

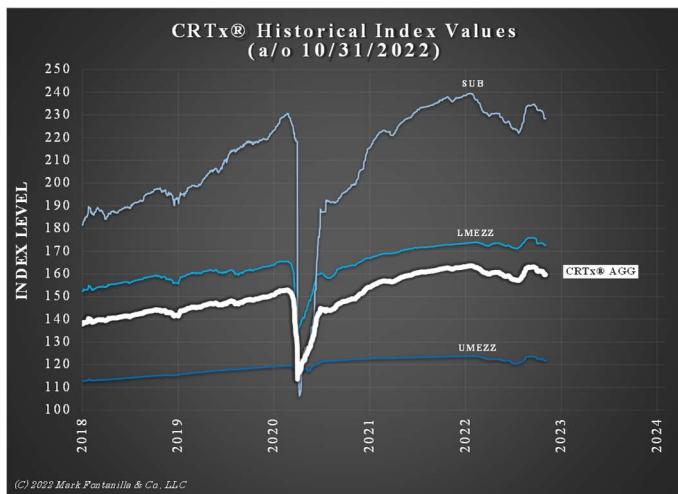
### CRTx®

*Credit Risk Transfer Return Tracking Index*

[www.markfontanilla.com/crtx-index](http://www.markfontanilla.com/crtx-index)

### CRTx® Index Rebalancing Update

10/31/2022



### Sector Musings DQ Pipeline Inversion

October statements showed GSE CRT reference pool credit performance generally better as total DQ percentages came in incrementally lower. But looking closer at DQ pipelines, since the beginning of the year, there has been a gradual “inversion” of DQ pipelines as, while 180+DQ percentages have steadily fallen over the past year and a half, conversely from the beginning of this year, earlier-stage DQs have quietly risen, although generally in context of pre-COVID levels.

Nonetheless, now 180+DQ percentages are lower vs. the rest of the DQ pipeline for most pre-COVID deals. For example, looking at the CAS and STACR deals with the highest total DQ percentages currently (both 2019 HLT), we can see that the 30d/60d buckets are higher, with the non-180d+ DQ portion now ~160% of the 180+DQ portion, a flop from the ~60% ratio at the end of 2021. As back-end improvement in DQ pipelines gradually wanes, the post-COVID onset DQ recovery is likely approaching plateau, which means early stage DQs come in focus. And they have edged higher...

Select GSE CRT Reference Pool Performance Data										
Deal	Factor Date	Delinquency Pipeline						CPR	≤180DQ to 180+DQ Ratio	1 mth
		30d	60d	90d	120d	150d	180d+			
CAS	12/2021	1.78	0.52	0.39	0.26	0.30	5.48	8.73	44%	59%
19-R04	10/2022	2.18	0.75	0.38	0.24	0.26	2.36	6.17	15%	162%
STACR	12/2021	1.38	0.47	0.38	0.45		4.90	7.58	40%	55%
19-HQA2	10/2022	1.92	0.58	0.38	0.52		2.11	5.51	12%	161%

### Inside

#### CRTx® Index Summary Panels

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- CRTx® AGG Index Rebalancing Stats
- CRTx® RNI™ AGG Index Rebalancing Stats

#### Return Roundup

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The CRTx® Aggregate fell for the 2nd month in a row, posting a -1.01% total return for October...The latest STACR tender offer helped soften the blow somewhat...YTD, the CRTx® Aggregate has now returned -2.17%, while the CRTx® RNI™ (Rolling New Issues) Aggregate is now -6.37% for the year.

#### Index Rebalancing Metrics

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The CRTx® November basket UPB falls 1.5% MoM to \$53.3B, with a total market value of \$51.3B. Constituency remains at 325 securities/124 deals, same as the October basket... Benchmark GSE CRT float contracted ~\$0.8B, or -1.47% MoM...bringing float down to pre-COVID high levels....

#### Latest Deal Performance

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CRT credit performance was steady to moderately improved in the October statements with MoM with pre-COVID late-stage DQs maintaining their steady declining trend and early stage DQs staying generally low (but slightly higher vs. the beginning of the year)...Structurally, writedowns/shortfalls were still minimal, CPRs slowed, and C/Es held steady to up slightly....

#### Relative Value Thoughts

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For the rest of the year, risk likely remains biased to the adverse side ... On the other hand, mortgage credit fundamentals still look supportive in the near term...at this juncture, maintaining sector weight and clipping rising coupons may be the prudent strategy....

#### Additional Tables/Metrics

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- CRTx® Index Suite Total Return Performance: Month-End Matrix
- CRTx® Index Basket History: Select Metrics
- CRTx® RNI™ Index Basket History: Select Metrics
- Latest Deal Performance Metrics: CAS
- Latest Deal Performance Metrics: STACR

[10/31/2022 Index Rebalancing Update \(continued\)](#)CRTx® Aggregate Index

<b>Oct 2022 CRTx® AGG Tot Ret</b>	<b>-101 bps</b>
<b>Index Month-End Closing Value</b>	<b>159.63</b>
Price Attribution	-161 bps
Paydown Attribution	+1 bps
Cpn Accr&Pmt Attribution	+60 bps
Writedown+Int Shortfall Attribution	-0.11 bps
Excess Return	-125 bps
Volatility (Annualized)	1.77%
UPB Paydown %	1.47%
<b>QTD Total Return</b>	<b>-1.01%</b>
<b>YTD Total Return</b>	<b>-2.17%</b>

**CRTx® AGG Rebalancing For Nov 2022**

As of 10/31/2022

November 2022 Aggregate Basket (w/MoM Δ):

- Beg. UPB (\$B): **\$53.28** -1.5%
- Beg. Market Value (\$B): **\$51.26** -3.1%
- Constituents: **325** +0
- WAvg Constituent Value: **96.21** -1.58 pts
- WAvg Constituent Coupon: **7.30%** +66 bps

**Index (+) Entries\* & (-) Exits****(+) None****(-) None**

\* 0.00% of Beg. Index Market Value

<b>CRTx® Mkt Val Breakdown: 11/2022 Basket</b>				
<b>Deal Yr</b>	<b>Aggregate</b>	<b>UMEZZ</b>	<b>LMEZZ</b>	<b>SUB</b>
<b>All</b>	<b>100.0%</b>	<b>24.8%</b>	<b>31.5%</b>	<b>43.7%</b>
<b>2022</b>	<b>38.7%</b>	<b>21.0%</b>	<b>9.5%</b>	<b>8.2%</b>
<b>2021</b>	<b>21.7%</b>	<b>3.8%</b>	<b>7.4%</b>	<b>10.6%</b>
<b>2020</b>	<b>10.5%</b>	0.0%	<b>2.8%</b>	<b>7.8%</b>
<b>2019</b>	<b>6.1%</b>	0.0%	<b>0.6%</b>	<b>5.5%</b>
<b>2018</b>	<b>6.3%</b>	0.0%	<b>2.0%</b>	<b>4.3%</b>
<b>2017</b>	<b>6.8%</b>	0.0%	<b>2.6%</b>	<b>4.2%</b>
<b>2016</b>	<b>3.9%</b>	0.0%	<b>2.1%</b>	<b>1.8%</b>
<b>2015</b>	<b>2.7%</b>	0.0%	<b>1.5%</b>	<b>1.3%</b>
<b>&lt;=2014</b>	<b>3.1%</b>	0.0%	<b>3.1%</b>	0.0%

