT continues to be a viable and economic means of capital management. This new rulemaking could build off previous rules in some respects. However, on questions related to capital relief for CRT transactions and the current rule's leverage ratio, substantial modification is warranted to reflect accurately the benefits of CRT.

Revisiting the capital rule can help ensure that the GSEs operate in a safe and sound manner but will enable the GSEs to fulfill their mission of providing access to credit, particularly for underserved borrowers.

About the Structured Finance Association

The Structured Finance Association is the leading securitization trade association representing over 370 member companies from all sectors of the securitization market. Our core mission is to support a robust and liquid securitization market and help its members and public policymakers grow credit availability and the real economy in a responsible manner.

SFA provides an inclusive forum for securitization professionals to collaborate and, as industry leaders, drive necessary changes, advocate for the securitization community, share best practices and innovative ideas, and offers professional development for industry members through conferences and other programs.

For more information, visit www.structuredfinance.org.

Technical Appendix for Table 5

Table 5 in this document estimates capital requirements and return on capital under two estimates of capital for loans underlying CRT transactions as of May 2021. The calculations for these estimates are described in this appendix.

Outstanding Mortgage Amount

The outstanding mortgage amount for loans underlying CRT were extract from Milliman M-PIRe[28], which obtains data on CRT loans from public datasets published by Freddie Mac and Fannie Mae. This amount reflects the outstanding principal balance for reference pool mortgages on public CRT transactions (STACR, CAS, ACIS, and CIRT) using remittance report data as of May 2021.

[28] www.millimanmpire.com

Estimated Capital Requirement without CRT

The estimated capital requirement without CRT is derived from the initial NFP for the 2020 capital rule. Table 26 from the NFP provides a summary of the capital requirement for Freddie Mac and Fannie Mae combined for the gross mortgage pool, the mortgage pools net of CRT, and for operational, market, and additional buffers. The capital requirement without CRT is estimated as the ratio of the Net Credit Risk capital requirement (net of mortgage insurance) divided by the Total UPB multiplied by the Outstanding Mortgage Amount. The initial proposed rule is used for this calculation as this table includes a comparison of the 2018 CCF and the 2020 proposed rule. Additionally, the final and proposed 2020 capital rule are largely similar. The ratio derived from Table 26 produces a Capital Requirement without CRT of 1.64% and 2.11% for the 2018 CCF and 2020 Capital Rule, respectively.

Estimated CRT Benefit

The Estimated CRT Benefit was similarly calculated from the NFP for the 2020 capital rule using Table 26 and data from Milliman M-PIRe. From Table 26, the capital credit for CRT is 0.54% and 0.22% for the 2018 CCF and 2020 Capital Rule, respectively. As of September 30, 2019, the outstanding UPB on reference pools for CRT was $2,155 billion, and the total UPB on GSE mortgages was $5,003 billion. Therefore, the 0.54% and 0.22% capital benefit came from less than half of the mortgages owned by the GSEs. Assuming a similar capital requirement of this collateral results in capital reduction of 77% (77% = 0.54% / (1.64% * 2,155 / 5,003) and 24% (24% = 0.22% / (2.11% * 2,155 / 5,003) for the 2018 CCF and 2020 Capital Rule, respectively.

The 2018 CCF results are consistent with FHFA's 2019 CRT progress report which states CRT activity in 2019 resulted in capital reductions of 85% and 89% for Fannie Mae and Freddie Mac, respectively[29].

Estimated Equity Capital

Equity capital is estimated as the difference between the required capital and CRT capital.

Estimated Guaranty Income

Estimated Guaranty Income is an estimate of the lifetime guaranty income produced from the reference pool. The guaranty income is estimated as follows:

Annual Guaranty Income			
	Without CRT	With CRT	
Average Annual Fee	56	56	Source: FHFA Annual Guaranty Fee Report
Expected Credit Loss	4	3	25 basis points spread over 7 years
Cost of CRT	0	14	From Table 3

[29] https://www.fhfa.gov/AboutUs/Reports/ReportDocuments/CRT-Progress-Report-4Q2019.pdf

Expenses	15	15	Estimated from Freddie Mac and Fannie Mae annual reports
Temporary Payroll Tax Cut Continuation Act of 2011	10	10	Regulatory requirement
Net Guaranty Income	**27**	**14**	

This value represents an average annual value. The annual guaranty income is assumed to have a multiple of 5, to take into account discounting and amortization.

Return on Capital

Return on capital is calculated as the Estimated Guaranty Income / Estimated Equity Capital and annualized over a 7-year period.