

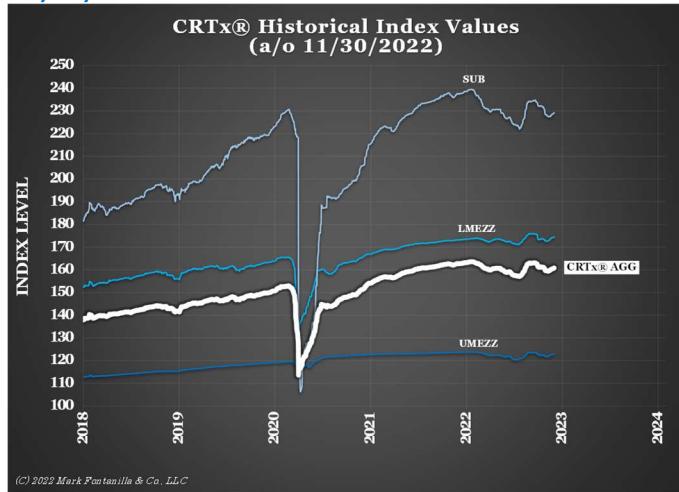
CRTx®

Credit Risk Transfer Return Tracking Index

www.markfontanilla.com/crtx-index

CRTx® Index Rebalancing Update

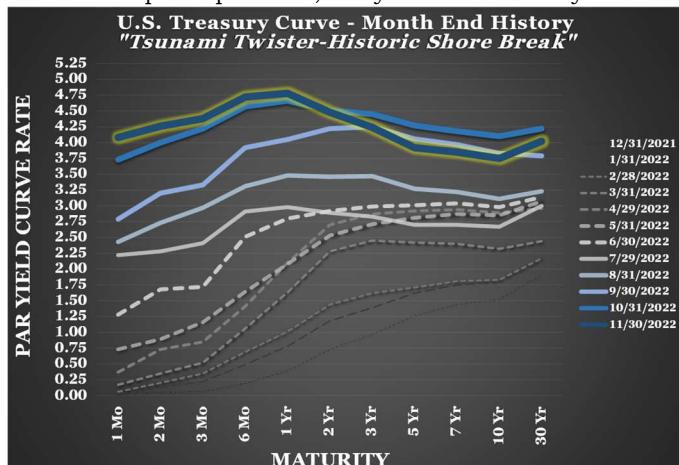
11/30/2022



Sector Musings

“Tsunami Curve”- Shore Break

The gyrations of 2022's Fed-influenced “tsunami twister” curve has reached significant levels as the 2y/10y spread broke below -70bps in the last days of November, a level not seen since the early '80s inflation/recession. What is unique this time around is not only the starting point off historically low rates, but the ebb and flow of the curve along the way (see below) as the belly/long end rise and fall, while the front end marches higher, apparently on different paths. The key here is that the Fed is influencing both the short and long ends: Fed Funds hikes on one end, and a still-\$8T+ QE Treasury/MBS bond balance sheet on the other end holding meaningful supply back. This technical “shore break” effect certainly makes valuation challenging, especially in structured spread products, but yields are at heady levels...



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The CRTx® December basket UPB falls 0.84% MoM to \$52.8B, with a total market value of \$50.8B. Constituent count marginally decreases to 323 securities from 123 deals...Benchmark GSE CRT float shrank -\$0.4B/-0.84% MoM, to \$52.8B in UPB...

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CRT credit performance in the November statements showed October trends continuing, with pre-COVID late-stage DQs continuing to shrink, while early stage DQs edging slightly higher MoM...Structurally, writedowns/shortfalls were once again muted, CPRs slowed further, and C/Es were steady to slightly better...

Relative Value Thoughts

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With just one month left to go in 2022, structured product markets remain challenging, despite Fed Chair Powell hinting at possibly smaller rate hikes in the near future and broader bond and stock markets gaining back some lost ground...For CRT, holding sector weight and clipping still-rising coupons remains the cautious bet...