CRTx® RNI™ (Rolling New Issues) Agg. Index

<b>Oct 2022 CRTx® RNI™ AGG Tot Ret</b>	<b>-92 bps</b>
<b>Index Month-End Closing Value</b>	<b>166.79</b>
Price Attribution	-148 bps
Paydown Attribution	+1 bps
Cpn Accr&Pmt Attribution	+55 bps
Writedown+Int Shortfall Attribution	+0 bps
Excess Return	-116 bps
Volatility (Annualized)	1.80%
UPB Paydown %	0.73%
<b>QTD Total Return</b>	<b>-0.92%</b>
<b>YTD Total Return</b>	<b>-6.37%</b>

**CRTx® RNI™ AGG Rebalancing For Nov 2022**

As of 10/31/2022

November 2022 Aggregate Basket (w/MoM Δ):

- Beg. UPB (\$B): **\$24.52** -10.0%
- Beg. Market Value (\$B): **\$23.32** -10.9%
- Constituents: **92** -8
- WAvg Constituent Value: **95.11** -1.04 pts
- WAvg Constituent Coupon: **6.75%** +75 bps

**Index (+) Entries\* & (-) Exits****(+) None****(-) CAS 2021-R01 1M1/1M2/1B1/1B2****(-) STACR 2021-DNA6 M1/M2/B1/B2**

\* 0.00% of Beg. Index Market Value

<b>CRTx® RNI™ Mkt Val Breakdown: 11/2022 Basket</b>				
<b>Deal Yr</b>	<b>Aggregate</b>	<b>UMEZZ</b>	<b>LMEZZ</b>	<b>SUB</b>
<b>All</b>	<b>100.0%</b>	<b>50.6%</b>	<b>25.1%</b>	<b>24.3%</b>
<b>2022</b>	<b>85.0%</b>	<b>46.1%</b>	<b>20.9%</b>	<b>18.0%</b>
<b>2021</b>	<b>15.0%</b>	<b>4.5%</b>	<b>4.2%</b>	<b>6.3%</b>
<b>2020</b>	<b>0.0%</b>	0.0%	0.0%	0.0%
<b>2019</b>	<b>0.0%</b>	0.0%	0.0%	0.0%
<b>2018</b>	<b>0.0%</b>	0.0%	0.0%	0.0%
<b>2017</b>	<b>0.0%</b>	0.0%	0.0%	0.0%
<b>2016</b>	<b>0.0%</b>	0.0%	0.0%	0.0%
<b>2015</b>	<b>0.0%</b>	0.0%	0.0%	0.0%
<b>&lt;=2014</b>	<b>0.0%</b>	0.0%	0.0%	0.0%

[10/31/2022 Index Rebalancing Update \(continued\)](#)**Return Roundup**

The CRTx® Aggregate fell for the 2<sup>nd</sup> month in a row, posting a -1.01% total return for October, with red seen across most of the CRT complex as even higher rates and vol weighed heavily on fixed income markets, especially rates, IG, and structured finance sectors. The latest STACR tender offer helped soften the blow somewhat, but YTD, the standard total market CRTx® Aggregate has now returned -2.17%, while the CRTx® RNI™ (Rolling New Issues) Aggregate is now -6.37% for the year.

10/31/2022		M/E RETURN ATTRIBUTION						
CRTx®	Index Mkt Val (\$B)	Price	CPN Accr.	CPN Pmt	Pay-down	Write-down Retrn	Int Shortfall	Index Total Return
AGG	52.881	-1.61%	0.05%	0.55%	0.01%	-0.0006%	-0.0005%	-1.01%
UMEZZ	13.074	-1.06%	0.03%	0.38%	0.01%	0.0000%	0.0000%	-0.64%
LMEZZ	16.853	-0.93%	0.04%	0.48%	0.01%	0.0000%	0.0000%	-0.40%
SUB	22.954	-2.43%	0.06%	0.69%	0.00%	-0.0013%	-0.0013%	-1.68%

10/31/2022		M/E RETURN ATTRIBUTION						
CRTx®	Index Mkt Val (\$B)	Price	CPN Accr.	CPN Pmt	Pay-down	Write-down Retrn	Int Shortfall	Index Total Return
AGG	26.187	-1.48%	0.04%	0.51%	0.01%	0.0000%	0.0000%	-0.92%
UMEZZ	12.431	-1.04%	0.03%	0.39%	0.01%	0.0000%	0.0000%	-0.61%
LMEZZ	6.573	-1.48%	0.04%	0.50%	0.00%	0.0000%	0.0000%	-0.94%
SUB	7.183	-2.24%	0.06%	0.73%	0.00%	0.0000%	0.0000%	-1.45%

As in September, declines were seen for a majority of the CRT complex in October as spreads moved roughly 40-50+bps in aggregate wider. The latest STACR tender offer gave about 1pt+ over prevailing market levels on \$317M in a handful of seasoned M2/M3 classes for the LMEZZ part of the Index, but most everywhere else was down for the month.

On the small bright side, supply technicals weren't as much of an issue, as the not-often-seen no class payoffs/no new issues for the month scenario occurred, and coupons have kept resetting higher as the Fed continues its tightening plans.

**Intra-Complex Highlights: October**

- The UMEZZ Index (M1 variants) fell -0.64%, not as bad as IG which lost about 1% MoM.
- The "best worst" LMEZZ Index (M2s/M3s) only lost -0.40%, boosted by STACR tender premiums. The RNI™ version posted a larger -0.94% decline.
- At the bottom of the CRT capital stack, the large SUB Index (B1/B2/Bs) lost a complex lagging -1.68%, despite equities and HY gaining for the month.

**Index Rebalancing Metrics**

The CRTx® November basket UPB falls 1.5% MoM to \$53.3B, with a total market value of \$51.3B. Constituency remains at 325 securities/124 deals, same as the October basket, as no classes paid off and no new issues entered the Index.

