



South Florida Bond Trader's Association Conference: Identifying MBS Risks and Actionable Opportunities in 2024

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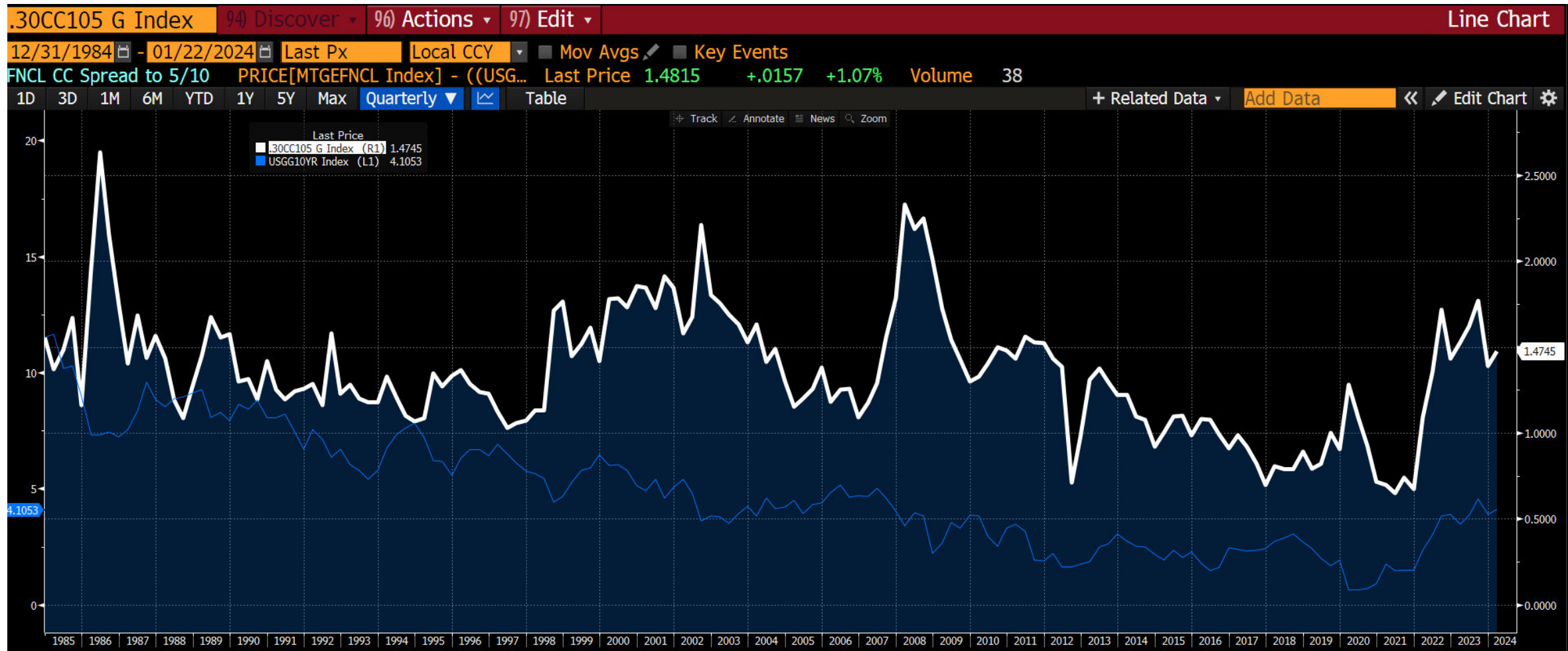
Part 1 - Fundamental/Technical analysis of macro trends within Agency MBS

Part 2 - Convexity (Price performance) versus "Carry" (Coupon Income)

Part 3 - Identifying and managing MBS prepayment risk in 2024

Part 4 - Case Study: Impact of VA loans and servicer behavior on prepayments and valuations in 2024

Is the Agency MBS sector currently undervalued?



1986 Peak 223bp vs 7.32 10yr Treas | 2008 Peak 232 bp vs 3.40 10yr | 2023 Peak 179bp vs 4.57 10yr (Spreads/Yields Averaged Quarterly)

