CRTx®

Credit Risk Transfer Return Tracking Index www.markfontanilla.com/crtx-index

CRTx® Index Analytic/Data Suite:

Right-To-Use License Options - *Standard Reports, File Layouts, Glossaries, Sample Sets, and Index Portal Functions*

(Effective 8/1/2023)

CRTx® Index Analytic/Data Suite				
Right-To-Use License Option	**Index Portal Access**	**Research Reports/Distributions**	**Enterprise Data Portal Files**	**Index Portal Screens/Functions**
Basic	**Level I**	Daily Return Summary (daily/email) Index Rebalancing Report (monthly/email) Miscellaneous Releases (varies/email)	None	Index Baskets Guide Daily Returns Evaluation Date Finder Latest Index Rebalancing
Professional	**Level II**	Daily Return Summary (daily/email) Index Rebalancing Report (monthly/email) Miscellaneous Releases (varies/email)	Constituent File Daily File Daily History File Daily Metrics File Monthly Metrics File-Basic	Index Baskets Guide Daily Returns Evaluation Date Finder Latest Index Rebalancing Structure & Credit Metrics Supply Metrics
Benchmark	**Level III**	Daily Return Summary (daily/email) Index Rebalancing Report (monthly/email) Miscellaneous Releases (varies/email)	Constituent File Daily File Daily History File Daily Metrics File Monthly Metrics File-Full	Index Baskets Guide Daily Returns Evaluation Date Finder Latest Index Rebalancing Structure & Credit Metrics Supply Metrics Index Desk Reference™ Risk/Return Metrics

CRTx® Research Reports/Distributions

CRTx® Daily Return Summary (Email Distribution)

Availability: Daily on each Index calculation day.

Sample Release

CRTx® (Credit Risk Transfer Return Tracking Index) Return Summary

		RETURNS									
		Index	Period						Annualized		
		Level	Daily	Wkly	Mthly	MTD	QTD	YTD	1-YR	3-YR	As of Date
		vs. Date	12-30-21	12-23-21	11-30-21	11-30-21	9-30-21	12-31-20	12-31-20	12-31-18	
CRTx® Aggregate		163.17	0.02%	0.00%	0.30%	0.30%	0.63%	5.86%	5.86%	4.79%	12-31-21
Upper Mezzanine		123.73	0.00%	0.01%	0.03%	0.03%	0.21%	0.82%	0.82%	2.35%	12-31-21
Lower Mezzanine		173.44	0.01%	-0.02%	0.16%	0.16%	0.49%	3.88%	3.88%	3.60%	12-31-21
Subordinate		238.61	0.03%	0.03%	0.51%	0.51%	0.86%	10.73%	10.73%	7.25%	12-31-21
Upper Mezzanine	2022		-	-	-	-	-	-	-	-	12-31-21
	2021	100.69	0.00%	0.01%	0.03%	0.03%	0.21%	0.69%	-	-	12-31-21
	2020	102.51	0.00%	0.01%	0.08%	0.08%	0.19%	0.77%	0.77%	-	12-31-21
	2019		-	-	-	-	-	-	-	-	12-31-21
	2018	108.58	0.00%	-0.02%	0.09%	0.09%	0.30%	1.02%	1.02%	2.14%	12-31-21
	2017	112.38	0.00%	-0.03%	-0.01%	-0.01%	0.21%	0.95%	0.95%	2.09%	12-31-21
	2016		-	-	-	-	-	-	-	-	12-31-21
	2015		-	-	-	-	-	-	-	-	12-31-21
	<=2014		-	-	-	-	-	-	-	-	12-31-21
Lower Mezzanine	2022		-	-	-	-	-	-	-	-	12-31-21
	2021	103.41	0.01%	0.04%	0.11%	0.11%	0.18%	3.41%	-	-	12-31-21
	2020	101.00	0.01%	-0.04%	0.17%	0.17%	0.23%	2.62%	2.62%	-	12-31-21
	2019	112.95	0.01%	0.02%	0.14%	0.14%	0.32%	2.88%	2.88%	-	12-31-21
	2018	115.54	0.00%	0.04%	0.34%	0.34%	0.63%	4.60%	4.60%	5.24%	12-31-21
	2017	130.66	0.01%	-0.02%	0.08%	0.08%	0.63%	4.23%	4.23%	3.98%	12-31-21
	2016	148.30	0.01%	-0.16%	0.00%	0.00%	0.35%	3.52%	3.52%	2.42%	12-31-21
	2015	138.04	0.01%	-0.04%	0.22%	0.22%	0.53%	2.91%	2.91%	2.30%	12-31-21
	<=2014	167.90	0.01%	-0.04%	0.30%	0.30%	0.98%	6.10%	6.10%	3.38%	12-31-21
Subordinate	2022		-	-	-	-	-	-	-	-	12-31-21
	2021	107.14	0.01%	0.07%	0.97%	0.97%	0.49%	7.14%	-	-	12-31-21
	2020	96.73	0.04%	-0.07%	0.12%	0.12%	0.79%	10.81%	10.81%	-	12-31-21
	2019	131.64	0.07%	0.14%	0.46%	0.46%	0.42%	11.41%	11.41%	-	12-31-21
	2018	127.47	0.00%	0.05%	0.38%	0.38%	0.38%	8.33%	8.33%	9.19%	12-31-21
	2017	157.90	0.01%	0.06%	0.31%	0.31%	1.93%	11.21%	11.21%	5.93%	12-31-21
	2016	197.54	0.03%	0.10%	0.78%	0.78%	1.85%	11.96%	11.96%	4.41%	12-31-21
	2015	208.87	0.02%	-0.35%	0.24%	0.24%	0.72%	4.79%	4.79%	2.60%	12-31-21
	<=2014										12-31-21

CRTx® Research Reports/Distributions (continued)

CRTx® Index Rebalancing Report (PDF/Email Distribution)

Availability: Monthly on the business day after the last business day of each month.

Sample Release (Page 1/Cover)

Mark Fontanilla & Co., LLC | MARKET INDEXES

CRTx ®

Credit Risk Transfer Return Tracking Index www.markfontanilla.com/crtx-index

CRTx® Index Rebalancing Update

07/31/2023

Inside

Return Roundup *Page 3*

The CRTx® Aggregate index posted a 2.34% total return in July, the 4th straight winning month in a row. A bull flattening credit curve, on top of substantial floater carry, continued to buoy GSE CRT returns for the month amid rallying equities and mixed performance across the broader fixed income market. YTD, the sector is outperforming rates and IG/HY, with the CRTx® AGG gaining 11.73% so far, as the GSE CRT market reaches its 10-year anniversary...

Index Rebalancing Metrics *Page 3*

The CRTx® basket UPB for August grows +2.0% MoM to $52.4B, with market value up +3.6% to $53.9B. Constituents increase to 351 securities from 132 deals as the latest CAS LLTV deals add 8 tranches into the Index, while the 1st GSE CRT deal ever issued STACR 2013-DN1 matures...Benchmark GSE CRT float increased $1B/1.96% MoM in July, the largest net supply gain since September 2022...

Latest Deal Performance *Page 5*

DQs continued to oscillate with STACR July DQs posting mixed MoM changes, following June's declines...Speed changes MoM were also modestly mixed, while losses/int. shortfalls were tame, and C/Es just slightly higher...

Relative Value Thoughts *Page 5*

The fundamentals persist...Again, seasoned paper story continues as scarcity value increases...Recent Issue CRT vs. IG/HY – carry remains king...as CRT coupons in the 7%-11%+ range... while secondary corporate coupons overall are 200-400+bps lower...