**Index Composition**

With no sector classes paying off or index-eligible new issues closing in October, current paydowns and the latest STACR tender retirements (\$317M in seasoned M2/old M3 (LMEZZ) bonds) were the only influences on November basket composition, which shifted slightly towards the top and bottom of the CRT stack, and more weight for newer post-COVID onset deals:

**CRTx® AGG composition (November 2022 basket):**

- 24.8% ↑ (vs 24.7% in Oct) - UMEZZ (M1/old M2s)
- 31.5% ↓ (vs 31.9% in Oct) - LMEZZ (M2/old M3s)
- 43.7% ↑ (vs 43.4% in Oct) - SUBs (B/B1/B2s)

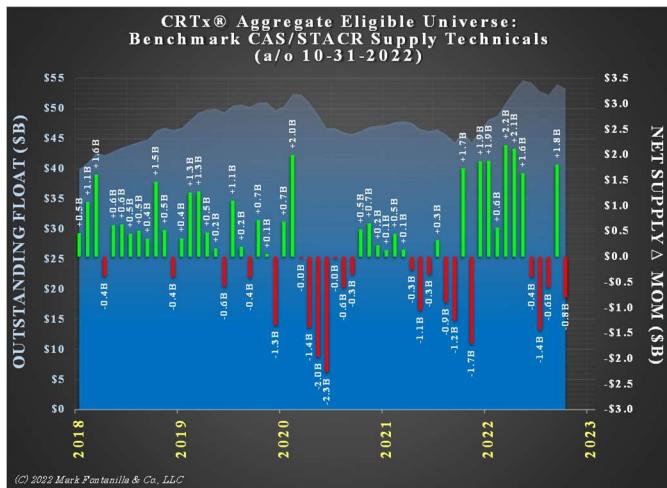
Further sector declines sunk the Index WAvg constituent market value -1.58 points to \$96.21, while LIBOR/SOFR resets rose again, bringing the Index-blended constituent coupon up 66bps to 7.3% and effective carry to ~58bps to the next reset.

With the November basket's rebalanced constituent weightings and higher resets, Index cashflow average life- and duration-to-optional-redemption edges down slightly to a rebalanced 3.4 years and 2.8 years, respectively.

Close Date	2022 Deals	LTV	Pricing Margin / Original CE			
			M1 or M1A/M1B	M2	B1	B2
01/20	CAS 22-R01	L	100/2.30	190/1.45	315/0.85	600/0.25
01/21	STACR 22-DNA1	L	100/3.00	185/2.00	250/1.25	340/0.75
02/09	CAS 22-R02	H	120/2.45	300/1.55	450/0.90	765/0.35
02/11	STACR 22-DNA2	L	130/3.40	240/2.00	375/1.25	475/0.75
03/18	STACR 22-HQA1	H	210/3.75	350/2.60	525/1.25	700/0.75
03/30	CAS 22-R03	L	210/2.15	350/1.25	625/0.75	985/0.25
04/08	CAS 22-R04	L	200/2.35	310/1.35	525/0.80	950/0.25
04/18	STACR 22-DNA3	L	200/3.60	290/2.00	435/1.25	565/0.75
05/11	CAS 22-R05	H	190/2.45	300/1.85	450/1.45	700/0.65
05/13	STACR 22-DNA4	L	220/3.60	335/2.00	525/1.25	625/0.75
06/10	CAS 22-R06	L	275/2.50	385/1.45	635/0.85	1060/0.30
06/17	STACR 22-DNA5	L	295/3.60	450/2.05	675/1.25	750/0.75
07/01	CAS 22-R07	L	295/2.55	465/1.60	680/1.00	1200/0.30
07/29	STACR 22-HQA2	H	265/3.00	400/2.00	600/1.25	
08/05	CAS 22-R08	L	255/2.55	360/1.90	560/1.10	
08/12	STACR 22-HQA3	H	230/3.00	355/2.00	535/1.25	
09/16	STACR 22-DNA6	L	215/3.60	370/2.20	575/1.30	
09/28	CAS 22-R09	H	250/2.80	475/1.90	675/1.25	
09/30	STACR 22-DNA7	L	250/3.50	500/2.55	700/1.50	

10/31/2022 Index Rebalancing Update (continued)**Sector Supply**

**Benchmark GSE CRT float contracted ~\$0.8B, or -1.47% MoM, to \$53.3B in UPB as of October month-end. STACR tender activity took \$317M out of circulation, while slower prepayments and a lack of October-closed deals all combined to bring float down to pre-COVID high levels.**



**October's -\$0.8B net supply decline included \$475M in normal amortization/prepayments, 2/3rds of the nominal Q1-Q3 monthly average. 2022's gross supply still stands at \$21.6B YTD, +53% more vs. 2021's full-year \$14.1B issuance.**

**OCT. 2022 Index-eligible NET SUPPLY breakdown:**

- **UMEZZ -0.234 B (- 1.77% MoM)**
  - Front-pay M1 variants at the top of the capital stack saw steady paydown percentages as CPRs settle down at baseline turnover levels.
- **LMEZZ -0.545 B (- 3.16% MoM)**
  - FHLMC's latest STACR tender offer provided \$317M in seasoned M2/M3 principal retirements, with total float continuing to decline through 2016 levels.
- **SUB -0.013 B (- 0.05% MoM)**
  - The B-variant cohort should only see modest float fluctuations in the near term as new issue appears to be limited to CAS B1s for now, while only a handful of Bs and B1s are paying down and the rest of the SUB cohort is still somewhat distant from principal windows/optional redemption dates opening up.