FNMA 30yr Agency MBS Benchmark – 5yr Historical Average



FNMA 30yr MBS Current Coupon Yield vs 5/10yr Treasury Blend

Range: 01/22/19 to 01/19/2024

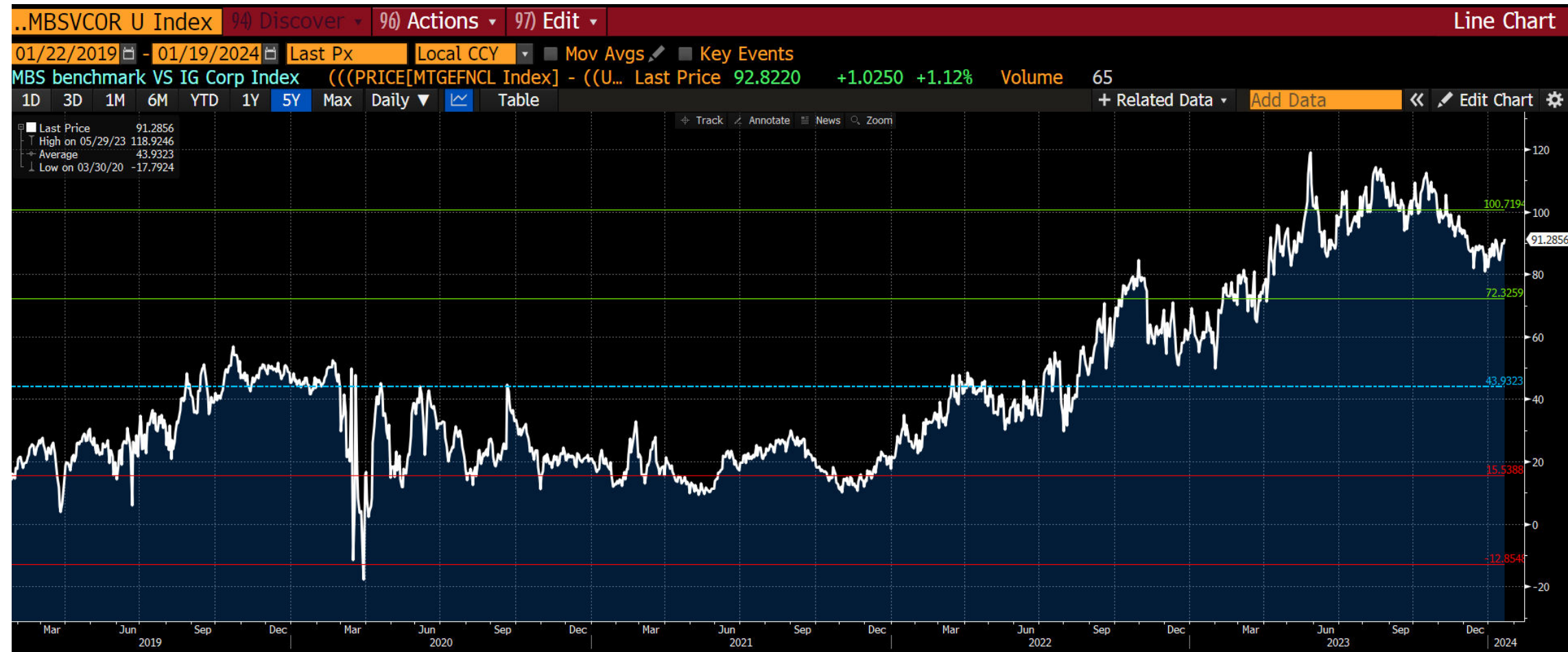
Current: 146bp | Avg Spread: 110bp | +1 Standard Deviation: +146bp | +2 Standard Deviation: 182bp