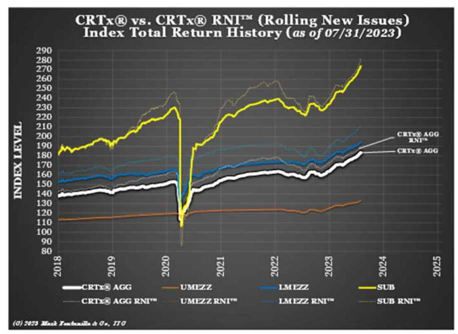
CRTx® Index Summary Panels *Page 2*

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

Additional Tables/Metrics *Pages 6-13*

- 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

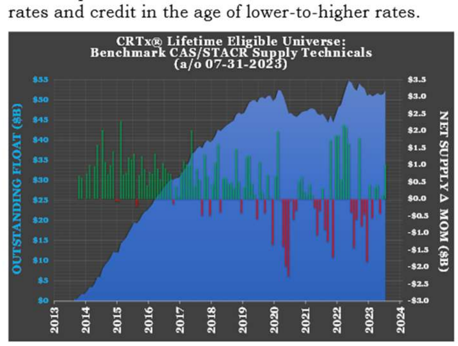
CRTx® & RNI™ Index Suites: Historical Levels



Sector Musings

A Decade Of Benchmark GSE CRT

The first benchmark GSE CRT deal in history, Freddie Mac's STACR 2013-DN1, just matured this month, marking the 10-year anniversary of the GSE CRT market. The 2nd sector deal ever issued, Fannie Mae's CAS 2013-C01 is slated to mature in October, and after a decade, the market has evolved into a staple asset in mortgage credit securitization. Since inception in 2013, there have been 136 deals, totaling over $131B in lifetime issuance, referencing nearly $4.6T in loans. Based on the CRTx® Aggregate Index, if you had invested in the first 2013 deals, and stayed reinvested in the market to now, your total return would be 83.2%, or a simple annualized rate of 6.24%. Not bad versus rates and credit in the age of lower-to-higher rates.



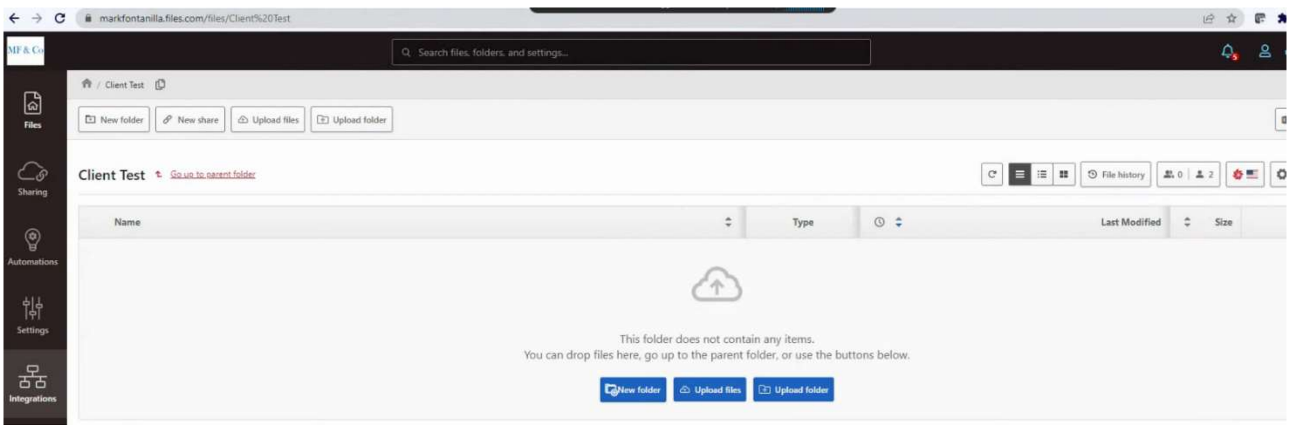
1

CRTx® Enterprise Data Files Via MFCo Data Portal

- Specific index enterprise data file accessibility depends upon the Client's right-to-use index license option selected.
- Data Portal access credentials and required usage agreement is separate from Index Portal online access credentials and digital agreement.

Index enterprise data files can be accessed 2 ways via the MFCo Client Data Portal

1) Web interface at: https://markfontanilla.files.com (sample view below)



2) Secure File Transfer Transfer Protocol (SFTP) or FTP File Server Location

   i. Clients will have their own secure password-authenticated SFTP/FTP location for "pull" file access of CRTx® Index data files.

CRTx® Enterprise Data Files Via MFCo Data Portal (continued)

CRTx® Constituent File

Availability: Released on the last business day of the month (.xls file format)

Glossary & Layout

CONSTITUENT FILE			
ELEMENT NAME	**DESCRIPTION**	**TYPE**	**FORMAT**
Sequence	Index entry sequence number.	ALPHA-NUMERIC	X(4)
Class	Individual security class name.	ALPHA-NUMERIC	X(30)
CUSIP	Unique 9-Digit alphanumeric security identifier.	ALPHA-NUMERIC	X(9)
Shelf	Issuer shelf name acronym.	ALPHA-NUMERIC	X(20)
Pool_Type	Reference pool collateral type: LLTV (Low Loan to Value), HLTV (High Loan to Value).	ALPHA-NUMERIC	X(10)
Tranche_Type	First-level Sub-Index categorization: UMEZZ (Upper Mezzanine), LMEZZ (Lower Mezzanine), SUB (Subordinate).	ALPHA-NUMERIC	X(10)
Deal_Vintage	Year of deal issuance.	NUMERIC	9999
Valuation Month Weighting	Monthly constituent market value weighting in index.	NUMERIC	9999.99999999

Sample Data

Sequence	1	2	3	4	5	6	7	8	9	10
Class	STACR 2013-DN1 M1	STACR 2013-DN1 M2	CAS 2013-C01 M1	CAS 2013-C01 M2	STACR 2013-DN2 M1	STACR 2013-DN2 M2	CAS 2014-C01 M1	CAS 2014-C01 M2	STACR 2014-DN1 M1	STACR 2014-DN1 M2
CUSIP	3137G0AA7	3137G0AB5	30711XAA2	30711XAB0	3137G0AC3	3137G0AD1	30711XAC8	30711XAD6	3137G0AK5	3137G0AL3
Shelf	STACR	STACR	CAS	CAS	STACR	STACR	CAS	CAS	STACR	STACR
Pool Type	LLTV	LLTV	LLTV	LLTV	LLTV	LLTV	LLTV	LLTV	LLTV	LLTV
Tranche Type	UMEZZ	LMEZZ	UMEZZ	LMEZZ	UMEZZ	LMEZZ	UMEZZ	LMEZZ	UMEZZ	UMEZZ
Deal Vintage	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
1/1/2015	0.01689380	0.02531842	0.02334800	0.03060363	0.01644940	0.03258053	0.02752222	0.03191281	0.01872132	0.02993733
2/1/2015	0.01653839	0.02510174	0.02268256	0.03078485	0.01598361	0.03271725	0.02684673	0.03260844	0.01854249	0.03035645
3/1/2015	0.01333736	0.02095269	0.01845555	0.02577721	0.01287751	0.02780969	0.02181217	0.02726594	0.01517331	0.02531948
4/1/2015	0.01243317	0.01978273	0.01737978	0.02434383	0.01205826	0.02612723	0.02066603	0.02570366	0.01442764	0.02416604
5/1/2015	0.01141040	0.01871482	0.01603238	0.02296315	0.01104458	0.02503224	0.01912706	0.02452003	0.01346956	0.02278927
6/1/2015	0.01030440	0.01741653	0.01450873	0.02154548	0.00998221	0.02315969	0.01738940	0.02283723	0.01246289	0.02111618

CRTx® Enterprise Data Files Via MFCo Data Portal (continued)

CRTx® Daily File

Availability: Released daily on Index Valuation days (.xls file format)