**CRTx® AGG (eligible universe as of 10/31/22)**

BENCHMARK GSE CRT SUPPLY TECHNICALS (\$MM)					
Month End	Float <sub>1</sub>	Gross Supply <sub>2</sub>	Pay-downs <sub>1</sub>	Write-downs <sub>1</sub>	Net Supply <sub>1</sub> % Δ MoM
2018-Jan	39,939.51	900.00	434.89	.40	.00 +464.71 +1.18%
2018-Feb	41,017.07	1,494.06	416.25	.25	.00 +1,077.56 +2.70%
2018-Mar	42,628.56	1,992.02	380.11	.42	.00 +1,611.49 +3.93%
2018-Apr	42,241.57	.00	386.48	.51	.00 -386.99 -0.91%
2018-May	42,864.97	1,050.03	426.17	.45	.00 +623.40 +1.48%
2018-Jun	43,499.75	1,050.00	414.55	.67	.00 +634.78 +1.48%
2018-Jul	43,951.18	939.46	487.56	.47	.00 +451.43 +1.04%
2018-Aug	44,461.53	982.68	471.84	.49	.00 +510.35 +1.16%
2018-Sep	44,818.31	820.00	463.05	.18	.00 +356.78 +0.80%
2018-Oct	46,292.11	1,918.19	443.93	.46	.00 +1,473.80 +3.29%
2018-Nov	46,818.17	921.89	395.46	.36	.00 +526.06 +1.14%
2018-Dec	46,413.76	.00	404.16	.25	.00 -404.41 -0.86%
2019-Jan	46,772.85	714.00	354.36	.55	.00 +359.09 +0.77%
2019-Feb	48,032.92	1,600.30	339.91	.32	.00 +1,260.07 +2.69%
2019-Mar	49,316.49	1,610.43	326.50	.36	.00 +1,283.57 +2.67%
2019-Apr	49,790.89	857.33	382.45	.48	.00 +474.40 +0.96%
2019-May	49,953.47	615.00	451.76	.67	.00 +162.58 +0.33%
2019-Jun	49,366.80	.00	585.65	1.02	.00 -586.67 -1.17%
2019-Jul	50,468.73	1,786.82	684.96	-.08	.00 +1,101.93 +2.23%
2019-Aug	50,665.72	993.16	795.69	.48	.00 +196.99 +0.39%
2019-Sep	50,254.38	626.00	1,036.70	.64	.00 -411.34 -0.81%
2019-Oct	50,975.91	1,882.85	1,160.69	.63	.00 +721.53 +1.44%
2019-Nov	51,029.16	1,430.31	1,376.63	.42	.00 +53.25 +0.10%
2019-Dec	49,686.84	.00	1,341.71	.61	.00 -1,342.32 -2.63%
2020-Jan	50,375.85	1,827.24	1,137.97	.27	.00 +689.01 +1.39%
2020-Feb	52,372.79	3,041.29	1,043.58	.78	.00 +1,996.94 +3.96%
2020-Mar	52,342.28	1,006.00	1,035.91	.60	.00 -30.51 -0.06%
2020-Apr	50,951.32	.00	1,390.53	.43	.00 -1,390.96 -2.66%
2020-May	48,983.31	.00	1,967.51	.50	.00 -1,968.01 -3.86%
2020-Jun	46,718.91	.00	2,263.91	.49	.00 -2,264.40 -4.62%
2020-Jul	46,681.77	1,941.00	1,977.70	.44	.00 -37.14 -0.08%
2020-Aug	46,076.35	1,088.00	1,693.03	.39	.00 -605.42 -1.30%
2020-Sep	45,735.37	680.00	1,020.66	.31	.00 -340.98 -0.74%
2020-Oct	46,269.82	1,086.00	551.37	.18	.00 +534.45 +1.17%
2020-Nov	46,924.62	1,080.00	425.03	.16	.00 +654.80 +1.42%
2020-Dec	47,148.36	790.00	565.97	.30	.00 +223.74 +0.48%
2021-Jan	47,277.42	970.00	840.51	.43	.00 +129.06 +0.27%
2021-Feb	47,729.91	1,386.00	933.14	.38	.00 +452.49 +0.96%
2021-Mar	47,872.55	1,188.00	1,045.16	.20	.00 +142.64 +0.30%
2021-Apr	47,615.04	950.00	1,207.50	.02	.00 -257.51 -0.54%
2021-May	46,556.67	.00	1,058.11	.25	.00 -1,058.37 -2.22%
2021-Jun	46,213.56	550.00	892.87	.23	.00 -343.11 -0.74%
2021-Jul	46,542.26	1,186.00	857.10	.20	.00 +328.70 +0.71%
2021-Aug	45,645.02	.00	896.92	.32	.00 -897.24 -1.93%
2021-Sep	44,395.83	1,071.00	977.13	.08	1,342.98 -1,249.19 -2.74%
2021-Oct	46,136.81	2,686.01	944.99	.04	.00 +1,740.98 +3.92%
2021-Nov	44,428.70	1,276.00	893.50	.37	2,090.24 -1,708.11 -3.70%
2021-Dec	46,303.37	2,855.84	978.99	.218	.00 +1,874.67 +4.22%
2022-Jan	48,187.25	2,859.26	974.26	1.13	.00 +1,883.88 +4.07%
2022-Feb	48,758.20	3,159.89	879.88	.58	1,708.47 +570.95 +1.18%
2022-Mar	50,947.78	3,057.61	867.66	.37	.00 +2,189.58 +4.49%
2022-Apr	53,065.96	2,984.38	865.97	.24	.00 +2,118.18 +4.16%
2022-May	54,707.01	2,471.03	829.79	.19	.00 +1,641.05 +3.09%
2022-Jun	54,305.82	2,176.38	689.16	.38	1,888.03 -401.19 -0.73%
2022-Jul	52,868.64	1,493.11	598.48	.17	2,331.64 -1,437.18 -2.65%
2022-Aug	52,267.27	1,166.30	509.11	.14	1,258.41 -601.37 -1.14%
2022-Sep	54,074.84	2,273.03	465.18	.28	.00 +1,807.57 +3.46%
2022-Oct	53,282.61	.00	474.53	.27	317.43 -792.23 -1.47%

1-Current Face

2-Original face issued based on CAS/STACR deal closing dates

Sources: FNMA, FHLMC, MF&amp;Co

[10/31/2022 Index Rebalancing Update \(continued\)](#)**Latest Deal Performance**

CRT credit performance was steady to moderately improved in the October statements with MoM with pre-COVID late-stage DQs maintaining their steady declining trend and early stage DQs staying generally low (but slightly higher vs. the beginning of the year), while post-COVID onset DQs remain low. Structurally, writedowns/shortfalls were still minimal, CPRs slowed, and C/Es held steady to up slightly.

**Credit**

- Pre-COVID total DQs were slightly better overall, with nominal 180+ bucket DQ counts/dollars still shrinking in the 8%-10% MoM on average, while early stage DQs/<180DQs were still in context with pre-COVID levels, but slightly higher vs. the beginning of the year (a mild inflection?).
- CRTx® 1st Loss Sub-Index (1st loss Bs) writedowns/int. shortfalls for October:
  - 3.5 bps hit to 1<sup>st</sup> Loss Sub-Index:
    - 3.6 bps to Fxd. Sev. Sub-Index component (vs. -4.7 bps in Sep.)

**Paydowns**

- The CRTx® AGG's 1.46% Oct. UPB paydown + tender percentage was higher vs. September's paydown-only 0.88%:
  - MTD CRTx® AGG return attribution from paydowns/retirements: +0.5 bps
- Oct. Index Paydowns/Tenders \$792M**

○ UMEZZ (Mostly M1s):	<b>\$234M</b>
○ LMEZZ (M2s/old M3s):	<b>\$545M</b>
▪ Paydowns	\$227M
▪ Tenders	\$317M
○ SUB (Bs/B1s/B2s):	<b>\$ 13M</b>
- STACR factor speeds were down about 1CPR/-10% on average, with seasoned reference pool CPRs generally in the mid single-digits to low-teens CPR (CAS likely following on a 1-month lag).