FNMA 30yr MBS Current Coupon OAS (Option Adjusted Spread) MOASFNCL Index <GO>



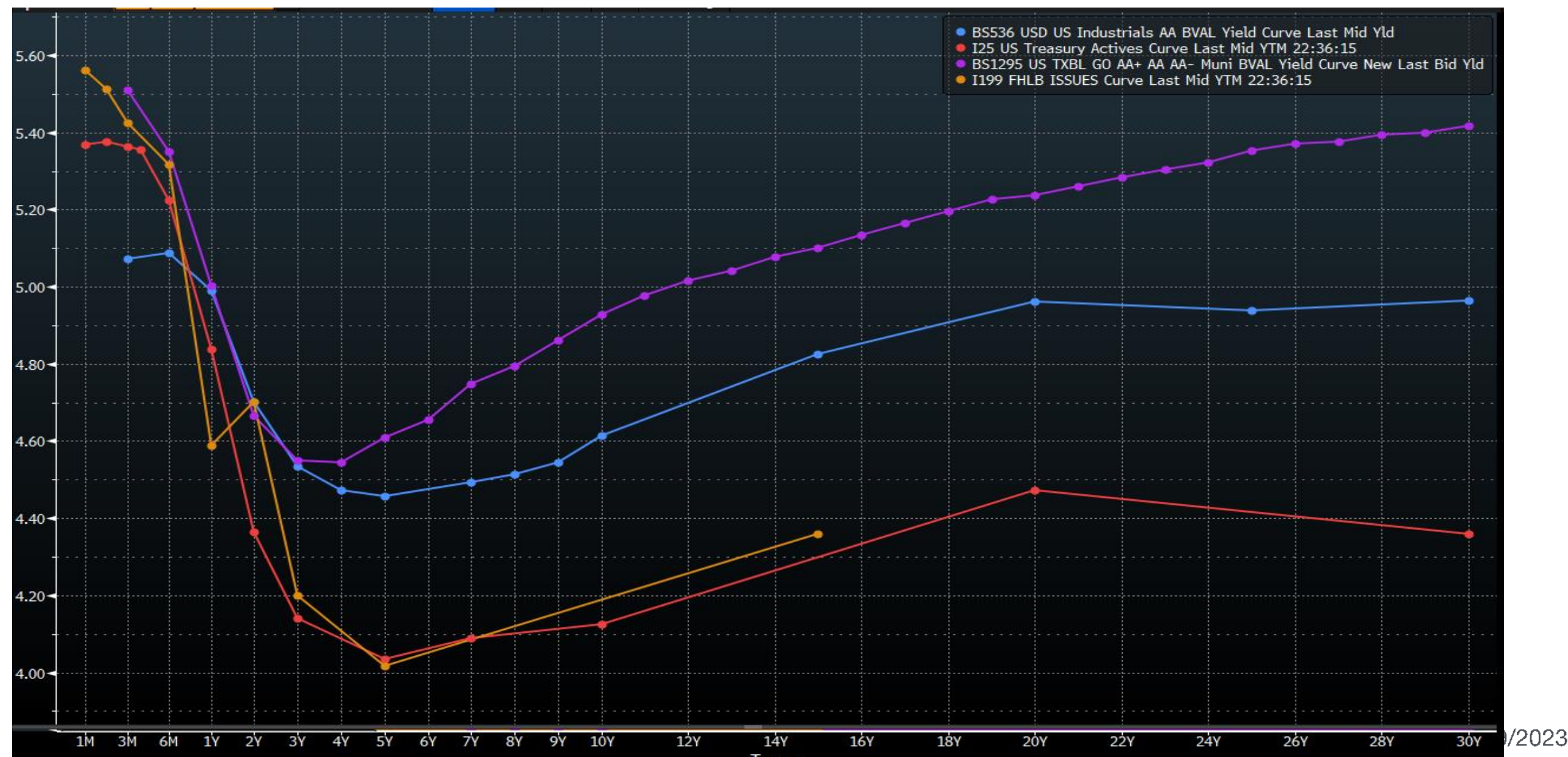
OAS (Option Free Spread) trading above the 5yr avg of 31bp, down from 86bp (+2 standard deviations) on 10/25/2023
Treasury OAS (I25 Discounting) – BAM Model

