

CRTx® RNI™ (Rolling New Issues) Index

Credit Risk Transfer Return Tracking Index

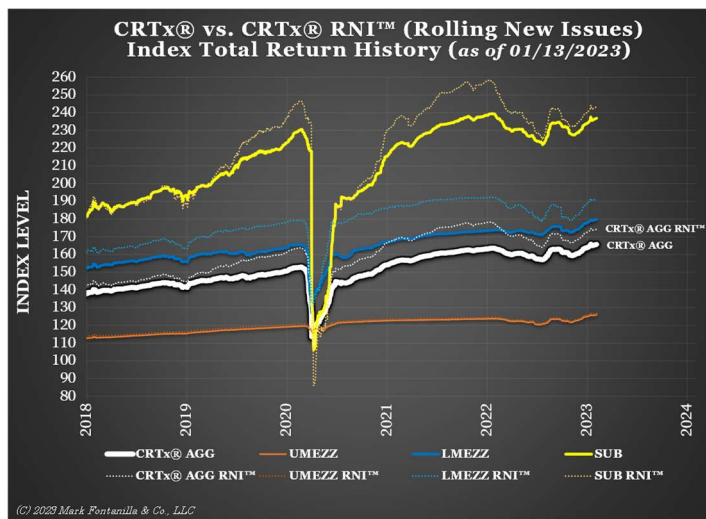
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The CRTx® RNI™ (Rolling New Issues) is a fixed income total return index that tracks the aggregate performance generated from a dynamic “rolling” basket of Credit Risk Transfer (CRT) securities that have been issued into the private market by the Government Sponsored Enterprises (GSEs) Fannie Mae (FNMA) and Freddie Mac (FHLMC). The CRTx® RNI™ is rebalanced monthly, and each newly rebalanced index constituency includes only the most recently issued securities from deals that have closed within a trailing 12-month period.

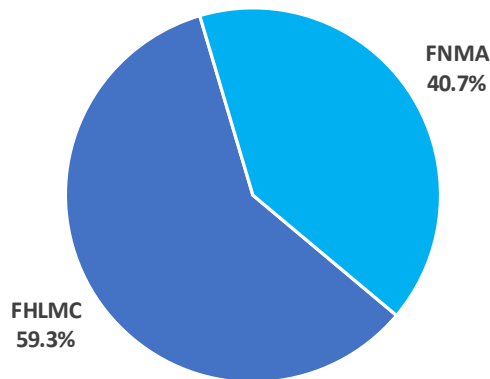
Key features:

The CRTx® RNI™ provides market participants with a cash-based “rolling” index option for benchmarking GSE CRT performance based on the newest CRT securities issued within the most recent 12 months. Key features of the CRTx® RNI™ include (as of December 2022):

- Monthly average rolling constituent market value of about \$13 Billion since 2015, with a monthly historical variation between \$8 Billion and \$26 Billion.
- 76 constituent securities in the 2023 RNI™ starting basket as of the most recent 12/30/2022 rebalancing, with a monthly average rolling constituency count of 54 securities since 2015.
- The CRTx® RNI™ Aggregate is further divided into several sub-indexes that are partitioned according to capital structure position and reference pool collateral type.
- The Index is rebalanced monthly, with primary constituent eligibility based on securities issued within the most recent 12-month lookback period preceding each valuation month.



Sponsor % of CRTx® RNI™ Mkt Val For 01/2023



CRTx® RNI™ (Rolling New Issues) Factsheet

<p>Inclusion/Exclusion Rules:</p>	<p><u>Included</u></p> <ul style="list-style-type: none"> - Only securities issued within the past 12 months - FNMA Connecticut Avenue Securities™ (CAS) - FHLMC Structured Agency Credit Risk (STACR®) - All rated and unrated tranches, in original form - All structural attachment points 	<p><u>Excluded</u></p> <ul style="list-style-type: none"> - CRT derivatives, or limited issuance vehicles - Interest-Only/stripped down floater options - Modifiable, combinable or other exchange variants - Single seller, non-public, or special transactions - Insurance or re-insurance deals
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Sub-Indexes:

CRTx® RNI™ Upper Mezzanine – Includes mezzanine securities structured to receive the earliest principal payments, and have the highest credit enhancement, among each respective deal’s offered securities.

CRTx® RNI™ Lower Mezzanine – Includes mezzanine securities that are time/credit tranching between Upper Mezzanine classes and any Subordinate or first-loss classes among each respective deal’s offered securities.

CRTx® RNI™ Subordinate – Includes subordinate securities that are time/credit tranching behind the mezzanine classes within each respective deal’s offered securities, and are typically unrated and not considered debt for tax purposes.