Glossary & Layout

DAILY FILE			
ELEMENT NAME	**DESCRIPTION**	**TYPE**	**FORMAT**
PART 1: DAILY INDEX VALUES			
Valuation Date	Day of Index calculations.	DATE	M/D/YYYY
AGG	CRTx® Aggregate Index level (daily).	NUMERIC	9999.99999999
UMEZZ	Upper Mezzanine Sub-Index level (daily).	NUMERIC	9999.99999999
LMEZZ	Lower Mezzanine Sub-Index level (daily).	NUMERIC	9999.99999999
SUB	Subordinate Sub-Index level (daily).	NUMERIC	9999.99999999
UMEZZ/LMEZZ	Upper/Lower Mezzanine Sub-Index level (daily).	NUMERIC	9999.99999999
LMEZZ/SUB	Lower Mezzanine/Subordinate Sub-Index level (daily).	NUMERIC	9999.99999999
CAS	CAS Sub-Index level (daily).	NUMERIC	9999.99999999
STACR	STACR Sub-Index level (daily).	NUMERIC	9999.99999999
LLTV	Low LTV Sub-Index level (daily).	NUMERIC	9999.99999999
HLTV	High LTV Sub-Index level (daily).	NUMERIC	9999.99999999
UMEZZ DEAL VINTAGE SUB-INDEXES			
LMEZZ DEAL VINTAGE SUB-INDEXES			
SUB DEAL VINTAGE SUB-INDEXES			
PART 2: DAILY RETURN VALUES			
Valuation Date	Day of Index calculations.	DATE	M/D/YYYY
AGG	CRTx® Aggregate Index daily return (daily).	NUMERIC	99.99%
UMEZZ	Upper Mezzanine Sub-Index daily return (daily).	NUMERIC	99.99%
LMEZZ	Lower Mezzanine Sub-Index daily return (daily).	NUMERIC	99.99%
SUB	Subordinate Sub-Index daily return (daily).	NUMERIC	99.99%
UMEZZ/LMEZZ	Upper/Lower Mezzanine Sub-Index daily return (daily).	NUMERIC	99.99%
LMEZZ/SUB	Lower Mezzanine/Subordinate Sub-Index daily return (daily).	NUMERIC	99.99%
CAS	CAS Sub-Index daily return (daily).	NUMERIC	99.99%
STACR	STACR Sub-Index daily return (daily).	NUMERIC	99.99%
LLTV	Low LTV Sub-Index daily return (daily).	NUMERIC	99.99%
HLTV	High LTV Sub-Index daily return (daily).	NUMERIC	99.99%
UMEZZ DEAL VINTAGE SUB-INDEXES			
LMEZZ DEAL VINTAGE SUB-INDEXES			
SUB DEAL VINTAGE SUB-INDEXES			

Sample Data

Valuation Date	AGG	UMEZZ	LMEZZ	SUB	UMEZZ_LMEZZ	LMEZZ_SUB	CAS	STACR	LLTV
1/2/2015	107.63951462	103.19798837	111.59998065		107.63951462	111.59998065	104.06600363	108.99694476	107.62317686
1/5/2015	107.13515288	102.97959150	110.80562311		107.13515288	110.80562311	103.61870278	108.44289909	107.08026096
1/6/2015	106.67390988	102.77519305	110.08396001		106.67390988	110.08396001	103.20506113	107.94114270	106.58320216

Valuation Date	AGG	UMEZZ	LMEZZ	SUB	UMEZZ_LMEZZ	LMEZZ_SUB	CAS	STACR	LLTV
1/2/2015									
1/5/2015	-0.47%	-0.21%	-0.71%		-0.47%	-0.71%	-0.43%	-0.51%	-0.50%
1/6/2015	-0.43%	-0.20%	-0.65%		-0.43%	-0.65%	-0.40%	-0.46%	-0.46%

CRTx® Enterprise Data Files Via MFCo Data Portal (continued)

CRTx® Daily Metrics File (*)

Availability - Released end-of-day on each Index calculation date (.xls file format)

Glossary & Layout

DAILY METRICS FILE (1)			
ELEMENT NAME	**DESCRIPTION**	**End**	**FORMAT**
Val_Dt	Day of Index calculations.	DATE	M/D/YYYY
Index	Index/Sub-Index name within CRTx® Index Suite	ALPHA-NUMERIC	X(30)
MTDTotRet	Month-to-date Index total return percentage.	NUMERIC	99.99%
MTDPriceRet	Month-to-date Index return percentage contributed by consitutuent price changes.	NUMERIC	99.99%
MTDAccrRet	Month-to-date Index return percentage contributed by coupon	NUMERIC	99.99%
MTDCPNRet	Month-to-date Index return percentage contributed by coupon	NUMERIC	99.99%
MTDPaydownRet	Month-to-date Index return percentage contributed by principal	NUMERIC	99.99%
MTDWritedownRet	Month-to-date Index return percentage contributed by principal	NUMERIC	99.99%
MTDIntShortRet	Month-to-date Index return percentage contributed by interest	NUMERIC	99.99%
BOMConstituents	Beginning-of-month Index basket constituent count.	NUMERIC	9999
BOMUPB	Beginning-of-month Index aggregate unpaid principal balance.	NUMERIC	9(13).99
BOMMktVal	Beginning-of-month Index aggregate cash market dollar value.	NUMERIC	9(13).99
BOMWAvgSecMktVal	Beginning-of-month Index weighted average security cash market value (price + accrued interest).	NUMERIC	999.99
BOMWAvgCPNMargin	Beginning-of-month Index weighted average security coupon margin	NUMERIC	9999
BOMWAvgCPN	Beginning-of-month Index weighted average security coupon rate.	NUMERIC	99.999
EODParWAvgPx	End-of-day Index par-weighted average security cash market price (clean w/o accrued interest).	NUMERIC	99.99
EODWAvgDM	End-of-day Index weighted average security discount margin (in bps, available starting 6/2022).	NUMERIC	9999
EODWAvgLife (2)*	**End-of-day Index weighted average life (available starting 6/2022).**	**NUMERIC**	**99.99**
EODWAvgDur (2)*	**End-of-day Index weighted average modified duration (available starting 6/2022).**	**NUMERIC**	**99.99**
EODWAvgCvx (2)*	**End-of-day Index weighted average convexity (available starting 6/2**	**NUMERIC**	**99.99**
EODWAvgYld (2)*	**End-of-day weighted average yield (available starting 6/2022).**	**NUMERIC**	**99.99**
EODIndexVal	End-of-day Index Value.	NUMERIC	9999.99999999

**** Due to a calculation convention change from the Index's security pricing/information source (Refinitiv/LSEG), certain data elements, and all corresponding files, will reflect this change effective 5/31/2022 (history will NOT be back-filled).***

(1) A separate Daily Metrics File is provided for the CRTx® Aggregate and each 1st-Level Sub-Index

(2) Calculation convention based on 1) static rates and 2) 10CPR/0CDR to the earlier of a) optional redemption date or b) maturity date, as of 5/31/2022 *(Note: Prior to 5/31/2022, values were calculated to maturity date).*

Sample Data

Val_Dt	Index	MTDTotRet	MTDPriceRet	MTDAccrRet	MTDCPNRet	MTDPaydownRet	MTDWritedownRet	MTDIntShortRet	BOMConstituents	BOMUPB
12/8/2022	CRTx® SUB	0.64%	0.41%	0.22%	0.00%	0.00%	0.0000%	0.0000%	157	23534820356
12/9/2022	CRTx® SUB	0.80%	0.55%	0.25%	0.00%	0.00%	0.0000%	0.0000%	157	23534820356
12/12/2022	CRTx® SUB	0.92%	0.59%	0.33%	0.00%	0.00%	0.0000%	0.0000%	157	23534820356
12/13/2022	CRTx® SUB	1.19%	0.83%	0.36%	0.00%	0.00%	0.0000%	0.0000%	157	23534820356
12/14/2022	CRTx® SUB	1.29%	0.90%	0.39%	0.00%	0.00%	0.0000%	0.0000%	157	23534820356
12/15/2022	CRTx® SUB	1.69%	1.27%	0.42%	0.00%	0.00%	0.0000%	0.0000%	157	23534820356
12/16/2022	CRTx® SUB	1.74%	1.30%	0.44%	0.00%	0.00%	0.0000%	0.0000%	157	23534820356