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[11/30/2022 Index Rebalancing Update \(continued\)](#)CRTx® Aggregate Index

Nov 2022 CRTx® AGG Tot Ret	+61 bps
Index Month-End Closing Value	160.61
Price Attribution	-3 bps
Paydown Attribution	+0 bps
Cpn Accr&Pmt Attribution	+64 bps
Writedown+Int Shortfall Attribution	-0.09 bps
Excess Return	+31 bps
Volatility (Annualized)	0.88%
UPB Paydown %	0.84%
QTD Total Return	-0.41%
YTD Total Return	-1.57%

CRTx® AGG Rebalancing For Dec 2022

As of 11/30/2022

December 2022 Aggregate Basket (w/MoM Δ):

- Beg. UPB (\$B): **\$52.83** -0.8%
- Beg. Market Value (\$B): **\$50.79** -0.9%
- Constituents: **323** -2
- WAvg Constituent Value: **96.14** -0.07 pts
- WAvg Constituent Coupon: **7.80%** +50 bps

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

(-) STACR2015-HQ1 B

(-) STACR 2020-DNA4 M2

* 0.00% of Beg. Index Market Value

CRTx® Mkt Val Breakdown: 12/2022 Basket				
Deal Yr	Aggregate	UMEZZ	LMEZZ	SUB
All	100.0%	24.8%	31.5%	43.7%
2022	39.0%	21.0%	9.7%	8.2%
2021	21.8%	3.7%	7.5%	10.6%
2020	10.4%	0.0%	2.7%	7.7%
2019	6.1%	0.0%	0.6%	5.6%
2018	6.2%	0.0%	1.9%	4.3%
2017	6.8%	0.0%	2.6%	4.3%
2016	3.9%	0.0%	2.1%	1.8%
2015	2.6%	0.0%	1.4%	1.2%
<=2014	3.1%	0.0%	3.1%	0.0%

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

Nov 2022 CRTx® RNI™ AGG Tot Ret	+109 bps
Index Month-End Closing Value	168.61
Price Attribution	+48 bps
Paydown Attribution	+1 bps
Cpn Accr&Pmt Attribution	+60 bps
Writedown+Int Shortfall Attribution	+0 bps
Excess Return	+79 bps
Volatility (Annualized)	0.99%
UPB Paydown %	0.65%
QTD Total Return	0.16%
YTD Total Return	-5.34%

CRTx® RNI™ AGG Rebalancing For Dec 2022

As of 11/30/2022

December 2022 Aggregate Basket (w/MoM Δ):

- Beg. UPB (\$B): **\$23.11** -5.8%
- Beg. Market Value (\$B): **\$22.13** -5.1%
- Constituents: **88** -4
- WAvg Constituent Value: **95.80** +0.69 pts
- WAvg Constituent Coupon: **7.30%** +55 bps

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

(-) STACR 2021-DNA7 M1/M2/B1/B2

* 0.00% of Beg. Index Market Value

CRTx® RNI™ Mkt Val Breakdown: 12/2022 Basket				
Deal Yr	Aggregate	UMEZZ	LMEZZ	SUB
All	100.0%	51.5%	25.6%	22.9%
2022	89.5%	48.3%	22.3%	18.9%
2021	10.5%	3.2%	3.3%	4.0%
2020	0.0%	0.0%	0.0%	0.0%
2019	0.0%	0.0%	0.0%	0.0%
2018	0.0%	0.0%	0.0%	0.0%
2017	0.0%	0.0%	0.0%	0.0%
2016	0.0%	0.0%	0.0%	0.0%
2015	0.0%	0.0%	0.0%	0.0%
<=2014	0.0%	0.0%	0.0%	0.0%

11/30/2022 Index Rebalancing Update (continued)**Return Roundup**

The CRTx® Aggregate posted a 0.61% gain in November, ending a significant 2-month losing streak as most fixed income and equity markets rebounded off recent lows throughout the month. CRT underperformed major bond sectors as a lower belly/long end of the curve boosted fixed rates, especially longer-duration IG and MBS. Intra-complex, the top/middle of the capital structure and newer issues led gains, but YTD the standard CRTx® Aggregate is still down -1.57%, while the CRTx® RNI™ (Rolling New Issues) Aggregate is at -5.34% with one month to go in the year.

11/30/2022		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	51.263	-0.03%	-0.01%	0.65%	0.00%	-0.0003%	-0.0006%	0.61%
UMEZZ	12.707	0.51%	-0.01%	0.47%	0.02%	0.0000%	0.0000%	0.98%
LMEZZ	16.159	0.37%	-0.01%	0.58%	-0.01%	0.0000%	0.0000%	0.93%
SUB	22.397	-0.61%	-0.02%	0.81%	0.00%	-0.0007%	-0.0013%	0.18%

11/30/2022		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	23.325	0.48%	-0.01%	0.61%	0.01%	0.0000%	0.0000%	1.09%
UMEZZ	11.799	0.52%	-0.01%	0.48%	0.02%	0.0000%	0.0000%	1.00%
LMEZZ	5.865	1.01%	-0.01%	0.62%	0.00%	0.0000%	0.0000%	1.61%
SUB	5.661	-0.13%	-0.02%	0.89%	0.00%	0.0000%	0.0000%	0.74%

Modest November gains in-excess-of-carry were generally seen in the middle/upper part of the CRT capital stack, while B classes largely returned at or below carry.