**Structure**

- Class C/Es minimally improved MoM.
- October LIBOR resets +50bps, SOFR resets +71bps. **YTD, LIBOR & SOFR resets are now up 349bps & 294bps, respectively.**

- 4 pre-COVID reference pools started passing their DQ tests in October, leaving ten 2018-2020 pre-COVID REMICs still failing.
- Call Watch> STACR 2015-HQ1 – 10% clean up threshold approaching:
  - Oct. ref. pool factor: 10.03%
  - Only one B class left (\$48M current)
  - \$1.7B ref. pool UPB
  - No sponsor optional redemption date
  - 3/2025 maturity date

**Relative Value Thoughts****Ideas**

For the rest of the year, risk likely remains biased to the adverse side as market headwinds continue to weigh on structured finance overall, and the upcoming holidays and typical end-of-year risk taking preferences may not necessarily be helpful.

On the other hand, mortgage credit fundamentals still look supportive in the near term, despite housing values tempering and sales activity continuing to decline. Coupon/static yield levels across the capital stack are now up the 6.0%-13.0%+, well in context nominally with IG/HY, and things are certainly cheaper than last month, but mark-to-market and liquidity is still a tangible challenge for market participants.

Things are certainly cheaper than last month, but at this juncture, maintaining sector weight and clipping rising coupons may be the prudent strategy. Opportunistically, these ongoing thematic suggestions remain if needed:

- ❖ Seasoned: Pre-2018 M2/M3s & B/B1/B2s, whenever you can find them.
- ❖ New Issue: Continue to take your pick at current rating-equivalent yields which have generally followed IG/HY. CRT stack options have a liquidity give to corporates, but still offer:
  - Floater benefits including coupon upside, lower inherent volatility vs. the curve, and monthly interest+principal paydown payments.
  - Housing-collateralized mortgage borrower risk vs. commercial credit risk.

CRTx® Index Suite Total Return Performance: Month-End Matrix 10/31/2022

CRTx® (Credit Risk Transfer Return Tracking Index) Return Summary							
	Index Level	RETURNS					
		Period			Annualized		
		MTD	QTD	YTD	1-YR	3-YR	As of Date
Aggregate	159.63	-1.01%	-1.01%	-2.17%	-1.74%	2.31%	10-31-22
Upper Mezzanine	121.78	-0.64%	-0.64%	-1.57%	-1.45%	0.87%	10-31-22
Lower Mezzanine	172.65	-0.40%	-0.40%	-0.46%	-0.11%	2.09%	10-31-22
Subordinate	228.33	-1.68%	-1.68%	-4.31%	-3.74%	1.52%	10-31-22
Upper/Lower Mezz.	153.02	-0.50%	-0.50%	-0.64%	-0.31%	2.13%	10-31-22
Lower Mezz./Sub.	180.78	-1.14%	-1.14%	-2.21%	-1.76%	2.13%	10-31-22
CAS	158.13	-1.01%	-1.01%	-0.64%	-0.01%	2.76%	10-31-22
STACR	158.32	-1.01%	-1.01%	-3.21%	-2.91%	2.00%	10-31-22
LLTV	158.93	-1.13%	-1.13%	-2.05%	-1.64%	2.26%	10-31-22
HLTV	142.12	-0.78%	-0.78%	-2.42%	-1.94%	2.35%	10-31-22
Upper Mezzanine	2022 97.87	-0.57%	-0.57%	-2.13%	-	-	10-31-22
	2021 99.14	-0.99%	-0.99%	-1.54%	-1.42%	-	10-31-22
	2020	-	-	-	-	-	10-31-22
	2019	-	-	-	-	-	10-31-22
	2018	-	-	-	-	-	10-31-22
	2017	-	-	-	-	-	10-31-22
	2016	-	-	-	-	-	10-31-22
	2015	-	-	-	-	-	10-31-22
	<=2014	-	-	-	-	-	10-31-22
Lower Mezzanine	2022 93.65	-0.06%	-0.06%	-6.35%	-	-	10-31-22
	2021 96.73	-1.93%	-1.93%	-6.47%	-6.38%	-	10-31-22
	2020 102.66	-0.01%	-0.01%	1.64%	1.87%	-	10-31-22
	2019 115.81	1.15%	1.15%	2.54%	2.75%	3.23%	10-31-22
	2018 117.27	-0.91%	-0.91%	1.49%	2.15%	3.05%	10-31-22
	2017 133.31	0.23%	0.23%	2.03%	2.47%	3.05%	10-31-22
	2016 154.66	0.45%	0.45%	4.29%	4.44%	3.51%	10-31-22
	2015 143.17	0.34%	0.34%	3.71%	4.06%	2.92%	10-31-22
	<=2014 172.03	0.15%	0.15%	2.46%	3.01%	3.21%	10-31-22
Subordinate	2022 94.17	-1.34%	-1.34%	-5.83%	-	-	10-31-22
	2021 93.71	-2.82%	-2.82%	-12.54%	-11.85%	-	10-31-22
	2020 93.85	-1.47%	-1.47%	-2.97%	-2.84%	-	10-31-22
	2019 132.61	-1.41%	-1.41%	0.74%	1.16%	3.58%	10-31-22
	2018 127.37	-1.72%	-1.72%	-0.08%	0.41%	2.94%	10-31-22
	2017 159.61	-1.21%	-1.21%	1.09%	1.98%	2.87%	10-31-22
	2016 201.91	-0.45%	-0.45%	2.21%	3.62%	3.44%	10-31-22
	2015 214.55	0.21%	0.21%	2.72%	3.45%	1.93%	10-31-22
	<=2014						10-31-22

CRTx® Index Suite Total Return Performance: Month-End Matrix 10/31/2022 (continued)

CRTx® RNI™ (Rolling New Issues*) Return Summary										
RETURNS										
Index Level vs. Date	Period						Annualized			As of Date
	DoD	WoW	MoM	MTD	QTD	YTD	1-YR	3-YR	10-31-19	
<b>CRTx® RNI™ Aggregate</b>	<b>166.79</b>	<b>0.05%</b>	-0.39%	-0.92%	-0.92%	-0.92%	-6.37%	-5.97%	1.61%	10-31-22
Upper Mezzanine	<b>122.48</b>	<b>0.01%</b>	-0.36%	-0.61%	-0.61%	-0.61%	-1.63%	-1.50%	0.73%	10-31-22
Lower Mezzanine	<b>179.58</b>	<b>0.11%</b>	-0.58%	-0.94%	-0.94%	-0.94%	-6.52%	-6.43%	0.60%	10-31-22
Subordinate	<b>232.74</b>	<b>0.07%</b>	-0.28%	-1.45%	-1.45%	-1.45%	-9.74%	-9.07%	0.30%	10-31-22
LLTV	<b>166.42</b>	<b>0.03%</b>	-0.46%	-0.97%	-0.97%	-0.97%	-6.30%	-5.73%	1.80%	10-31-22
HTLV	<b>147.99</b>	<b>0.10%</b>	-0.21%	-0.81%	-0.81%	-0.81%	-6.63%	-6.63%	1.41%	10-31-22