Agency MBS Benchmark Spread vs IG Corp Index (FNMA Current Coupon 30yr MBS Index vs CDX IG CDSI Gen 5y (IG Corp Bond Proxy Spread)



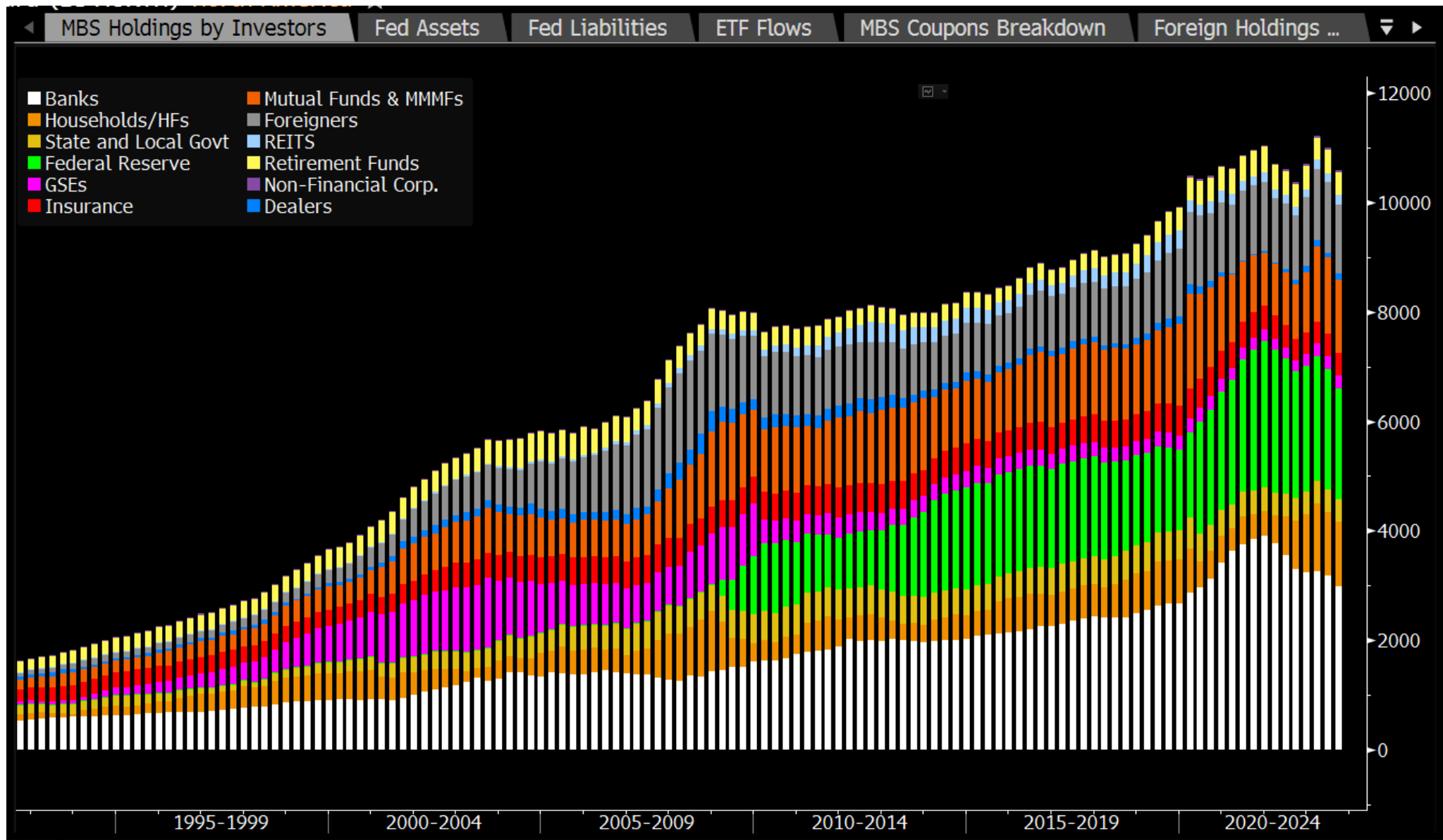
Current: +91bp vs 43bp 5yr Average | 72bp: +1 Standard Deviation | +100 bp: 2 Standard Deviations