Supply technical didn't present much of a headwind again in November as new issue was absent and CRT float shrank.

Intra-Complex Highlights: November

- The UMEZZ Index (M1 variants) gained 0.98%, leading the complex with spreads tightening about 10bps on average for the top of CRT capital stack.
- The LMEZZ Index (M2s/M3s) followed UMEZZ, returning 0.93% as seasoned paper continued to provide steady risk/reward, while newer issues firmed up ~20bps for the month, with the RNI™ version gaining 1.61%.
- The SUB Index (B1/B2/Bs) at the bottom of the capital stack lagged the complex, similar to November's HY-vs.-IG performance differential, gaining a below-carry 0.18% on varied vintage performance.

Index Rebalancing Metrics

The CRTx® December basket UPB falls 0.84% MoM to \$52.8B, with a total market value of \$50.8B. Constituent count marginally decreases to 323 securities from 325 deals as a couple of tranches paid off, while no new issues enter the December Index basket.

Index Composition

There was little MoM change for the CRTx® December basket composition as only 2 classes paid off and no index-eligible securities were issued, while November paydowns were relatively low:

CRTx® AGG composition (December 2022 basket):

- 24.8% ↔ (vs 24.8% in Nov) - UMEZZ (M1/old M2s)
- 31.5% ↔ (vs 31.5% in Nov) - LMEZZ (M2/old M3s)
- 43.7% ↔ (vs 43.7% in Nov) - SUBs (B/B1/B2s)

A slim recovery in newer-issue spreads off recent lows helped take back a small fraction of M1/M2 price declines over the past several months, while B-classes lagged, combining to bring the Index WAvg constituent market value -0.07 points to \$96.14 (RNITM AGG +0.69 to \$95.80). LIBOR/SOFR resets moved up again, raising the Index-blended constituent coupon +50bps to 7.80% and effective carry to ~68bps to next reset.

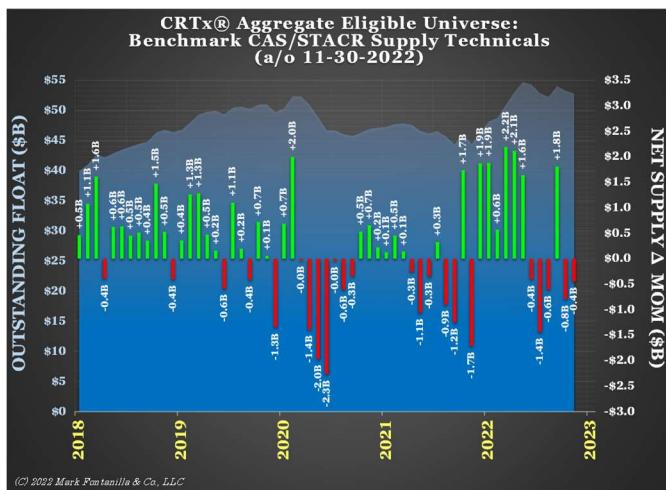
Index cashflow average life- and duration-to-optional-redemption for December's basket shortens slightly to a rebalanced 3.39 years and 2.69 years, respectively.

Close Date	2022 Deals	LTV	2022 GSE CRT Deal Pricing Margins (bps) & Orig. Ces			
			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	1290/0.25
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	

11/30/2022 Index Rebalancing Update (continued)

Sector Supply

Benchmark GSE CRT float shrank -\$0.4B/-0.84% MoM, to \$52.8B in UPB as of November month-end. The lowest monthly paydowns of the year (due to the slowest CPRs of the year) and an absence of November new issues caused negative net supply for a 2nd month in a row.