CRTx® Enterprise Data Files Via MFCo Data Portal (continued)

CRTx® Daily Metrics File (continued)

Sample Data (continued)

BOMMktVal	BOMWAvgSecMkt	BOMWAvgCPNMa	BOMWAvgCPN	EODParWAvgPx	EODWAvgDM	EODWAvgLife	EODWAvgDur	EODWAvgCvx	EODWAvgYld	EODIndexVal
22192497336	94.3	567	9.43	94.56	657	4.66	3.46	0.36	10.84	230.18728746
22192497336	94.3	567	9.43	94.69	654	4.66	3.46	0.36	10.84	230.57235524
22192497336	94.3	567	9.43	94.72	653	4.65	3.46	0.36	10.82	230.84848220
22192497336	94.3	567	9.43	94.95	648	4.65	4.85	0.36	10.78	231.45471399
22192497336	94.3	567	9.43	95.01	647	4.65	4.84	0.36	10.78	231.68260680
22192497336	94.3	567	9.43	95.37	640	4.64	4.84	0.36	10.72	232.59764753
22192497336	94.3	567	9.43	95.39	639	4.64	4.84	0.36	10.72	232.72056939

CRTx® Enterprise Data Files Via MFCo Data Portal (continued)

CRTx® Monthly Metrics File – Basic and Full Versions (*)

Availability - Released on the last business day of the month (.xls file format)

Glossary & Layout

MONTHLY METRICS FILE (1)			
ELEMENT NAME	**DESCRIPTION**	**TYPE**	**FORMAT**
Val_Dt	Last business day of the respective Valuation Month.	DATE	M/D/YYYY
Index	Index/Sub-Index name within CRTx® Index Suite.	ALPHA-NUMERIC	X(30)
MTDTotRet	Period total return percentage.	NUMERIC	99.99%
PriceRet	Period return percentage contributed by month-to-date consitutuent price changes.	NUMERIC	99.99%
AccrRet	Period return percentage contributed by month-to-date coupon accruals.	NUMERIC	99.99%
CPNRet	Period return percentage contributed by month-to-date coupon payments.	NUMERIC	99.99%
PaydownRet	Period return percentage contributed by month-to-date principal payments.	NUMERIC	99.99%
WritedownRet	Period return percentage contributed by month-to-date principal writedowns.	NUMERIC	99.99%
IntShortRet	Period return percentage contributed by month-to-date interest shortfalls.	NUMERIC	99.99%
BegConstituents	Number of index constituents for each respective valuation month.	NUMERIC	9999
BegUPB	Unpaid principal balance of all index constituent securities starting each respective valuation month.	NUMERIC	9(13).99
BegMktVal	Total cash market collar value of all index constituent securities starting each respective valuation month.	NUMERIC	9(13).99
BegWAvgSecMktVal	Weighted average security cash market value (price + accrued interest) starting each respective valuation month.	NUMERIC	999.99
BegWAvgCPNMargin	Weighted average security coupon margin (in bps) starting each respective valuation month.	NUMERIC	9999
BegWAvgCPN	Weighted average security coupon rate starting each respective valuation month.	NUMERIC	99.999
EndWAvgDM	Weighted average security discount margin (in bps) at end of each respective valuation month.	NUMERIC	9999
EndWAvgLife (2)*	**Constituency weighted average life at end of each respective valuation month (available starting 5/2018).**	**NUMERIC**	**99.99**
EndWAvgDur (2)*	**Constituency weighted average modified duration at end of each respective valuation month (available starting 5/2018).**	**NUMERIC**	**99.99**
EndWAvgCvx (2)*	**Constituency weighted average convexity at end of each respective valuation month (available starting 5/2018).**	**NUMERIC**	**99.99**
EndWAvgYld (2)*	**Constituency weighted average yield at end of each respective valuation month (available starting 5/2018).**	**NUMERIC**	**99.99**
EndIndexVal	Month-end index value (last business day of the respective Valuation Month).	NUMERIC	9999.99999999

Due to a calculation convention change from the Index's security pricing/information source (Refinitiv/LSEG), certain data elements, and all corresponding files, will reflect this change effective 5/31/2022 (history will NOT be back-filled).

(1) A separate Monthly Metrics File is provided for the CRTx® Aggregate and each 1st-Level Sub-Index

(2) Calculation convention based on 1) static rates and 2) 10CPR/0CDR to the earlier of a) optional redemption date or b) maturity date, as of 5/31/2022 *(Note: Prior to 5/31/2022, values were calculated to maturity date).*

CRTx® Enterprise Data Files Via MFCo Data Portal (continued)

CRTx® Monthly Metrics File (continued)

Sample Data

Val_Dt	Index	MTDTotRet	PriceRet	AccrRet	CPNRet	PaydownRet	WritedownRet	IntShortRet	BegConstituents	BegUPB
5/31/2018	CRTx® AGG	0.34%	-0.07%	0.01%	0.42%	-0.03%	-0.0013%	-0.0001%	171	42241567665

BegMktVal	BegWAvgSecMktV	BegWAvgCPNMar	BegWAvgCPN	EndWAvgDM	EndWAvgLife	EndWAvgDur	EndWAvgCvx	EndWAvgYld	EndIndexVal
45959484313	108.8	360	5.50	165	4.87	3.91	0.26	4.26	141.07763220

Note: The Monthly Metrics Basic Version includes the CRTx® Aggregate, Upper Mezzanine, Lower Mezzanine, and Subordinate indexes. The Full Version contains all CRTx® Index Suite standard indexes, including the new M2, B1, B2, & B index variants.

CRTx® Index Portal Screens/Functions

- Specific CRTx® Index Portal screens/functions accessibility depends upon the Client's right-to-use index license option selected and its associated Index Portal access level (I, II, or III).
- Index Portal access credentials and digital agreement is separate from Index Portal access credentials and usage agreement.

Daily Returns (Access Level I, II, III)

CRTx®: Index Portal

Daily Returns | Find A Valuation Date | Latest Index Rebalancing | Structures & Credit Metrics | Supply Metrics | Risk/Return Metrics | Index Baskets Guide | Back To Top

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UPDATES & NOTICES: NEW: M2, B1, B2, & B index variants added to the CRTx® Suite (in the Risk/Return Metrics screen).