\* Most recently issued securities within a "rolling" 12-month window

CRTx® (Credit Risk Transfer Return Tracking Index) Return Summary							
RETURNS							
Special Sub-Indexes:	Index	Period			Annualized		As of Date
	Level	MTD	QTD	YTD	1-YR	3-YR	
Fxd Severity - Type I*	Custom Client Access Only	<b>0.42%</b>	0.42%	2.35%	3.03%	3.72%	10/31/22
Fxd Severity - Type II*		<b>-0.19%</b>	-0.19%	3.41%	3.74%	3.04%	10/31/22
Actual Loss		<b>-1.06%</b>	-1.06%	-2.41%	-1.98%	2.36%	10/31/22
CAS Fxd Severity - Type I*		<b>0.45%</b>	0.45%	2.19%	3.04%	3.35%	10/31/22
STACR Fxd Severity - Type I*		<b>0.40%</b>	0.40%	2.48%	3.03%	4.05%	10/31/22
CAS Fxd Severity - Type II*		<b>-0.41%</b>	-0.41%	2.86%	3.20%	2.98%	10/31/22
STACR Fxd Severity - Type II*		<b>0.50%</b>	0.50%	5.04%	5.37%	3.34%	10/31/22
CAS Act. Loss		<b>-1.07%</b>	-1.07%	-0.86%	-0.22%	2.81%	10/31/22
STACR Act. Loss		<b>-1.06%</b>	-1.06%	-3.42%	-3.13%	2.05%	10/31/22

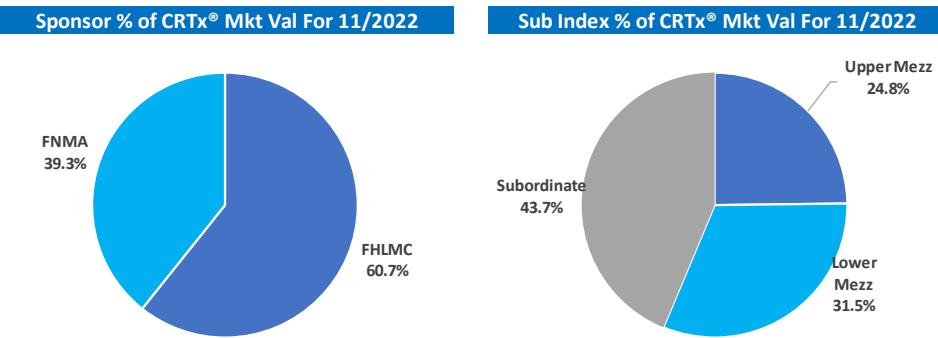
\* Type I - No Credit Event Relief Provisions For Natural Disaster/Casualty Events

Type II - Some Credit Event Relief Provisions For Natural Disaster/Casualty Events

## \* CRTx® Aggregate Index and Sub Index Constituency

Aggregate	Upper Mezzanine	Lower Mezzanine	Subordinate	LLTV	HTLV
All Index-Eligible FNMA CAS shelf and FHLMC STACR shelf At-Issuance Classes	<u>FNMA CAS Shelf:</u> M1 Classes  <u>FHLMC STACR Shelf:</u> M1 Classes (in M1/M2 structures) M1/M2 Classes (in M1/M2/M3 structures)	<u>FNMA CAS Shelf:</u> M2 Classes  <u>FHLMC STACR Shelf:</u> M2 Classes (in M1/M2 structures) M3 Classes (in M1/M2/M3 structures)	<u>FNMA CAS Shelf:</u> All B Classes  <u>FHLMC STACR Shelf:</u> All B Classes	All Index-Eligible FNMA CAS shelf and FHLMC STACR shelf At-Issuance Classes from deals referencing Low Loan to Value (LLTV) loans	All Index-Eligible FNMA CAS shelf and FHLMC STACR shelf At-Issuance Classes from deals referencing High Loan to Value (HTLV) loans
Vintage Sub Index constituency determined by deal/security closing year (except 2013/2014 which are grouped as "2014").					

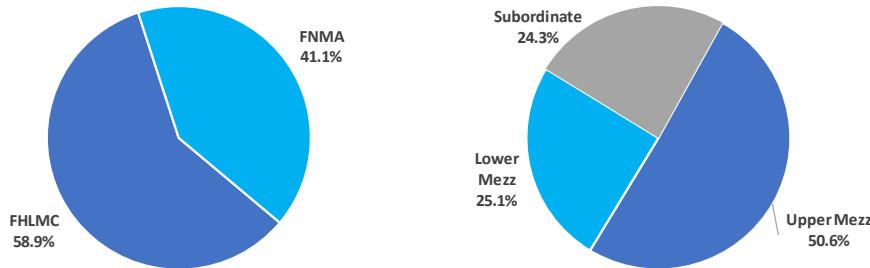
RNI™ (Rolling New Issues) versions of the standard CRTx® Aggregate and Sub-Indexes have dynamic constituent baskets made up exclusively of the most recently issued securities within a "rolling" 12-month look-back window.