2022's sector record gross supply continues to hold at \$21.6B YTD, +53% more than the next-highest gross supply tally, 2021's \$14.1B total issuance. Intra-complex, float was incrementally lower across the board MoM:

NOV. 2022 Index-eligible NET SUPPLY breakdown:

- **UMEZZ -0.196 B (- 1.50% MoM)**
 - Front-pay M1 variants at the top of the capital stack saw proportionally higher, but still nominally modest, paydowns as CPRs inched lower. Float is still smallest of the complex.
- **LMEZZ -0.190 B (- 1.14% MoM)**
 - Seasoned M2s/Old M3s have all started paying down, while recent M2s are in slow-paying structures at this juncture. Overall, the middle of the capital structure is likely to keep shrinking in the near term.
- **SUB -0.062 B (- 0.26% MoM)**
 - New issue B-variants continue to be limited to CAS B1s, and a function of deal issuance sizes overall. Only a few seasoned Bs and B1s are paying down so float should remain generally steady heading into next year.

CRTx® AGG (eligible universe as of 11/30/22)

Month End	Float ₁	BENCHMARK GSE CRT SUPPLY TECHNICALS (\$MM)				Net Supply ₁	% Δ MoM
		Gross Supply ₂	Pay-downs ₁	Write-downs ₁	Tenders ₁		
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	2.18	.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%
2022-Nov	52,835.00	.00	447.47	.14	.00	-447.61	-0.84%

1-Current Face

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

Sources: FNMA, FHLMC, MF&Co

[11/30/2022 Index Rebalancing Update \(continued\)](#)**Latest Deal Performance**

CRT credit performance in the November statements showed October trends continuing, with pre-COVID late-stage DQs continuing to shrink, while early stage DQs edging slightly higher MoM (based on STACR experience). Post-COVID onset DQs remained low, but also inching higher. Structurally, writedowns/shortfalls were once again muted, CPRs slowed further, and C/Es were steady to slightly better.

Credit

- STACR pre-COVID total DQ %s edged up overall (CAS observation window lags 1 month, DQs down slightly in Nov. statements), with 30d DQs up roughly 3% MoM, while 180+ bucket DQ #s/\$s fell again moderately. Newer deal 30d DQs also ticked up slightly but still below 1%.
- CRTx® 1st Loss Sub-Index (1st loss Bs) writedowns/int. shortfalls for November:
 - **-2.7 bps hit to 1st Loss Sub-Index:**
 - **-2.3 bps to Fxd. Sev. Sub-Index component** (vs. -3.6 bps in Oct.)

Paydowns

- **The CRTx® AGG's 0.84% Nov. UPB paydown-only percentage was much lower vs. October's paydown + tender percentage of 1.46%:**
 - **MTD CRTx® AGG return attribution from paydowns/retirements: +0.2 bps**

Nov. Index Paydowns \$447M

- UMEZZ (Mostly M1s): \$196M
- LMEZZ (M2s/old M3s): \$190M
- SUB (Bs/B1s/B2s): \$ 62M

- **STACR factor speeds slowed another 1-2CPR on average, with current seasoned reference pool CPRs in 6-10CPR range, while newer 2022 deals are in the 3-5CPR range right now** (CAS likely following on a 1-month lag).

Structure

- Class C/E still building at a crawl now MoM.
- October LIBOR resets +43bps, SOFR resets +53bps. **YTD, LIBOR & SOFR resets are now up 392bps & 347bps, respectively.**

- One pre-COVID reference pool started passing its DQ test, leaving **just nine 2019/2020 pre-COVID REMICs left still failing**.
- **Call Watch> STACR 2015-HQ1 – 10% clean up threshold reached:**
 - **Last remaining B class fully paid off**
 - \$1.7B remaining ref. pool UPB removed:
 - 0.00 Factor

Relative Value Thoughts**Ideas**

With just one month left to go in 2022, structured product markets remain challenging, despite Fed Chair Powell hinting at possibly smaller rate hikes in the near future and broader bond and stock markets gaining back some lost ground. The fact remains that rates and credit spreads are still extraordinarily higher vs. the beginning of the year, and year-end liquidity is certainly a factor.

Meanwhile, conventional mortgage credit/housing still looks reasonably contained, and coupon/static yield levels in the CRT stack are in the 7.0%-14.0% area, still within context, or even cheaper now, vs rating-equivalent IG/HY corporates. But, while investors have dipped back into the liquid duration of IG and MBS, other credit sectors are still sluggish.

For CRT, holding sector weight and clipping still-rising coupons remains the cautious bet with 4 weeks to go in the 2022 season. Looking towards the start of 2023, for opportunists, that could be a different story...