Tracking competing sectors when evaluating Agency MBS



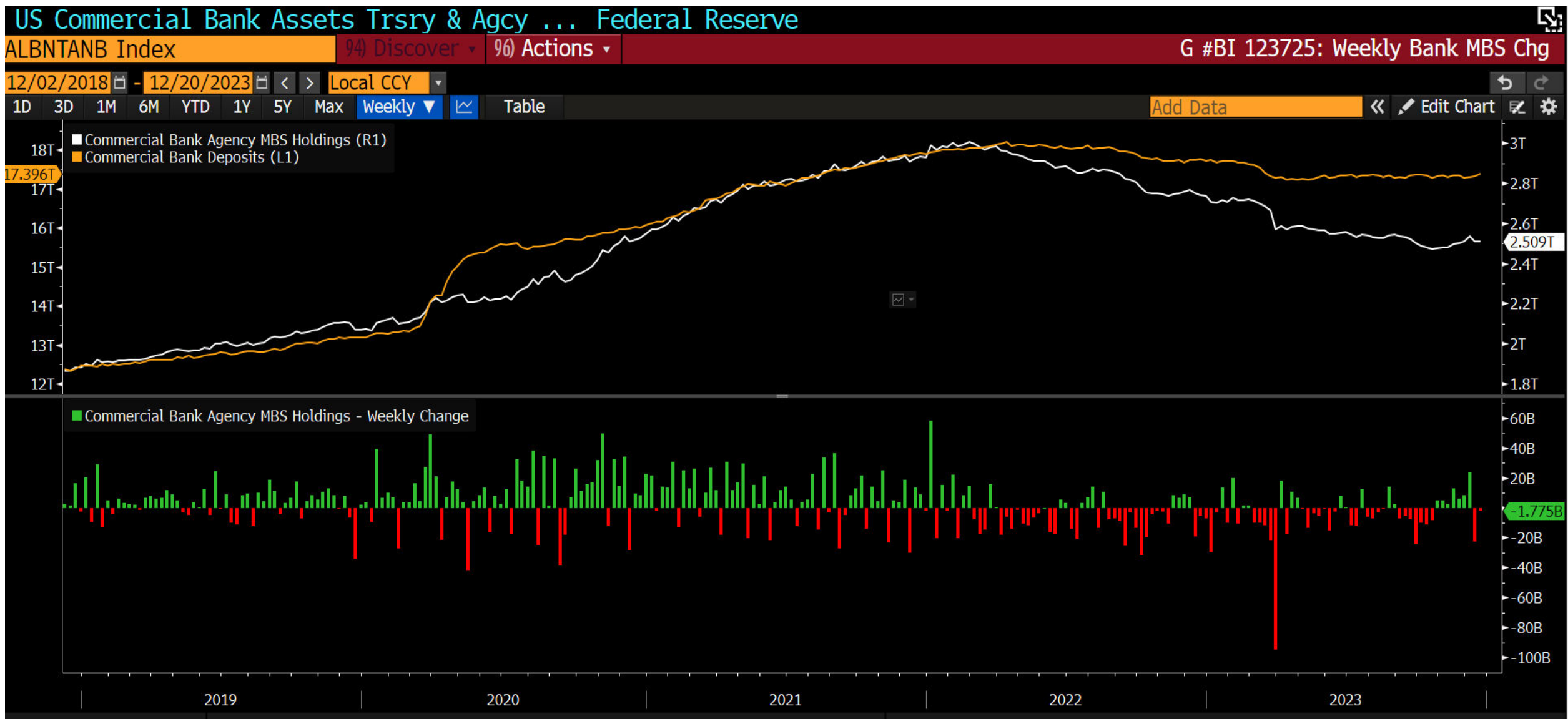
Source: Bloomberg

Agency MBS and other GSE Backed Securities Holdings by Investor Type



*As of 09/2023

US Commercial Bank Assets – Mortgage-Backed Securities (MBS) NSA



Source: Bloomberg Intelligence, Federal Reserve

Agency MBS Market Macro Trends

Deteriorating convexity in newly issued current coupon MBS pools

- Increasing GSE conforming limits, thus increasing Average Loan Sizes for new issue MBS (~\$417,662)
- Borrower quality improving: (FICO scores)
- Higher gross WACs relative to net WAC
- Low SATO collateral has exhibited steeper S curves (Prepayment rates versus interest rate incentive for refinancing)

Collateral Vintage Year	Current Coupon by Year	Balance	Wavg Credit Score	SATO	WAOLS	WAOLTV	WAC	WAC Dispersion (Gross WAC - Net WAC)	Max Loan Size
2015	3.5	\$ 211,730,759,516	749	-3	\$ 266,386	77	4.12	0.62	\$ 1,202,925
2016	3	\$ 234,029,419,714	760	-18	\$ 284,319	75	3.67	0.67	\$ 1,202,925
2017	3.5	\$ 174,245,853,217	755	-18	\$ 276,961	77	4.06	0.56	\$ 1,223,475
2018	4	\$ 190,603,776,108	749	-10	\$ 285,676	79	4.64	0.64	\$ 1,307,175
2019	3	\$ 306,009,415,153	758	-15	\$ 314,288	78	3.90	0.90	\$ 1,397,000
2020	2	\$ 702,933,972,082	766	-13	\$ 333,834	73	2.93	0.93	\$ 1,473,000
2021	2	\$ 1,055,536,492,458	761	-13	\$ 346,471	72	2.86	0.86	\$ 1,582,000
2022	2.5	\$ 169,112,084,828	748	-10	\$ 407,801	75	3.32	0.82	\$ 1,867,000
2023	5.5	\$ 158,172,098,516	757	-6	\$ 417,662	79	6.45	0.95	\$ 2,095,000

GSE UMBS (FNMA/FHLMC) Conforming Loan Limit History

Year	Single Family	% Chg (YoY)	Single Family (High Cost Area)	% Chg (YoY)
2023	\$726,200	12%	\$1,089,300	12%
2022	\$647,200	18%	\$970,800	18%
2021	\$548,250	7%	\$822,375	7%
2020	\$510,400	5%	\$765,600	5%
2019	\$484,350	7%	\$726,525	7%
2018	\$453,100	7%	\$679,650	7%
2017	\$424,100	2%	\$636,150	2%
2016	\$417,000	0%	\$625,500	0%
2015	\$417,000	0%	\$625,500	0%
2014	\$417,000	0%	\$625,500	0%
2013	\$417,000	0%	\$625,500	0%
2012	\$417,000	0%	\$625,500	0%
2011	\$417,000	0%	\$625,500	0%
2010	\$417,000	0%	\$625,500	0%
2009	\$417,000	0%	\$625,500	0%
2008	\$417,000	0%	\$625,500	0%
2007	\$417,000	0%	\$625,500	0%
2006	\$417,000	16%	\$625,500	16%
2005	\$359,650	--	\$539,475	--

G2SF FHA, G2SF VA, UMBS (Fannie Mae)