CRTx® Index Basket History: Select Metrics As of 10/31/2022 Rebalancing

CRTx® AGG								
MONTH END CLOSINGS			BEGINNING MONTH BASKET					
Calculation Month	INDEX VALUE	Month to Date Total Return	# of Constituents	Beg Month UPB	Beg Month Total \$ Market Value	Security Mkt Value	W Avg Adj Beg Month	
							Current Coupon	WTD Avg Cpn Margin
Dec-2019	150.73	0.65%	233	51,029,160,871	53,690,414,024	105.22	5.23	352
Jan-2020	152.55	1.21%	228	49,686,844,416	52,466,578,192	105.60	5.35	356
Feb-2020	152.31	-0.16%	232	50,375,851,983	53,580,028,930	106.36	5.20	354
Mar-2020	113.64	-25.39%	240	52,372,791,379	55,277,944,042	105.55	5.11	348
Apr-2020	123.83	8.97%	234	52,342,281,038	40,769,683,770	77.89	4.45	351
May-2020	132.53	7.03%	229	50,951,320,646	42,820,320,693	84.04	4.03	355
Jun-2020	144.50	9.04%	218	48,983,309,963	43,695,592,838	89.21	3.77	360
Jul-2020	143.94	-0.39%	214	46,718,914,995	45,227,362,482	96.81	3.83	365
Aug-2020	146.37	1.69%	217	46,681,772,649	44,843,108,762	96.06	3.87	370
Sep-2020	147.99	1.11%	217	46,076,349,850	44,862,684,449	97.37	3.92	374
Oct-2020	148.99	0.68%	220	45,735,370,315	44,865,412,741	98.10	3.90	375
Nov-2020	151.26	1.52%	224	46,269,817,211	45,566,172,083	98.48	3.93	378
Dec-2020	154.14	1.91%	228	46,924,624,650	46,772,793,230	99.68	3.93	378
Jan-2021	155.99	1.20%	230	47,148,362,895	47,722,154,982	101.22	3.92	377
Feb-2021	156.91	0.59%	232	47,277,423,099	48,281,726,799	102.12	3.90	377
Mar-2021	156.58	-0.21%	235	47,729,907,668	48,857,887,219	102.36	3.87	376
Apr-2021	158.53	1.25%	236	47,872,554,649	48,747,702,476	101.83	3.87	378
May-2021	159.34	0.51%	238	47,615,037,767	48,936,401,435	102.78	3.89	380
Jun-2021	160.42	0.68%	235	46,556,670,751	47,976,744,707	103.05	3.90	382
Jul-2021	160.88	0.29%	239	46,213,562,998	47,807,083,563	103.45	3.91	383
Aug-2021	161.28	0.25%	242	46,542,264,071	48,139,580,923	103.43	3.91	383
Sep-2021	162.16	0.55%	240	45,645,024,894	47,210,049,253	103.43	3.93	385
Oct-2021	162.45	0.18%	243	44,395,832,151	46,008,939,674	103.63	3.93	385
Nov-2021	162.69	0.15%	250	46,136,808,535	47,705,750,833	103.40	3.92	384
Dec-2021	163.17	0.30%	253	44,428,702,439	45,850,865,730	103.20	3.97	389
Jan-2022	163.27	0.06%	264	46,303,372,955	47,721,518,712	103.06	3.92	383
Feb-2022	161.64	-1.00%	272	48,187,246,457	49,476,212,584	102.68	3.86	378
Mar-2022	159.97	-1.04%	280	48,758,202,585	49,320,610,808	101.15	3.93	380
Apr-2022	160.67	0.44%	285	50,947,780,611	50,882,869,681	99.87	4.14	386
May-2022	159.01	-1.03%	291	53,065,956,573	53,054,131,960	99.98	4.34	386
Jun-2022	157.45	-0.98%	297	54,707,014,476	53,912,547,204	98.55	4.66	388
Jul-2022	157.87	0.27%	305	54,305,816,176	52,723,290,518	97.09	5.21	399
Aug-2022	162.94	3.21%	311	52,868,638,801	51,179,435,509	96.81	5.87	406
Sep-2022	161.27	-1.03%	316	52,267,272,868	51,923,167,525	99.34	6.34	407
Oct-2022	159.63	-1.01%	325	54,074,843,112	52,881,044,458	97.79	6.64	407
Nov-2022			325	53,282,606,013	51,262,793,323	96.21	7.30	410

CRTx® RNI™ Index Basket History: Select Metrics As of 10/31/2022 Rebalancing

Sponsor % of CRTx® RNI™ Mkt Val For 11/2022      Sub Index % of CRTx® RNI™ Mkt Val For 11/2022



CRTx® RNI™ AGG									
MONTH END CLOSINGS			BEGINNING MONTH BASKET						
Calculation Month	INDEX VALUE	Month to Date Total Return	# of Constituents	Beg Month UPB	Beg Month Total \$ Market Value	W Avg Adj Beg Month Security Mkt Value	WTD Avg Current Coupon	WTD Avg Cpn Margin	
Dec-2019	161.24	0.96%	53	11,183,706,619	11,434,402,160	102.24	4.43	272	
Jan-2020	163.27	1.26%	52	10,810,525,676	11,128,255,837	102.94	4.58	279	
Feb-2020	163.04	-0.14%	54	11,750,620,247	12,144,811,071	103.36	4.32	266	
Mar-2020	123.73	-24.11%	57	13,219,029,124	13,479,658,957	101.97	4.09	246	
Apr-2020	120.70	-2.45%	55	12,793,770,386	9,865,262,294	77.11	3.43	249	
May-2020	134.53	11.46%	51	11,841,276,956	8,721,408,098	73.65	3.01	252	
Jun-2020	151.62	12.71%	46	10,917,819,539	8,842,509,887	80.99	2.69	253	
Jul-2020	153.41	1.17%	45	10,409,152,540	9,432,905,082	90.62	2.78	259	
Aug-2020	154.49	0.71%	46	10,724,189,826	9,890,825,093	92.23	2.99	282	
Sep-2020	157.58	2.00%	47	10,980,427,286	10,237,992,004	93.24	3.19	301	
Oct-2020	158.61	0.66%	48	11,105,630,257	10,559,393,889	95.08	3.25	310	
Nov-2020	161.83	2.03%	47	10,696,965,880	10,283,123,737	96.13	3.47	333	
Dec-2020	166.71	3.02%	46	10,736,337,604	10,542,306,038	98.19	3.53	339	
Jan-2021	168.67	1.18%	50	11,324,184,451	11,415,597,441	100.81	3.50	337	
Feb-2021	169.49	0.48%	47	10,504,416,039	10,712,665,142	101.98	3.61	350	
Mar-2021	167.93	-0.92%	39	9,048,558,462	9,296,466,342	102.74	3.84	377	
Apr-2021	170.69	1.64%	38	8,978,749,172	9,107,517,591	101.43	3.81	376	
May-2021	172.19	0.88%	41	9,588,703,205	9,840,125,130	102.62	3.79	375	
Jun-2021	174.63	1.42%	40	9,373,273,707	9,681,506,748	103.29	3.81	378	
Jul-2021	175.45	0.47%	44	9,738,420,034	10,156,250,987	104.29	3.78	374	
Aug-2021	175.78	0.19%	42	9,659,687,165	10,041,577,171	103.95	3.55	349	
Sep-2021	177.19	0.80%	39	8,836,801,107	9,156,649,664	103.62	3.40	335	
Oct-2021	177.37	0.10%	39	9,275,157,362	9,611,457,885	103.63	3.25	320	
Nov-2021	177.29	-0.05%	44	11,029,258,671	11,264,989,273	102.14	3.12	307	
Dec-2021	178.13	0.47%	44	11,364,521,191	11,523,394,460	101.40	3.14	309	
Jan-2022	176.91	-0.69%	52	13,499,939,498	13,679,507,404	101.33	3.06	301	
Feb-2022	173.35	-2.01%	57	15,396,876,140	15,433,974,963	100.24	3.01	296	
Mar-2022	170.35	-1.73%	62	17,234,456,472	16,913,526,465	98.14	3.12	307	
Apr-2022	170.82	0.28%	67	19,128,995,434	18,549,644,816	96.97	3.38	329	
May-2022	168.30	-1.48%	72	21,068,208,560	20,517,088,834	97.38	3.64	336	
Jun-2022	165.20	-1.84%	80	23,394,497,238	22,433,577,349	95.89	4.00	343	
Jul-2022	165.70	0.30%	85	24,884,587,943	23,480,348,016	94.36	4.49	358	
Aug-2022	171.79	3.68%	89	25,180,986,750	23,907,838,996	94.94	5.17	365	
Sep-2022	168.34	-2.01%	95	26,170,925,042	25,675,201,828	98.11	5.82	365	
Oct-2022	166.79	-0.92%	100	27,235,965,638	26,187,236,662	96.15	6.00	372	
Nov-2022			92	24,523,836,681	23,324,904,484	95.11	6.75	376	