CRTx® Index Suite Total Return Performance: Month-End Matrix 11/30/2022

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	160.61	0.61%	-0.41%	-1.57%	-1.28%	2.36%	11-30-22
Upper Mezzanine	122.98	0.98%	0.34%	-0.60%	-0.57%	1.13%	11-30-22
Lower Mezzanine	174.25	0.93%	0.52%	0.46%	0.62%	2.22%	11-30-22
Subordinate	228.73	0.18%	-1.51%	-4.14%	-3.65%	1.42%	11-30-22
Upper/Lower Mezz.	154.48	0.95%	0.44%	0.31%	0.46%	2.29%	11-30-22
Lower Mezz./Sub.	181.67	0.49%	-0.65%	-1.73%	-1.43%	2.12%	11-30-22
CAS	159.41	0.81%	-0.21%	0.17%	0.45%	2.88%	11-30-22
STACR	159.09	0.48%	-0.54%	-2.74%	-2.44%	2.00%	11-30-22
LLTV	160.15	0.77%	-0.37%	-1.30%	-1.01%	2.35%	11-30-22
HLTV	142.54	0.30%	-0.49%	-2.13%	-1.82%	2.30%	11-30-22
Upper Mezzanine	2022	98.92	1.08%	0.50%	-1.08%	-	-
	2021	99.60	0.47%	-0.52%	-1.08%	-1.05%	-
	2020	-	-	-	-	-	11-30-22
	2019	-	-	-	-	-	11-30-22
	2018	-	-	-	-	-	11-30-22
	2017	-	-	-	-	-	11-30-22
	2016	-	-	-	-	-	11-30-22
	2015	-	-	-	-	-	11-30-22
	<=2014	-	-	-	-	-	11-30-22
Lower Mezzanine	2022	95.22	1.67%	1.62%	-4.78%	-	-
	2021	98.02	1.34%	-0.61%	-5.21%	-5.11%	-
	2020	102.94	0.27%	0.26%	1.92%	2.09%	-
	2019	115.43	-0.33%	0.81%	2.20%	2.34%	2.95%
	2018	117.44	0.15%	-0.76%	1.64%	1.98%	3.02%
	2017	133.86	0.41%	0.64%	2.45%	2.54%	2.94%
	2016	154.36	-0.19%	0.25%	4.09%	4.09%	3.25%
	2015	143.81	0.44%	0.78%	4.18%	4.40%	2.84%
	<=2014	172.70	0.39%	0.54%	2.86%	3.17%	3.17%
Subordinate	2022	94.65	0.51%	-0.84%	-5.35%	-	-
	2021	94.05	0.36%	-2.47%	-12.22%	-11.38%	-
	2020	92.86	-1.05%	-2.51%	-4.00%	-3.88%	-
	2019	133.17	0.42%	-1.00%	1.17%	1.63%	3.53%
	2018	127.57	0.16%	-1.56%	0.08%	0.46%	2.84%
	2017	160.55	0.59%	-0.62%	1.68%	1.99%	3.00%
	2016	203.89	0.98%	0.53%	3.22%	4.02%	3.73%
	2015	215.52	0.45%	0.67%	3.18%	3.43%	1.68%
	<=2014	-	-	-	-	-	11-30-22

CRTx® Index Suite Total Return Performance: Month-End Matrix 11/30/2022 (continued)

CRTx® RNI™ (Rolling New Issues*) Return Summary						
	Index Level	RETURNS				
		MTD	QTD	YTD	1-YR	3-YR
Aggregate	168.61	1.09%	0.16%	-5.34%	-4.90%	1.83%
Upper Mezzanine	123.70	1.00%	0.38%	-0.65%	-0.62%	1.00%
Lower Mezzanine	182.48	1.61%	0.66%	-5.02%	-4.91%	0.98%
Subordinate	234.46	0.74%	-0.72%	-9.07%	-8.29%	0.37%
LLTV	168.55	1.27%	0.30%	-5.10%	-4.58%	2.10%
HTLV	148.95	0.65%	-0.16%	-6.02%	-5.78%	1.45%

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

CRTx® (Credit Risk Transfer Return Tracking Index) Return Summary						
	Index Level	RETURNS				
		MTD	QTD	YTD	1-YR	3-YR
Special Sub-Indexes:						
Fxd Severity - Type I*		0.42%	0.84%	2.77%	3.15%	3.71%
Fxd Severity - Type II*		0.44%	0.25%	3.86%	3.98%	3.00%
Actual Loss	Custom Client Access Only	0.62%	-0.45%	-1.80%	-1.51%	2.41%
CAS Fxd Severity - Type I*		0.07%	0.53%	2.26%	2.71%	3.24%
STACR Fxd Severity - Type I*		0.67%	1.08%	3.17%	3.49%	4.11%
CAS Fxd Severity - Type II*		0.44%	0.02%	3.31%	3.51%	2.92%
STACR Fxd Severity - Type II*		0.44%	0.94%	5.50%	5.44%	3.35%
CAS Act. Loss		0.85%	-0.23%	-0.02%	0.26%	2.94%
STACR Act. Loss		0.48%	-0.58%	-2.96%	-2.66%	2.04%