% of Agency MBS Currently Refinanceable

G2SF VA L 30yr WAC	Outstanding	Balance %	G2SF FHA 30yr WAC	Outstanding	Balance %	UMBS 30yr WAC	Outstanding	Balance %
Total	\$ 884,131,845,067	100%	Total	\$ 1,148,763,871,037	100%	Total	\$ 4,933,208,584,946	100%
<= 3.00	\$ 427,063,822,387	48.30%	<= 3.00	\$ 261,201,375,128	22.70%	<= 3.00	\$ 1,453,221,420,581	29.10%
<= 3.50	\$ 554,117,094,383	62.70%	<= 3.50	\$ 476,515,766,824	41.50%	<= 3.50	\$ 2,612,470,898,838	53.00%
<= 4.00	\$ 636,698,266,781	72.00%	<= 4.00	\$ 663,843,750,907	57.80%	<= 4.00	\$ 3,394,264,799,457	68.80%
<= 4.50	\$ 677,285,565,483	76.60%	<= 4.50	\$ 774,494,267,213	67.40%	<= 4.50	\$ 3,743,956,299,457	75.90%
<= 5.00	\$ 719,030,051,438	81.30%	<= 5.00	\$ 860,728,171,379	74.90%	<= 5.00	\$ 4,041,423,858,971	81.90%
<= 5.50	\$ 759,020,733,861	85.80%	<= 5.50	\$ 931,041,798,956	81.00%	<= 5.50	\$ 4,200,426,427,617	85.10%
<= 6.00	\$ 804,283,670,578	91.00%	<= 6.00	\$ 1,001,732,434,673	87.20%	<= 6.00	\$ 4,426,912,824,330	89.70%
<= 6.50	\$ 839,372,314,322	94.90%	<= 6.50	\$ 1,062,141,186,255	92.50%	<= 6.50	\$ 4,576,706,645,644	92.80%
<= 7.00	\$ 868,511,433,811	98.20%	<= 7.00	\$ 116,206,035,741	97.20%	<= 7.00	\$ 4,791,595,789,496	97.10%
Currently Refinanceable	\$ 35,190,945,827	4.00%	Currently Refinanceable	\$ 12,396,237,929	2.80%	Currently Refinanceable	\$ 99,120,418,175	2.01%

Assumption: Currently refinanceable, assumes at least 50bps in the money from current market 30yr mortgage rates (6.92% 30yr FRM per Mortgagenewsdaily.com (1/21/2024))

Importance of OAS (Option Adjusted Spread) in MBS – 2024 & beyond

- A key measure of yield spread in evaluation relative value between fixed income investments of like credit quality with embedded call/prepayment options
- OFS (Option Free Spread): Represents the spread that would exist if a bond did not have any embedded options (OFS can be calculated using the Black-Scholes model for pricing options)
- Option Cost: $\text{Yield Spread (I-Spread)} - \text{Option Free Spread (OFS)} = \text{Option Cost (Cashflow Timing Uncertainty)}$
- OAS analysis considers a large set of interest rate scenarios (BAM Model: 256 Interest Rate Paths)
- OAS: $\text{Yield Spread (Static "I" Spread)} - \text{Option Cost}$

FNMA (UMBS) TBA 30yr & 15yr Pricing and Key Valuation Metrics

30yr TBA	Px Ask	WAL	I-Spread	Yield	+300 WAL	OAS	Duration	Convexity
FNCL 2 G0 Mtge	81-08	10.36	53.73	4.54	10.94	29.58	8.29	0.50
FNCL 2.5 G0	↓84-23 ³ / ₈	10.19	60.69	4.60	11.03	32.72	7.86	0.23
FNCL 3 G0	↓88-04 ¹ / ₈	10.12	68.41	4.68	11.17	35.59	7.41	0.02
FNCL 3.5 G0	↓91-17 ³ / ₄	9.85	76.81	4.75	11.43	35.48	6.85	-0.36
FNCL 4 G0	↓94-12 ³ / ₄	9.56	88.44	4.86	11.64	35.15	6.15	-0.78
FNCL 4.5 G0	↓96-28 ⁵ / ₈	9.10	104.55	5.02	12.01	33.17	5.36	-1.30
FNCL 5 G0	↓99-00+	8.16	124.40	5.20	11.90	32.61	4.25	-1.94
FNCL 5.5 G0	↓100-15 ³ / ₄	6.76	147.04	5.41	11.63	35.59	3.21	-2.13
FNCL 6 G0	↓101-18	5.44	169.51	5.60	11.28	43.27	2.39	-2.13
FNCL 6.5 G0	↓102-16 ¹ / ₄	3.58	161.50	5.60	11.14	46.91	1.66	-1.62
15yr TBA	Px Ask	WAL	I-Spread	Yield	+300 WAL	OAS	Duration	Convexity
FNCL 2 G0	↓89-21 ⁷ / ₈	5.28	45.47	4.36	5.37	38.71	4.46	0.19
FNCL 2.5 G0	↑92-07 ³ / ₄	5.39	31.84	4.23	5.56	23.69	4.38	0.08
FNCL 3 G0	↓94-10 ³ / ₄	5.31	38.64	4.29	5.65	21.00	4.27	-0.07
FNCL 3.5 G0	↓96-10	5.31	44.10	4.35	5.69	19.16	4.03	-0.31
FNCL 4 G0	↓98-05+	5.47	50.79	4.42	6.17	9.05	3.66	-0.76
FNCL 4.5 G0	↓99-16+	5.24	71.87	4.62	6.10	18.55	3.25	-0.84
FNCL 5 G0	↓100-20 ⁵ / ₈	4.94	93.75	4.84	6.21	28.44	2.90	-0.91
FNCL 5.5 G0	↓101-14+	4.37	116.21	5.10	6.18	54.56	2.75	-0.90