CRTx® Daily Return Summary *

CRTx®	Level	Daily	Wkly	Mthly	MTD	QTD	YTD	1-YR (Ann.)	3-YR (Ann.)	As of Date
Aggregate	184.32	0.01%	0.24%	1.34%	0.61%	2.96%	12.41%	13.38%	8.27%	8/22/2023
Upper Mezzanine	133.50	0.02%	0.13%	0.92%	0.40%	1.94%	6.85%	8.12%	3.09%	8/22/2023
Lower Mezzanine	194.87	0.00%	0.09%	0.91%	0.48%	2.12%	9.50%	11.14%	6.74%	8/22/2023
Subordinate	275.85	0.01%	0.39%	1.90%	0.82%	4.17%	17.83%	18.06%	12.96%	8/22/2023
Upper/Lower Mezz.	170.34	0.01%	0.11%	0.91%	0.44%	2.03%	8.22%	9.69%	6.04%	8/22/2023
Lower Mezz./Sub.	212.72	0.00%	0.27%	1.51%	0.69%	3.36%	14.51%	15.36%	9.11%	8/22/2023
CAS	180.26	0.01%	0.16%	1.11%	0.49%	2.47%	10.59%	12.58%	8.28%	8/22/2023
STACR	184.24	0.01%	0.29%	1.50%	0.68%	3.26%	13.55%	13.84%	8.20%	8/22/2023
LLTV	182.89	0.01%	0.27%	1.38%	0.68%	2.83%	11.77%	13.24%	8.29%	8/22/2023
HLTV	165.27	0.01%	0.16%	1.26%	0.46%	3.20%	13.75%	13.71%	8.28%	8/22/2023
Upper Mezzanine 2023	105.27	0.03%	0.10%	0.94%	0.33%	2.01%	-	-	-	8/22/2023
2022	107.57	0.02%	0.15%	0.86%	0.41%	1.92%	6.93%	8.33%	-	8/22/2023
2021	106.84	0.02%	0.14%	1.25%	0.51%	1.90%	6.21%	6.59%	-	8/22/2023
2020		-	-	-	-	-	-	-	-	8/22/2023
2019		-	-	-	-	-	-	-	-	8/22/2023
2018		-	-	-	-	-	-	-	-	8/22/2023
2017		-	-	-	-	-	-	-	-	8/22/2023
2016		-	-	-	-	-	-	-	-	8/22/2023
2015		-	-	-	-	-	-	-	-	8/22/2023
<=2014		-	-	-	-	-	-	-	-	8/22/2023
Lower Mezzanine 2023	109.54	0.00%	-0.05%	0.78%	0.04%	2.99%	-	-	-	8/22/2023
2022	109.91	-0.01%	0.09%	1.18%	0.71%	2.67%	11.66%	12.73%	-	8/22/2023
2021	110.07	-0.02%	0.12%	0.93%	0.45%	2.24%	9.82%	10.15%	-	8/22/2023
2020	110.16	0.02%	0.13%	0.75%	0.40%	1.27%	6.06%	7.42%	5.14%	8/22/2023
2019	122.88	0.02%	0.14%	0.62%	0.42%	1.03%	5.83%	6.78%	4.53%	8/22/2023
2018	127.44	0.02%	0.14%	0.79%	0.52%	1.22%	7.15%	8.23%	6.04%	8/22/2023
2017	143.49	0.02%	0.14%	0.60%	0.43%	1.14%	5.81%	8.28%	5.40%	8/22/2023
2016	168.25	0.02%	0.13%	0.48%	0.39%	0.99%	7.40%	10.31%	6.38%	8/22/2023
2015	155.81	0.02%	0.14%	0.42%	0.45%	0.92%	6.41%	10.07%	5.78%	8/22/2023
<=2014	184.65	0.02%	0.13%	0.56%	0.42%	0.95%	5.71%	8.07%	10.66%	8/22/2023
Subordinate 2023	112.20	0.02%	0.40%	2.93%	0.66%	5.79%	-	-	-	8/22/2023
2022	116.30	0.03%	0.18%	2.06%	0.57%	5.35%	19.77%	20.43%	-	8/22/2023
2021	119.21	0.00%	0.34%	2.26%	0.74%	5.42%	23.17%	20.87%	-	8/22/2023
2020	111.50	0.00%	0.68%	2.02%	1.05%	3.97%	18.10%	17.07%	15.64%	8/22/2023
2019	153.73	-0.02%	0.32%	1.27%	0.96%	2.32%	12.26%	13.80%	13.12%	8/22/2023
2018	148.79	0.01%	0.94%	2.21%	1.33%	2.80%	13.54%	15.95%	12.70%	8/22/2023
2017	181.89	0.02%	0.14%	0.78%	0.56%	2.18%	11.55%	13.15%	10.33%	8/22/2023
2016	233.38	0.03%	0.24%	1.02%	0.76%	1.92%	13.21%	16.03%	13.77%	8/22/2023
2015	241.35	0.03%	0.24%	1.03%	0.74%	1.79%	10.86%	14.19%	9.02%	8/22/2023
<=2014										8/22/2023
RNI™ Aggregate	189.64	0.02%	0.13%	1.05%	0.57%	2.52%	9.93%	10.52%	7.17%	8/22/2023
RNI™ Upper Mezzanine	134.46	0.02%	0.10%	0.84%	0.36%	1.87%	6.91%	8.29%	3.12%	8/22/2023
RNI™ Lower Mezzanine	211.95	0.01%	0.09%	0.85%	0.92%	2.83%	12.39%	12.94%	5.56%	8/22/2023
RNI™ Subordinate	283.77	0.02%	0.37%	2.59%	0.75%	5.29%	17.95%	17.33%	14.15%	8/22/2023
RNI™ LLTV	189.34	0.02%	0.06%	1.20%	0.56%	2.57%	9.76%	11.16%	7.18%	8/22/2023
RNI™ HLTV	168.25	0.01%	0.34%	0.73%	0.58%	2.42%	10.48%	9.19%	6.96%	8/22/2023

CRTx® Index Portal Screens/Functions (continued)

Evaluation Date Finder (Access Level I, II, III)

CRTx® Aggregate Index Historical Lookback Tool *

Reset All

Month: 1 2 3 4 5 6 7 8 9 10 11 12

Day: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Year: 2015 2016 2017 2018 2019 2020 2021 2022 2023

Configurator Cub...

Valuation Date	Index	Index Level	Daily	Wkly	Mthly	MTD	QTD	YTD	1-YR	3-YR
2023-08-22	CRTx AGG	184.32126	0.00900%	0.23530%	1.34451%	0.60576%	2.95573%	12.41056%	13.37909%	8.26784%

Latest Index Rebalancing (Access Level I, II, III)

CRTx® Index Rebalancing Update *

CRTx® Index Rebalancing Update (8/1/23)

Full Report (PDF)

(Click to image to enlarge)

The CRTx® Aggregate index posted a 2.34% total return in July, the 4th straight winning month in a row. A bull flattening credit curve, on top of substantial floater carry, continued to buoy GSE CRT returns for the month amid rallying equities and mixed performance across the broader fixed income market. YTD, the sector is outperforming rates and IG/HY, with the CRTx® AGG gaining 11.73% so far, as the GSE CRT market reaches its 10-year anniversary.

Jul 2023 CRTx® AGG Tot Ret	+234 bps
Index Month-End Closing Value	**183.21**
Price Attribution	*+156 bps*
Paydown Attribution	*-1 bps*
Cpn Accr&Pmt Attribution	*+78 bps*
Writedown+Int Shortfall Attribution	*-0.02 bps*
Excess Return	+190 bps
Volatility (Annualized)	0.75%
UPB Paydown %	0.96%
QTD Total Return	**2.34%**
YTD Total Return	**11.73%**

CRTx® AGG Rebalancing For Aug 2023

As of 7/31/2023

August 2023 Aggregate Basket (w/MoM Δ):

- **Beg. UPB ($B):** $52.35 +2.0%
- **Beg. Market Value ($B):** $53.92 +3.6%
- **Constituents:** 351 +7
- **WAvg Constituent Value:** 102.99 +1.62 pts
- **WAvg Constituent Coupon:** 9.28% +8 bps