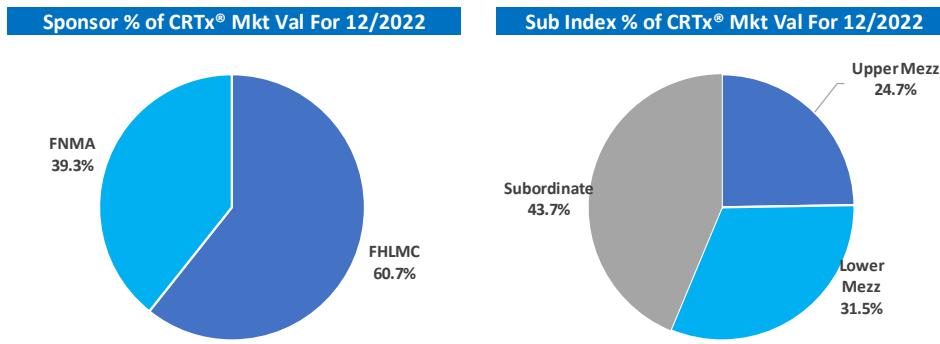
* Type I - No Credit Event Relief Provisions For Natural Disaster/Casualty Events

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").					

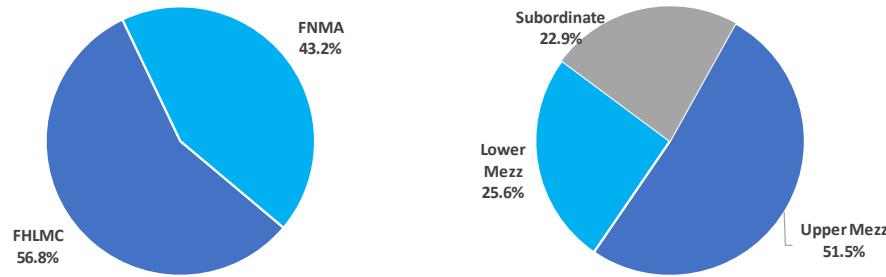
RNI™ (Rolling New Issues) versions of the standard CRTx® Aggregate and Sub-Indexes have dynamic constituent baskets made up exclusively of the most recently issued securities within a "rolling" 12-month look-back window.