CRTx® RNI™ and Sub Indexes*

	CRTx® RNI™ Aggregate	CRTx® RNI™ Upper Mezzanine	CRTx® RNI™ Lower Mezzanine	CRTx® RNI™ Subordinate
Rolling 12-Mth Issuance	●	●	●	●
<i>Deal Vintage</i>	<i>Not Applicable</i>			

*Securities Included				
CAS	All At-Issuance Classes	M1	M2	All B Classes
STACR	All At-Issuance Classes	M1 (in M1-M2 structures) M1/M2 (in M1-M2-M3 structures)	M2 (in M1-M2 structures) M3 (in M1-M2-M3 structures)	All B Classes

Market Pricing Protocols

Calendar – The Index will follow the US bond market trading day and holiday schedule as publicly released by the Securities Industry and Financial Markets Association (SIFMA).

Timing – Market prices will be taken on each market trading as of the end of the day.

Sources – Market prices will be obtained from a well-established third-party pricing source (CRTx® security prices are powered by Refinitiv, an LSEG (London Stock Exchange Group) business).

Month-End Marking – For month end valuation, and subsequently for starting values in the the following month, market prices will be taken as of the last business day of the month.

Bid/Offer Price – The Index utilizes market bid-side prices.

Settlement – For Index calculations, cash settlement (T+0) is utilized in order to emulate practical entry or exit of investment into or out of the Index on any day. Since observed security market prices from a third-party source(s) will reflect the prevailing GSE CRT settlement date convention (T+3 prior to 9/5/2017, T+2 on 9/5/2017 and forward), each constituent’s market price will be carry-adjusted for return calculations by discounting back from the prevailing settlement date to the day of valuation.

Rebalancing Protocols

Frequency – The Index is rebalanced monthly, on the last business of day of the month.

Security Eligibility Date - Security inclusion for rebalancing is determined on the last business day of the month.

Newly Issued Securities - Become eligible for Index inclusion consideration on their Issue Date (where coupon interest first begins accruing).

Principal and Coupon Payments - Security payments become part of the Index Value and return calculations during the month of payment, on the day actually paid. These bond payments do not get reinvested for the remainder of the month of receipt, but instead effectively get reinvested in the Index for the following month, and going forward, as part of the Index Value at the beginning of the next month.

* See CRTx® Rules and Guidelines for specific methods, determinations, and calculations

CRTx® RNI™ Performance Metrics (as of December 2022 Month-End)

CRTx® RNI™ Aggregate													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2015	1.49%	2.97%	0.00%	1.51%	-0.15%	-0.53%	-0.07%	-0.27%	-0.12%	0.64%	0.47%	-0.49%	5.53%
2016	-1.39%	-1.45%	3.43%	2.88%	0.61%	0.02%	2.61%	1.29%	1.27%	-0.31%	0.33%	1.80%	11.52%
2017	1.84%	0.54%	0.52%	1.67%	2.09%	1.08%	1.36%	-1.32%	0.17%	1.04%	0.44%	2.15%	12.16%
2018	1.86%	-0.52%	-0.99%	1.17%	0.34%	-0.14%	0.90%	1.08%	0.61%	-0.75%	-0.59%	-1.12%	1.81%
2019	2.67%	0.96%	0.24%	1.93%	-0.01%	1.10%	1.19%	0.49%	0.62%	0.25%	0.45%	0.96%	11.37%
2020	1.26%	-0.14%	-24.11%	-2.45%	11.46%	12.71%	1.17%	0.71%	1.99%	0.66%	2.03%	3.02%	3.40%
2021	1.18%	0.48%	-0.92%	1.64%	0.88%	1.42%	0.47%	0.19%	0.80%	0.10%	-0.05%	0.47%	6.84%
2022	-0.68%	-2.01%	-1.73%	0.28%	-1.48%	-1.84%	0.30%	3.68%	-2.01%	-0.92%	1.09%	2.32%	-3.14%

CRTx® RNI™ Upper Mezzanine													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2015	0.53%	0.99%	0.34%	0.41%	-0.08%	-0.24%	0.53%	0.17%	-0.23%	0.61%	-0.11%	-0.07%	2.88%
2016	-0.20%	0.13%	0.74%	0.74%	0.68%	0.27%	0.43%	0.54%	0.21%	-0.09%	0.12%	0.27%	3.90%
2017	0.35%	0.29%	0.27%	0.29%	0.41%	0.44%	0.27%	-0.15%	0.27%	0.23%	0.15%	0.34%	3.20%
2018	0.66%	-0.39%	0.04%	0.22%	0.26%	0.19%	0.22%	0.33%	0.31%	0.11%	0.10%	0.18%	2.25%
2019	0.46%	0.24%	0.27%	0.43%	0.26%	0.25%	0.30%	0.19%	0.21%	0.19%	0.18%	0.17%	3.20%
2020	0.20%	0.18%	-3.11%	1.65%	1.08%	1.56%	0.39%	0.16%	0.13%	0.22%	0.10%	0.18%	2.69%
2021	0.09%	0.07%	0.02%	0.06%	0.06%	0.07%	0.04%	0.11%	0.07%	0.08%	0.10%	0.03%	0.80%
2022	0.03%	-0.24%	-0.90%	-0.03%	-0.58%	-1.01%	0.36%	2.17%	-0.79%	-0.61%	1.00%	1.67%	1.02%