Index (+) Entries* & *(-) Exits*

(+) CAS 2023-R05 1M1/1M2/1B1/1B2

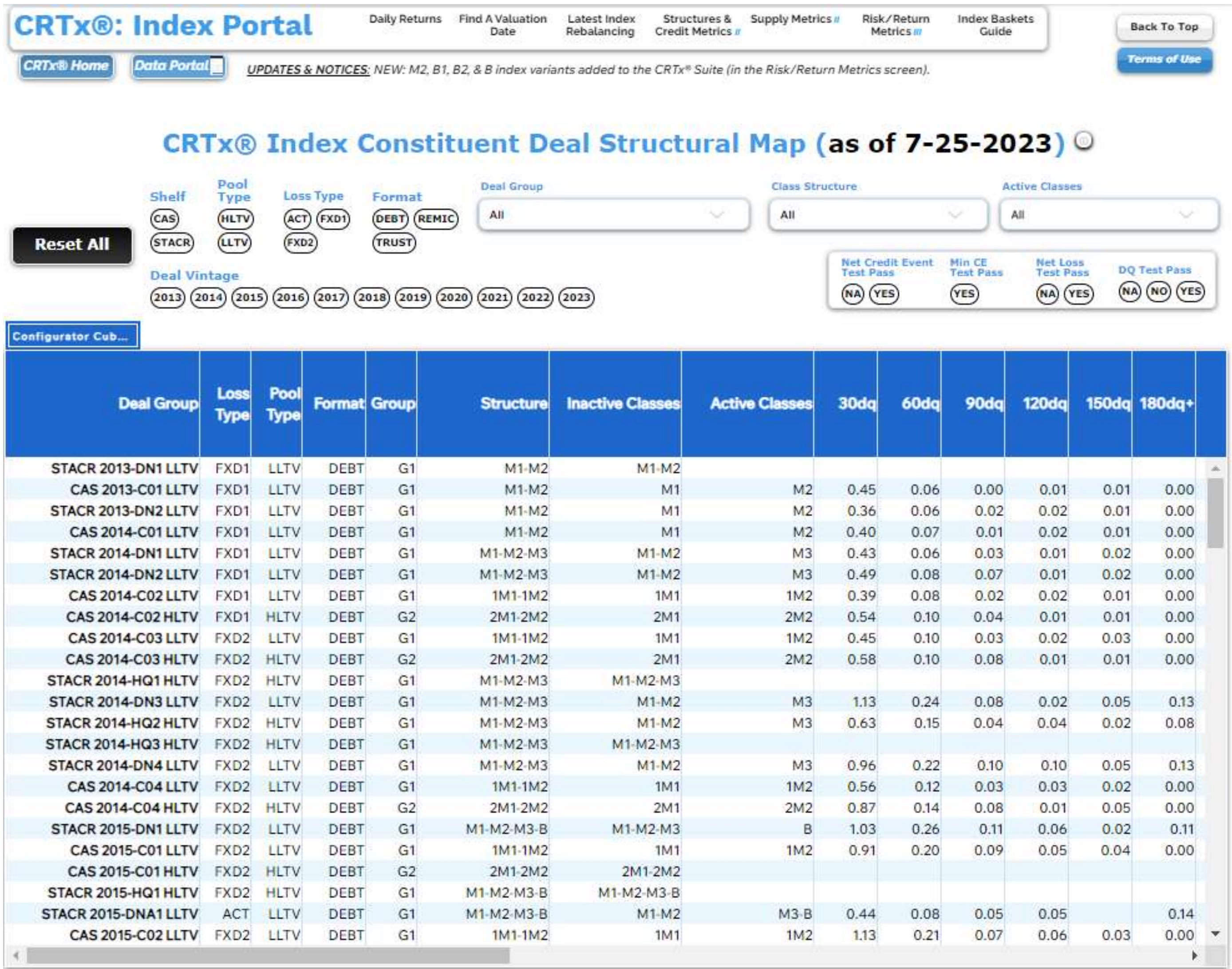
(+) CAS 2023-R06 1M1/1M2/1B1/1B2

(-) STACR 2013-DN1 M2 (MATURED)

*2.82% of Beg. Index Market Value

CRTx® Index Portal Screens/Functions (continued)

Structure and Credit Metrics (Access Level II, III) (1)



Deal Group	Loss Type	Pool Type	Format	Group	Structure	Inactive Classes	Active Classes	30dq	60dq	90dq	120dq	150dq	180dq+
STACR 2013-DN1 LLTV	FXD1	LLTV	DEBT	G1	M1-M2	M1-M2							
CAS 2013-C01 LLTV	FXD1	LLTV	DEBT	G1	M1-M2	M1	M2	0.45	0.06	0.00	0.01	0.01	0.00
STACR 2013-DN2 LLTV	FXD1	LLTV	DEBT	G1	M1-M2	M1	M2	0.36	0.06	0.02	0.02	0.01	0.00
CAS 2014-C01 LLTV	FXD1	LLTV	DEBT	G1	M1-M2	M1	M2	0.40	0.07	0.01	0.02	0.01	0.00
STACR 2014-DN1 LLTV	FXD1	LLTV	DEBT	G1	M1-M2-M3	M1-M2	M3	0.43	0.06	0.03	0.01	0.02	0.00
STACR 2014-DN2 LLTV	FXD1	LLTV	DEBT	G1	M1-M2-M3	M1-M2	M3	0.49	0.08	0.07	0.01	0.02	0.00
CAS 2014-C02 LLTV	FXD1	LLTV	DEBT	G1	1M1-1M2	1M1	1M2	0.39	0.08	0.02	0.02	0.01	0.00
CAS 2014-C02 HLTV	FXD1	HLTV	DEBT	G2	2M1-2M2	2M1	2M2	0.54	0.10	0.04	0.01	0.01	0.00
CAS 2014-C03 LLTV	FXD2	LLTV	DEBT	G1	1M1-1M2	1M1	1M2	0.45	0.10	0.03	0.02	0.03	0.00
CAS 2014-C03 HLTV	FXD2	HLTV	DEBT	G2	2M1-2M2	2M1	2M2	0.58	0.10	0.08	0.01	0.01	0.00
STACR 2014-HQ1 HLTV	FXD2	HLTV	DEBT	G1	M1-M2-M3	M1-M2-M3							
STACR 2014-DN3 LLTV	FXD2	LLTV	DEBT	G1	M1-M2-M3	M1-M2	M3	1.13	0.24	0.08	0.02	0.05	0.13
STACR 2014-HQ2 HLTV	FXD2	HLTV	DEBT	G1	M1-M2-M3	M1-M2	M3	0.63	0.15	0.04	0.04	0.02	0.08
STACR 2014-HQ3 HLTV	FXD2	HLTV	DEBT	G1	M1-M2-M3	M1-M2-M3							
STACR 2014-DN4 LLTV	FXD2	LLTV	DEBT	G1	M1-M2-M3	M1-M2	M3	0.96	0.22	0.10	0.10	0.05	0.13
CAS 2014-C04 LLTV	FXD2	LLTV	DEBT	G1	1M1-1M2	1M1	1M2	0.56	0.12	0.03	0.03	0.02	0.00
CAS 2014-C04 HLTV	FXD2	HLTV	DEBT	G2	2M1-2M2	2M1	2M2	0.87	0.14	0.08	0.01	0.05	0.00
STACR 2015-DN1 LLTV	FXD2	LLTV	DEBT	G1	M1-M2-M3-B	M1-M2-M3	B	1.03	0.26	0.11	0.06	0.02	0.11
CAS 2015-C01 LLTV	FXD2	LLTV	DEBT	G1	1M1-1M2	1M1	1M2	0.91	0.20	0.09	0.05	0.04	0.00
CAS 2015-C01 HLTV	FXD2	HLTV	DEBT	G2	2M1-2M2	2M1-2M2							
STACR 2015-HQ1 HLTV	FXD2	HLTV	DEBT	G1	M1-M2-M3-B	M1-M2-M3-B							
STACR 2015-DNA1 LLTV	ACT	LLTV	DEBT	G1	M1-M2-M3-B	M1-M2	M3-B	0.44	0.08	0.05	0.05		0.14
CAS 2015-C02 LLTV	FXD2	LLTV	DEBT	G1	1M1-1M2	1M1	1M2	1.13	0.21	0.07	0.06	0.03	0.00

(1) Analytic output elements include key structural features, current delinquency pipeline figures, trigger tests, original and outstanding balances, and deal maturity/optional redemption dates.