- Most Agency and Non-Agency MBS can be evaluated relative to similar profile coupon and duration TBA equivalent cohorts
- Deliverable collateral will generally trade at or above TBA equivalents
- Non-Deliverable collateral will trade below similar coupon TBA pricing
- Examples of non-deliverable collateral types: Jumbo, Modified, Reperforming
- Structured MBS (CMOs) with similar coupon and duration profiles can trade well behind collateral equivalents, providing opportunities for enhanced risk adjusted returns

Strategies for Sourcing Convexity/Prepayment Protection in 2024

Identify attractive, risk adjusted return opportunities with more convex collateral attributes

- Lower Current/Maximum Loan Balance vs New Issue Loan WAVG loan balance of ~ 400k – 450k
- Max Loan Balance Tiers: 85K, 110K, 150K, 175K, 225K, 250K, 300K
- FICO – Lower FICO's impede refinancing
 - < 580: Poor
 - 580-669: Fair
 - 670-739: Good
 - 740-799: Very Good
 - 800 and Above: Exceptional
- Slower Prepaying Mortgage Servicers (Bank Servicing vs Nonbank Servicing)
- Slower Prepaying Geographies: NY, FL, TX
- Investor/vacation versus owner occupied properties
- Seasoning/Loan Age (WALA): N(New): 30 months or less | M(Moderate): 31 to 59 months | S(Seasoned): > 60 months

Bloomberg Specified Collateral Cohorts

Spec type	Description	Sector
Loan balance		
LB085	Max OLS <= \$85K	All
LB110	\$85K < Max OLS <= \$110K	All
LB125	\$110K < Max OLS <= \$125K	All
LB150	\$125K < Max OLS <= \$150K	All
LB175	\$150K < Max OLS <= \$175K	All
LB200	\$175K < Max OLS <= \$200K	All
LB200P	Max OLS > \$200K	All
MHA (Orig Date > May 09 & % Refi >= 95%)		
MHA080	Min OLTV > 80, Max OLTV <= 90	Conv
MHA090	Min OLTV > 90, Max OLTV <= 95	Conv
MHA095	Min OLTV > 95, Max OLTV <= 100	Conv
MHA100	Min OLTV > 100, Max OLTV <= 105	Conv
High LTV		
LTV080	80 < WAOLTV <= 90	Conv
LTV090	90 < WAOLTV <= 95	Conv
LTV095	95 < WAOLTV <= 100	Conv
LTV100	100 < WAOLTV <= 105	Conv

Spec type	Description	Sector
Credit score		
FICO	Max Credit Score < 700	Conv
CS680	WA Credit Score < 680	Conv
CS700	680 <= WA Credit Score < 700	Conv
CS720	700 <= WA Credit Score < 720	Conv
CS740	720 <= WA Credit Score < 740	Conv
CS760	740 <= WA Credit Score < 760	Conv
CS760P	WA Credit Score >= 760	Conv
Occupancy		
INV	% Investor >= 95%	Conv
GNMA Spec Cohorts		
RHS	% Rural Housing Service >= 95%	GN/G2
HARP	% 1bp UFMIP > 98%, % FHA = 100%	GN/G2
HLM	% Loss Mitigation >= 90%	GN/G2
Geography		
NY	% NY >= 95%	All
PR	% PR >= 95%	All
TX	% TX >= 95%	All
CA	% CA >= 95%	All
FL	% FL >= 95%	All
Worst-to-deliver		
W2D	Excludes Waterfall Spec Pools	All

Bloomberg Specified Collateral Cohorts cont.

Spec type	Description	Sector
Servicer		
ARVEST	% Arvest >= 95%	All
BBT	% BB&T >= 95%	All
BOA	% BofA/CW >= 95%	All
CALIB	% Caliber >= 95%	All
CITI	% Citi >= 95%	All
DITECH	% Ditech/Greentree >= 95%	All
EVERBK	% Everbank >= 95%	All
FIFTH3	% Fifth Third >= 95%	All
FLAG	% Flagstar >= 95%	All
FRANK	% Franklin >= 95%	All
FREE	% Freedom >= 95%	All
JPM	% JPM Chase >= 95%	All
LKVIEW	% Lakeview >= 95%	All
MATRIX	% Matrix Financial >= 95%	All
MFIRST	% Midfirst >= 95%	All
NAVY	% Navy Federal >= 95%	All
NSTAR	% Nationstar >= 95%	All
NYCB	% NY Community Bank >= 95%	All
OCWEN	% Ocwen >= 95%	All