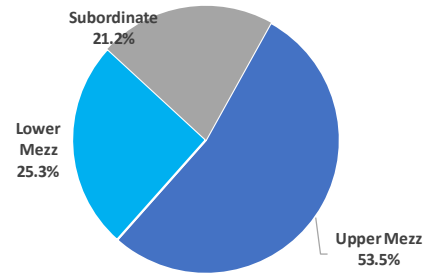
CRTx® RNI™ Lower Mezzanine													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2015	2.46%	4.94%	-0.32%	2.55%	-0.68%	-1.03%	-0.90%	-0.73%	0.04%	0.56%	1.12%	-0.69%	7.37%
2016	-2.55%	-2.63%	6.75%	4.59%	0.39%	-0.28%	4.29%	1.52%	1.35%	-0.81%	0.49%	2.97%	16.80%
2017	2.73%	-0.11%	0.78%	2.43%	3.30%	0.33%	1.89%	-1.72%	0.82%	1.08%	0.25%	2.46%	15.08%
2018	1.61%	-0.36%	-0.77%	1.27%	0.29%	-0.20%	1.04%	1.00%	0.55%	-0.94%	-0.66%	-1.39%	1.40%
2019	3.35%	0.80%	0.17%	1.71%	-0.22%	0.58%	0.48%	0.30%	0.38%	0.21%	0.48%	0.50%	9.05%
2020	0.57%	-0.24%	-25.51%	9.38%	14.17%	6.67%	0.45%	1.46%	1.12%	0.19%	1.08%	0.50%	4.42%
2021	0.67%	0.04%	0.11%	0.90%	0.47%	0.39%	0.08%	0.12%	0.28%	0.09%	-0.02%	0.12%	3.29%
2022	-0.06%	-1.22%	-1.83%	0.83%	-1.81%	-1.91%	0.44%	3.60%	-3.64%	-0.94%	1.61%	3.35%	-1.83%

CRTx® RNI™ Subordinate													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2015			0.97%	1.00%	9.91%	4.88%	3.27%	0.55%	-0.84%	1.56%	-1.54%	-1.82%	18.83%
2016	-0.75%	-3.66%	-0.68%	4.32%	1.95%	0.66%	2.51%	4.15%	6.90%	2.40%	0.37%	1.56%	21.12%
2017	2.80%	5.76%	-0.10%	2.39%	1.59%	6.57%	1.99%	-2.48%	-2.67%	2.64%	1.78%	4.37%	27.08%
2018	4.86%	-1.34%	-3.43%	2.37%	0.65%	-0.39%	1.40%	2.53%	1.26%	-1.26%	-1.22%	-1.86%	3.33%
2019	3.16%	2.31%	0.41%	4.05%	0.26%	3.25%	3.72%	1.16%	1.48%	0.39%	0.55%	2.36%	25.58%
2020	3.14%	-0.09%	-33.65%	-30.10%	15.58%	41.95%	3.25%	-0.46%	4.64%	1.69%	4.57%	8.07%	-3.09%
2021	2.38%	1.13%	-2.24%	2.83%	1.46%	2.60%	0.89%	0.26%	1.40%	0.13%	-0.11%	0.86%	12.11%
2022	-1.41%	-3.56%	-2.28%	0.17%	-2.21%	-2.77%	0.12%	6.00%	-2.48%	-1.45%	0.74%	2.62%	-6.69%

CRTx® RNI™ Monthly Constituent Metrics (as of December 2022 Month-End)

CRTx® RNI™ Mkt Val Breakdown: 1/2023 Basket				
Deal Yr	Aggregate	UMEZZ	LMEZZ	SUB
All	100.0%	53.5%	25.3%	21.2%
2022	100.0%	53.5%	25.3%	21.2%
2021	0.0%	0.0%	0.0%	0.0%
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%

Sub Index % of CRTx® RNI™ Mkt Val For 01/2023



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	WTD Avg Current Coupon	WTD Avg Cpn Margin
							Beg Month Security Mkt Value		
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	172.51	2.32%	88	23,106,299,521	22,134,708,648	95.80	7.30	378	
Jan-2023			76	20,380,723,155	20,010,012,306	98.18	7.84	392	

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