CRTx® Index Portal Screens/Functions (continued)

Supply Metrics (Access Level II, III)

CRTx® Index Eligible Sector Supply Metrics* ($MM as of 7-31-2023)

Month End	Float	Gross Supply	Pay-downs	Write-downs	Tenders	Net Supply	% Chg MoM
2023-07-31	52,350.98	1,503.76	497.52	-.18	.00	+1,006.42	+1.96%
2023-06-30	51,344.56	512.00	376.64	0.06	0.00	+135.29	+0.26%
2023-05-31	51,209.27	1,703.94	351.11	0.22	1,780.21	-427.61	-0.83%
2023-04-28	51,636.88	762.00	333.24	0.16	0.00	428.6	0.84%
2023-03-31	51,208.28	611.00	269.24	0.06	0.00	341.69	0.67%
2023-02-28	50,866.59	709.14	276.08	0.10	988.71	-555.76	-1.08%
2023-01-31	51,422.35	730.75	299.95	0.03	0.00	430.77	0.84%
2022-12-30	50,991.58	0.00	315.47	0.51	1,527.44	-1,843.42	-3.49%
2022-11-30	52,835.00	0.00	447.47	0.14	0.00	-447.61	-0.84%
2022-10-31	53,282.61	0.00	474.53	0.27	317.43	-792.23	-1.47%
2022-09-30	54,074.84	2,273.03	465.18	0.28	0.00	1,807.57	3.46%
2022-08-31	52,267.27	1,166.30	509.11	0.14	1,258.41	-601.37	-1.14%
2022-07-29	52,868.64	1,493.11	598.48	0.17	2,331.64	-1,437.18	-2.65%
2022-06-30	54,305.82	2,176.38	689.16	0.38	1,888.03	-401.19	-0.73%
2022-05-31	54,707.01	2,471.03	829.79	0.19	0.00	1,641.05	3.09%
2022-04-29	53,065.96	2,984.38	865.97	0.24	0.00	2,118.18	4.16%
2022-03-31	50,947.78	3,057.61	867.66	0.37	0.00	2,189.58	4.49%
2022-02-28	48,758.20	3,159.89	879.88	0.58	1,708.47	570.95	1.18%
2022-01-31	48,187.25	2,859.26	974.26	1.13	0.00	1,883.88	4.07%
2021-12-31	46,303.37	2,855.84	978.99	2.18	0.00	1,874.67	4.22%
2021-11-30	44,428.70	1,276.00	893.50	0.37	2,090.24	-1,708.11	-3.70%
2021-10-29	46,136.81	2,686.01	944.99	0.04	0.00	1,740.98	3.92%
2021-09-30	44,395.83	1,071.00	977.13	0.08	1,342.98	-1,249.19	-2.74%
2021-08-31	45,645.02	0.00	896.92	0.32	0.00	-897.24	-1.93%
2021-07-30	46,542.26	1,186.00	857.10	0.20	0.00	328.7	0.71%
2021-06-30	46,213.56	550.00	892.87	0.23	0.00	-343.11	-0.74%
2021-05-28	46,556.67	0.00	1,058.11	0.25	0.00	-1,058.37	-2.22%
2021-04-30	47,615.04	950.00	1,207.50	0.02	0.00	-257.51	-0.54%
2021-03-31	47,872.55	1,188.00	1,045.16	0.20	0.00	142.64	0.30%
2021-02-26	47,729.91	1,386.00	933.14	0.38	0.00	452.49	0.96%
2021-01-29	47,277.42	970.00	840.51	0.43	0.00	129.06	0.27%
2020-12-31	47,148.36	790.00	565.97	0.30	0.00	223.74	0.48%
2020-11-30	46,924.62	1,080.00	425.03	0.16	0.00	654.8	1.42%
2020-10-30	46,269.82	1,086.00	551.37	0.18	0.00	534.45	1.17%
2020-09-30	45,735.37	680.00	1,020.66	0.31	0.00	-340.98	-0.74%
2020-08-31	46,076.35	1,088.00	1,693.03	0.39	0.00	-605.42	-1.30%

CRTx® Index Portal Screens/Functions (continued)

Index Desk Reference™ Risk/Return Metrics (Access Level III) (1)(2)

CRTx®: Index Portal

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UPDATES & NOTICES: NEW: M2, B1, B2, & B index variants added to the CRTx® Suite (in the Risk/Return Metrics screen).

Reset Selections

CRTx® Index Desk Reference™ (as of 7-31-2023)

Valuation Month(s): 1 2 3 4 5 6 7 8 9 10 11 12

Valuation Year(s): 2015 2016 2017 2018 2019 2020 2021 2022 2023

Single Index Selection: All

Quick Multi-Index Selection

Style: RNI STD

Deal Vintage: 2014 2015 2016 2016 2017 2017 2018 2019 2020 2021 2022 2023

Index Cohort Categories: AGG, B 1ST LOSS, B1, B1 CAS MID/POSTCOVID, B1 CAS PRECOVID, B1 STACR MID/POSTCOVID, B1 STACR PRECOVID, B2, B2 CAS MID/POSTCOVID, B2 PRECOVID, B2 STACR MID/POSTCOVID, CAS, HLTV, LLTV, LMEZZ, LMEZZ/SUB, M1A/M1B STACR, M2 ACT PRECOVID, M2 MID/POSTCOVID, M2/M3 FXDSEV, STACR, SUB, UMEZZ, UMEZZ/LMEZZ

Configurator Cub...