CRTx® Index Basket History: Select Metrics As of 11/30/2022 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 \$		W Avg Adj Beg Month Security Mkt Value	WTD Avg Current Coupon		
					Market Value	Total \$		WTD Avg Cpn Margin	Current Margin	Margin
Jan-2020	152.55	1.21%	228	49,686,844,416	52,466,578,192	105.60	105.60	5.35	5.35	356
Feb-2020	152.31	-0.16%	232	50,375,851,983	53,580,028,930	106.36	106.36	5.20	5.20	354
Mar-2020	113.64	-25.39%	240	52,372,791,379	55,277,944,042	105.55	105.55	5.11	5.11	348
Apr-2020	123.83	8.97%	234	52,342,281,038	40,769,683,770	77.89	77.89	4.45	4.45	351
May-2020	132.53	7.03%	229	50,951,320,646	42,820,320,693	84.04	84.04	4.03	4.03	355
Jun-2020	144.50	9.04%	218	48,983,309,963	43,695,592,838	89.21	89.21	3.77	3.77	360
Jul-2020	143.94	-0.39%	214	46,718,914,995	45,227,362,482	96.81	96.81	3.83	3.83	365
Aug-2020	146.37	1.69%	217	46,681,772,649	44,843,108,762	96.06	96.06	3.87	3.87	370
Sep-2020	147.99	1.11%	217	46,076,349,850	44,862,684,449	97.37	97.37	3.92	3.92	374
Oct-2020	148.99	0.68%	220	45,735,370,315	44,865,412,741	98.10	98.10	3.90	3.90	375
Nov-2020	151.26	1.52%	224	46,269,817,211	45,566,172,083	98.48	98.48	3.93	3.93	378
Dec-2020	154.14	1.91%	228	46,924,624,650	46,772,793,230	99.68	99.68	3.93	3.93	378
Jan-2021	155.99	1.20%	230	47,148,362,895	47,722,154,982	101.22	101.22	3.92	3.92	377
Feb-2021	156.91	0.59%	232	47,277,423,099	48,281,726,799	102.12	102.12	3.90	3.90	377
Mar-2021	156.58	-0.21%	235	47,729,907,668	48,857,887,219	102.36	102.36	3.87	3.87	376
Apr-2021	158.53	1.25%	236	47,872,554,649	48,747,702,476	101.83	101.83	3.87	3.87	378
May-2021	159.34	0.51%	238	47,615,037,767	48,936,401,435	102.78	102.78	3.89	3.89	380
Jun-2021	160.42	0.68%	235	46,556,670,751	47,976,744,707	103.05	103.05	3.90	3.90	382
Jul-2021	160.88	0.29%	239	46,213,562,998	47,807,083,563	103.45	103.45	3.91	3.91	383
Aug-2021	161.28	0.25%	242	46,542,264,071	48,139,580,923	103.43	103.43	3.91	3.91	383
Sep-2021	162.16	0.55%	240	45,645,024,894	47,210,049,253	103.43	103.43	3.93	3.93	385
Oct-2021	162.45	0.18%	243	44,395,832,151	46,008,939,674	103.63	103.63	3.93	3.93	385
Nov-2021	162.69	0.15%	250	46,136,808,535	47,705,750,833	103.40	103.40	3.92	3.92	384
Dec-2021	163.17	0.30%	253	44,428,702,439	45,850,865,730	103.20	103.20	3.97	3.97	389
Jan-2022	163.27	0.06%	264	46,303,372,955	47,721,518,712	103.06	103.06	3.92	3.92	383
Feb-2022	161.64	-1.00%	272	48,187,246,457	49,476,212,584	102.68	102.68	3.86	3.86	378
Mar-2022	159.97	-1.04%	280	48,758,202,585	49,320,610,808	101.15	101.15	3.93	3.93	380
Apr-2022	160.67	0.44%	285	50,947,780,611	50,882,869,681	99.87	99.87	4.14	4.14	386
May-2022	159.01	-1.03%	291	53,065,956,573	53,054,131,960	99.98	99.98	4.34	4.34	386
Jun-2022	157.45	-0.98%	297	54,707,014,476	53,912,547,204	98.55	98.55	4.66	4.66	388
Jul-2022	157.87	0.27%	305	54,305,816,176	52,723,290,518	97.09	97.09	5.21	5.21	399
Aug-2022	162.94	3.21%	311	52,868,638,801	51,179,435,509	96.81	96.81	5.87	5.87	406
Sep-2022	161.27	-1.03%	316	52,267,272,868	51,923,167,525	99.34	99.34	6.34	6.34	407
Oct-2022	159.63	-1.01%	325	54,074,843,112	52,881,044,458	97.79	97.79	6.64	6.64	407
Nov-2022	160.61	0.61%	325	53,282,606,013	51,262,793,323	96.21	96.21	7.30	7.30	410
Dec-2022			323	52,834,998,700	50,794,605,389	96.14	96.14	7.80	7.80	410

CRTx® RNI™ Index Basket History: Select Metrics As of 11/30/2022 Rebalancing

Sponsor % of CRTx® RNI™ Mkt Val For 12/2022 **Sub Index % of CRTx® RNI™ Mkt Val For 12/2022**

**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 \$	Security Mkt Value	WAvg Adj Beg Month	WTD Avg Current Coupon	WTD Avg Cpn Margin
					Market Value		Value		
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	168.61	1.09%	92	24,523,836,681	23,324,904,484	95.11	6.75	376	
Dec-2022			88	23,106,299,521	22,134,708,648	95.80	7.30	378	