Latest Deal Performance Metrics: October 2022 Monthly Statements – CAS (continued)

CRTx® AGG Index Constituent Performance Data (Oct-2022 Monthly Statements)											CPR	Net Credit Event Test									
Deal	Loss	Pool	Form	Structure (paid-off)	Early Redemption Option (Yrs)	Maturity (Yrs)	Rem. Early Redemp. Option (Yrs)	Rem. Maturity (Yrs)	Delinquency Pipeline						Total	MoM % Chg	1mth	Pass	Pass	Pass	Pass
									30d	60d	90d	120d	150d	180d+	Total	MoM % Chg	1mth	Pass	Pass	Pass	Pass
CAS 2022-R06	ACT	LLTV	REMIC	1M1-1M2-1B1-1B2	5.0	20.0	4.6	19.6	0.41	0.07	0.03	0.02	0.01	-	0.54	-8%	6%	NA	YES	NA	YES
CAS 2022-R07	ACT	LLTV	REMIC	1M1-1M2-1B1-1B2	5.0	20.0	4.7	19.7	0.41	0.07	0.05	0.02	-	-	0.55	8%	7%	NA	YES	NA	YES
CAS 2022-R08	ACT	LLTV	REMIC	1M1-1M2-1B1	5.0	20.0	4.8	19.8	0.36	0.07	0.02	0.00	-	-	0.45	0%	6%	NA	YES	NA	YES
CAS 2022-R09	ACT	HLTV	REMIC	2M1-2M2-2B1	5.0	20.0	4.9	19.9	0.29	0.00	-	-	-	-	0.29	3%	NA	YES	NA	YES	



Latest Deal Performance Metrics: October 2022 Monthly Statements – STACR (continued)

CRTx® AGG Index Constituent Performance Data (Oct-2022 Monthly Statements)										CPR	Net Credit Event Test				Cum Min CE Loss DQ Test						
Deal	Loss	Pool	Form	Structure (paid off)	Early Redemption Option (Yrs)	Maturity (Yrs)	Rem. Early Redemp. Option (Yrs)	Rem. Maturity (Yrs)	Delinquency Pipeline						Total	MoM	1mth	Pass	Pass	Pass	Pass
									30d	60d	90d	120d	150d	180d+	DQ%	% Chg					
STACR 2021-DNA6	ACT	LLTV	REMIC	M1-M2-B1-B2	5.0	20.0	4.0	19.0	0.32	0.05	0.03	0.02	0.02	0.06	0.51	-1%	5%	NA	NO	YES	YES
STACR 2021-DNA7	ACT	LLTV	REMIC	M1-M2-B1-B2	5.0	20.0	4.1	19.1	0.36	0.06	0.04	0.03	0.02	0.10	0.61	8%	5%	NA	YES	YES	YES
STACR 2021-HQA1	ACT	HLTV	REMIC	M1-M2-B1-B2	12.5		10.8		0.51	0.10	0.08	0.04	0.03	0.27	1.04	5%	7%	NA	YES	YES	YES
STACR 2021-HQA2	ACT	HLTV	REMIC	M1-M2-B1-B2	12.5		11.2		0.41	0.10	0.06	0.08	0.19	0.84	-2%	6%	NA	YES	YES	YES	
STACR 2021-HQA3	ACT	HLTV	REMIC	M1-M2-B1-B2	5.0	20.0	3.9	18.9	0.42	0.12	0.06	0.09	0.18	0.87	5%	5%	NA	YES	YES	YES	
STACR 2021-HQA4	ACT	HLTV	REMIC	M1-M2-B1-B2	5.0	20.1	4.2	19.2	0.42	0.13	0.06	0.10	0.16	0.87	10%	5%	NA	YES	YES	YES	
STACR 2022-DNA1	ACT	LLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.0	4.3	19.3	0.45	0.10	0.05	0.05	0.09	0.74	-9%	5%	NA	YES	YES	YES	
STACR 2022-DNA2	ACT	LLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.1	4.3	19.4	0.53	0.11	0.06	0.07	0.08	0.85	4%	6%	NA	YES	YES	YES	
STACR 2022-DNA3	ACT	LLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.0	4.5	19.5	0.43	0.10	0.06	0.08	0.03	0.70	9%	5%	NA	YES	YES	YES	
STACR 2022-DNA4	ACT	LLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.0	4.6	19.6	0.43	0.08	0.05	0.07	0.02	0.65	10%	5%	NA	YES	YES	YES	
STACR 2022-DNA5	ACT	LLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.0	4.7	19.7	0.44	0.10	0.06	0.05	-	0.65	0%	4%	NA	YES	YES	YES	
STACR 2022-DNA6	ACT	LLTV	REMIC	M1A-M1B-M2	5.0	20.0	4.9	19.9	0.36	0.06	-	0.00	-	0.42	9%	NA	YES	YES	YES		
STACR 2022-DNA7	ACT	LLTV	REMIC	M1A-M1B-M2	5.0	20.0	4.9	19.9	0.46	-	-	0.00	-	0.46	5%	NA	YES	YES	YES		
STACR 2022-HQA1	ACT	HLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.0	4.4	19.4	0.54	0.14	0.07	0.11	0.07	0.93	-4%	4%	NA	YES	YES	YES	
STACR 2022-HQA2	ACT	HLTV	REMIC	M1A-M1B-M2	5.0	20.0	4.8	19.8	0.46	0.11	0.08	0.04	-	0.69	17%	4%	NA	NO	YES	YES	
STACR 2022-HQA3	ACT	HLTV	REMIC	M1A-M1B-M2	5.0	20.0	4.8	19.8	0.40	0.07	0.02	0.00	-	0.49	32%	3%	NA	YES	YES	YES	

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