Mth End Val Date	Index	IndexVal	Index Mkt Val ($B)	Ct	WA Mkt Px+Accr	WA Cpn	WA Cpn Margin	PriceRet	AccrRet	CPNRet	PrincRet	Writedown Ret	IntShort Ret	MTD TotRet	QTD	YTD	1-YR
2023-07-31	CRTx AGG	183.21145	$52.049	344	101.40	9.21	412	1.56%	0.05%	0.73%	-0.01%	0.0004%	-0.0006%	2.34%	2.34%	11.73%	16.05%
2023-06-30	CRTx AGG	179.02962	$51.478	341	100.50	9.13	412	0.89%	-0.05%	0.81%	0.00%	-0.0001%	-0.0006%	1.65%	5.16%	9.18%	13.70%
2023-05-31	CRTx AGG	176.13308	$51.727	333	100.20	9.01	413	0.49%	0.07%	0.73%	0.03%	-0.0005%	-0.0006%	1.33%	3.46%	7.42%	10.77%
2023-04-28	CRTx AGG	173.82676	$50.591	330	98.80	8.77	413	1.42%	-0.03%	0.72%	0.00%	-0.0003%	-0.0006%	2.11%	2.11%	6.01%	8.17%
2023-03-31	CRTx AGG	170.24264	$50.674	327	99.60	8.64	412	-0.91%	0.07%	0.67%	0.00%	-0.0001%	-0.0006%	-0.17%	3.82%	3.82%	6.42%
2023-02-28	CRTx AGG	170.52698	$50.913	324	99.00	8.51	414	0.82%	-0.12%	0.78%	0.05%	-0.0002%	-0.0006%	1.53%	4.00%	4.00%	5.50%
2023-01-31	CRTx AGG	167.95503	$49.608	322	97.30	8.22	414	1.67%	0.08%	0.68%	0.00%	-0.0001%	-0.0006%	2.43%	2.43%	2.43%	2.87%
2022-12-30	CRTx AGG	163.97148	$50.795	323	96.10	7.80	410	1.37%	-0.04%	0.71%	0.06%	-0.0011%	-0.0006%	2.09%	1.68%	0.49%	0.50%
2022-11-30	CRTx AGG	160.60767	$51.263	325	96.20	7.30	410	-0.03%	-0.01%	0.65%	0.00%	-0.0003%	-0.0006%	0.61%	-0.41%	-1.57%	-1.28%
2022-10-31	CRTx AGG	159.63027	$52.881	325	97.80	6.64	407	-1.61%	0.05%	0.55%	0.01%	-0.0006%	-0.0005%	-1.01%	-1.01%	-2.17%	-1.74%
2022-09-30	CRTx AGG	161.26611	$51.923	316	99.30	6.34	407	-1.56%	-0.03%	0.57%	-0.01%	-0.0006%	-0.0005%	-1.03%	2.42%	-1.17%	-0.55%
2022-08-31	CRTx AGG	162.94367	$51.179	311	96.80	5.87	406	2.62%	0.04%	0.52%	0.04%	-0.0003%	-0.0005%	3.21%	3.49%	-0.14%	1.03%
2022-07-29	CRTx AGG	157.87043	$52.723	305	97.10	5.21	399	-0.17%	0.02%	0.41%	0.02%	-0.0003%	-0.0005%	0.27%	0.27%	-3.25%	-1.87%
2022-06-30	CRTx AGG	157.45302	$53.913	297	98.60	4.66	388	-1.39%	-0.04%	0.43%	0.02%	-0.0008%	-0.0004%	-0.98%	-1.57%	-3.51%	-1.85%
2022-05-31	CRTx AGG	159.01175	$53.054	291	100.00	4.34	386	-1.40%	0.03%	0.36%	-0.02%	-0.0004%	-0.0004%	-1.03%	-0.60%	-2.55%	-0.20%
2022-04-29	CRTx AGG	160.67316	$50.883	285	99.90	4.14	386	0.13%	-0.02%	0.36%	-0.02%	-0.0005%	-0.0003%	0.44%	0.44%	-1.53%	1.40%
2022-03-31	CRTx AGG	159.96767	$49.321	280	101.20	3.93	380	-1.35%	0.03%	0.31%	-0.03%	-0.0008%	-0.0002%	-1.04%	-1.96%	-1.96%	2.16%
2022-02-28	CRTx AGG	161.64378	$49.476	272	102.70	3.86	378	-1.29%	-0.03%	0.32%	0.01%	-0.0012%	-0.0002%	-1.00%	-0.94%	-0.94%	3.02%
2022-01-31	CRTx AGG	163.26933	$47.722	264	103.10	3.92	383	-0.24%	0.02%	0.31%	-0.03%	-0.0025%	-0.0002%	0.06%	0.06%	0.06%	4.67%
2021-12-31	CRTx AGG	163.17299	$45.851	253	103.20	3.97	389	0.00%	0.00%	0.34%	-0.03%	-0.0049%	-0.0002%	0.30%	0.63%	5.86%	5.86%
2021-11-30	CRTx AGG	162.68742	$47.706	250	103.40	3.92	384	-0.20%	0.00%	0.33%	0.01%	-0.0008%	-0.0002%	0.15%	0.33%	5.54%	7.56%
2021-10-29	CRTx AGG	162.45187	$46.009	243	103.60	3.93	385	-0.10%	0.01%	0.29%	-0.03%	-0.0001%	-0.0002%	0.18%	0.18%	5.39%	9.04%
2021-09-30	CRTx AGG	162.15934	$47.210	240	103.40	3.93	385	0.24%	-0.03%	0.35%	-0.01%	-0.0002%	-0.0002%	0.55%	1.08%	5.20%	9.58%
2021-08-31	CRTx AGG	161.27826	$48.140	242	103.40	3.91	383	-0.07%	0.02%	0.32%	-0.02%	-0.0008%	-0.0001%	0.25%	0.53%	4.63%	10.19%
2021-07-30	CRTx AGG	160.87970	$47.807	239	103.50	3.91	383	-0.01%	-0.01%	0.33%	-0.02%	-0.0005%	-0.0001%	0.29%	0.29%	4.37%	11.76%
2021-06-30	CRTx AGG	160.42175	$47.977	235	103.10	3.90	382	0.35%	0.02%	0.33%	-0.02%	-0.0005%	-0.0001%	0.68%	2.45%	4.07%	11.02%
2021-05-28	CRTx AGG	159.33749	$48.936	238	102.80	3.89	380	0.23%	-0.01%	0.31%	-0.02%	-0.0006%	-0.0001%	0.51%	1.76%	3.37%	20.97%
2021-04-30	CRTx AGG	158.53491	$48.748	236	101.80	3.87	378	0.94%	-0.02%	0.34%	-0.01%	0.0000%	-0.0001%	1.25%	1.25%	2.85%	28.03%
2021-03-31	CRTx AGG	156.58350	$48.858	235	102.40	3.87	376	-0.54%	0.05%	0.30%	-0.02%	-0.0004%	-0.0001%	-0.21%	1.58%	1.58%	37.79%
2021-02-26	CRTx AGG	156.91266	$48.282	232	102.10	3.90	377	0.31%	-0.03%	0.33%	-0.01%	-0.0009%	-0.0001%	0.59%	1.80%	1.80%	2.83%
2021-01-29	CRTx AGG	155.99102	$47.722	230	101.20	3.92	377	0.90%	0.01%	0.30%	-0.01%	-0.0010%	-0.0001%	1.20%	1.20%	1.20%	2.28%
2020-12-31	CRTx AGG	154.14299	$46.773	228	99.70	3.93	378	1.57%	-0.02%	0.36%	0.00%	-0.0007%	-0.0001%	1.91%	4.16%	2.26%	2.26%
2020-11-30	CRTx AGG	151.25856	$45.566	224	98.50	3.93	378	1.17%	0.01%	0.33%	0.01%	-0.0004%	-0.0001%	1.52%	2.21%	0.35%	1.00%

(1) NEW: M2, B1, B2, & B index variants added to the CRTx® Index Suite only available via the CRTx® Index Portal Index Desk Reference™ risk/return metrics screen/function.

(2) Analytic output elements are the same as in the Monthly Metrics File on the Data Portal (see page 9-10).

CRTx® Index Portal Screens/Functions (continued)

Index Baskets Guide (Access Level I, II, III)

<table>
<tr><th colspan="7">CRTx® Aggregate Index and Sub Index Constituent Eligibility Guide</th></tr>
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(AGG)</th><th colspan="2">Upper Mezzanine
(UMEZZ)</th><th>Lower Mezzanine
(LMEZZ)</th><th>Subordinate
(SUB)</th><th>LLTV</th><th>HLTV</th></tr>
<tr><td rowspan="2">All Index-Eligible FNMA CAS shelf and FHLMC STACR shelf At-Issuance Classes</td><td>FNMA CAS Shelf:
M1 Classes</td><td>FHLMC STACR Shelf:
M1/M1A/M1B Classes
(in M1/M2 structures)

M1/M2 Classes
(in M1/M2/M3 structures)</td><td>FNMA CAS Shelf:
M2 Classes

FHLMC STACR Shelf:
M2 Classes (in M1/M2 structures)</td><td>FNMA CAS Shelf:
All B Classes

FHLMC STACR Shelf:
All B Classes</td><td rowspan="2">All Index-Eligible FNMA CAS shelf and FHLMC STACR shelf At-Issuance Classes from deals referencing Low Loan to Value (LLTV) loans</td><td rowspan="2">All Index-Eligible FNMA CAS shelf and FHLMC STACR shelf At-Issuance Classes from deals referencing High Loan to Value (HLTV) loans</td></tr>
<tr><td colspan="4">Vintage Sub Index constituency determined by deal/security closing year (except 2013/2014 which are grouped as "2014").</td></tr>
<tr><td colspan="7">PRECOVID: Issuance prior to April 2020, MIDCOVID: Issuance from April 2020 to March 2023, POSTCOVID: Issuance from April 2023 forward</td></tr>
<tr><td colspan="7">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.</td></tr>
</table>

For information on CRTx® Rules and Guidelines, commercial licensing, data usage, and redistribution of the CRTx® suite of indexes, please contact:

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