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

CRTx® AGG Index Constituent Performance Data (Nov-2022 Monthly Statements)											CPR	Net Credit Event									
Deal	Loss	Pool	Form	Structure (paid off)	Early Redemption Option (Yrs)	Maturity (Yrs)	Delinquency Pipeline						Total	MoM	1mth	Pass	Pass	Pass	Pass		
							Rem. Early Redemp. Option (Yrs)	Rem. Maturity (Yrs)	30d	60d	90d	120d	150d	180d+	DQ%	% Chg	Test	Test	Test	Test	
CAS 2022-R06	ACT	LLTV	REMIC	1M1-1M2-1B1-1B2	5.0	20.0	4.5	19.5	0.45	0.08	0.03	0.02	0.01	0.01	0.61	14%	5%	NA	YES	NA	YES
CAS 2022-R07	ACT	LLTV	REMIC	1M1-1M2-1B1-1B2	5.0	20.0	4.6	19.6	0.50	0.08	0.04	0.04	0.02	-	0.68	23%	5%	NA	YES	NA	YES
CAS 2022-R08	ACT	LLTV	REMIC	1M1-1M2-1B1	5.0	20.0	4.7	19.7	0.36	0.08	0.05	0.01	0.00	-	0.50	11%	5%	NA	YES	NA	YES
CAS 2022-R09	ACT	HLTV	REMIC	2M1-2M2-2B1	5.0	20.0	4.8	19.8	0.40	0.07	-	-	-	-	0.46	59%	3%	NA	YES	NA	YES

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

CRTx® AGG Index Constituent Performance Data (Nov-2022 Monthly Statements)											CPR	Net Credit Event Test					Cum Min CE Loss 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	3.9	18.9	0.42	0.06	0.03	0.02	0.02	0.07	0.62	22%	4%	NA	NO	YES	YES
STACR 2021-DNA7	ACT	LLTV	REMIC	M1-M2-B1-B2	5.0	20.0	4.0	19.0	0.50	0.07	0.04	0.03	0.02	0.11	0.77	26%	4%	NA	YES	YES	YES
STACR 2021-HQA1	ACT	HLTV	REMIC	M1-M2-B1-B2		12.5		10.8	0.69	0.10	0.06	0.06	0.04	0.25	1.19	15%	6%	NA	YES	YES	YES
STACR 2021-HQA2	ACT	HLTV	REMIC	M1-M2-B1-B2		12.5		11.1	0.57	0.10	0.06	0.09		0.18	1.00	19%	5%	NA	YES	YES	YES
STACR 2021-HQA3	ACT	HLTV	REMIC	M1-M2-B1-B2	5.0	20.0	3.8	18.8	0.58	0.12	0.06	0.10	0.19	0.19	1.05	21%	4%	NA	YES	YES	YES
STACR 2021-HQA4	ACT	HLTV	REMIC	M1-M2-B1-B2	5.0	20.1	4.1	19.1	0.55	0.11	0.08	0.10	0.19	0.19	1.03	18%	4%	NA	YES	YES	YES
STACR 2022-DNA1	ACT	LLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.0	4.2	19.2	0.52	0.09	0.08	0.06	0.10	0.10	0.85	15%	4%	NA	YES	YES	YES
STACR 2022-DNA2	ACT	LLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.1	4.3	19.3	0.69	0.10	0.07	0.07	0.10	0.10	1.03	21%	4%	NA	YES	YES	YES
STACR 2022-DNA3	ACT	LLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.0	4.4	19.4	0.65	0.10	0.07	0.09	0.05	0.05	0.96	37%	4%	NA	YES	YES	YES
STACR 2022-DNA4	ACT	LLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.0	4.5	19.5	0.57	0.11	0.05	0.08	0.04	0.04	0.85	31%	4%	NA	YES	YES	YES
STACR 2022-DNA5	ACT	LLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.0	4.6	19.6	0.62	0.12	0.07	0.07	0.02	0.02	0.90	38%	4%	NA	YES	YES	YES
STACR 2022-DNA6	ACT	LLTV	REMIC	M1A-M1B-M2	5.0	20.0	4.8	19.8	0.52	0.06	0.04	0.00	-	-	0.62	48%	4%	NA	YES	YES	YES
STACR 2022-DNA7	ACT	LLTV	REMIC	M1A-M1B-M2	5.0	20.0	4.8	19.8	0.63	0.09	-	0.00	-	-	0.72	57%	4%	NA	YES	YES	YES
STACR 2022-HQA1	ACT	HLTV	REMIC	M1A-M1B-M2-B1-B2	5.0	20.0	4.3	19.3	0.64	0.15	0.09	0.12	0.09	0.09	1.09	17%	3%	NA	YES	YES	YES
STACR 2022-HQA2	ACT	HLTV	REMIC	M1A-M1B-M2	5.0	20.0	4.7	19.7	0.58	0.12	0.08	0.09	-	-	0.87	26%	3%	NA	YES	YES	YES
STACR 2022-HQA3	ACT	HLTV	REMIC	M1A-M1B-M2	5.0	20.0	4.8	19.8	0.50	0.12	0.05	0.02	-	-	0.69	41%	3%	NA	NO	YES	YES

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