Spec type	Description	Sector
Servicer		
PENNY	% Pennymac >= 95%	All
PHH	% PHH >= 95%	All
PNC	% PNC >= 95%	All
PROV	% Provident >= 95%	All
QUICK	% Quicken >= 95%	All
RNDPT	% Roundpoint >= 95%	All
SETRS	% Seterus >= 95%	All
SUNTR	% Suntrust >= 95%	All
USB	% US Bank >= 95%	All
WELLS	% Wells Fargo >= 95%	All
Origination Channel		
BROKER	% Broker >= 95%	Conv
CORRES	% Correspondent >= 95%	Conv
RETAIL	% Retail >= 95%	Conv
TPO	%Broker + %Corr. + %TPO >= 95%	Conv
Loan Purpose		
PURCH	% Purchase >= 95%	Conv
REFI	% Refinance >= 95%, WAOLTV <= 80	Conv
GNMA II Custom Pools		
CUSTOM	GNMA II Custom Pools	G2

Conventional Mortgage Pay Up Matrix

MPAY <GO>

1) Refresh	2) BVAL Information (BVLI)	Conventional Mortgage Payup Matrix						
<div> <div>Latest</div> <div>TBA Price Source</div> <div>CBBT</div> </div>		<div> <div>Historical BVAL</div> <div>01/04/24</div> <div>NY 4PM</div> </div>		<div> <div>BVAL data as of</div> <div>CBBT data as of</div> <div>Jan-4-2024 NY4PM</div> <div>19:47</div> </div>				
TBA Bid Price (CBBT)	30Yr 3	30Yr 3.5	30Yr 4	30Yr 4.5	15Yr 2.5	15Yr 3	15Yr 3.5	15Yr 4
FNMA TBA	87-07+	90-19+	93-15	95-31	91-08+	93-12+	95-12	97-08
FGLMC TBA	84-00+	87-15	90-19	93-17	0-00	0-00	0-00	0-00
BVAL Non Standard Payups								
Low Loan Balance (85K)	1-15+	1-23	1-14	1-22+	0-11	0-19+	1-03	0-26
Medium Loan Balance (110K)	1-10+	1-18	1-14	1-15+	0-06	0-14+	1-00+	0-20+
High Loan Balance (150K)	1-03+	1-01+	1-04+	1-03+	0-06	0-09	0-16	0-17+
Super High Loan Balance (175K)	0-28+	0-29+	0-29	0-28	0-06	0-09	0-13+	0-13+
100% New York	0-00+	0-01+	0-07	0-11+	0-02	0-26	0-29	0-04
MHA LTV 80-90%	0-00	0-01	0-00	0-02	0-00	0-00	0-00	0-00
MHA LTV 90-95%	0-00	0-00	0-00	0-02+	0-00	0-00	0-00	0-00
MHA LTV 95-100%	0-11	0-02	0-01	0-02	0-01	0-01+	0-01	0-03
MHA LTV 100-105%	0-08	1-08	1-10	1-28	0-02	0-03	0-06	0-24
MHA LTV 105-125% (CQ)	0-00	-0-15	0-00	-0-04+	1-17+	1-12	0-28+	1-08
MHA LTV 125+% (CR)	-0-04+	0-00+	0-00	0-00	1-15+	1-12	1-12	1-16
0% Third Party Origination	0-03+	0-00+	0-01	0-00	0-01+	0-00+	0-01	0-00
BVAL Seasoning Payups								
2024	0-01+	0-03+	0-00	0-00	0-03	0-01	0-00+	0-00+
2023	0-03+	0-03+	0-00	0-00	0-03	0-01	0-00+	0-00+
2022	0-03+	0-05	0-00	0-03	0-03+	0-00+	0-01	0-03+
BVAL 20Yr/10Yr Payups								
20Yr	2-28	2-21+	1-27+	1-16+	--	--	--	--
10Yr	--	--	--	--	0-24+	1-03	0-24+	0-20
Suggested Functions		WIRP Analyze interest rate probabilities			FWCV See how forward curves move over time			

Example of Loan Balance and Loan Age (WALA) on MBS Valuations for FNCL 4% 30yr MBS

Collat	Coupon	Type	Pool Number	Orig Face	Curr Face	Offer	WALA
FNCL	4	150K	FR SD4316	171062403	169518361	2-14	94
FNCL	4	150K	FN FS3580	36201752	34574920	2-22	121
FNCL	4	175K	FN BM4877	45870512	8512763	1-23	63
FNCL	4	175K	FN BM3285	74000000	17778607	2-14	96
FNCL	4	200K	FR QA8526	5465013	2483713	1-13	45
FNCL	4	200K	FN BJ7349	18000000	4063277	1-18	63
FNCL	4	200K	FR SD4451	38831311	38329934	1-24	80
FNCL	4	250K	FN CB3856	60371115	56000499	0-19	18

30yr TBA	PX	WAL	I-Spread	Yield	+300 WAL	OAS*	Duration*	Convexity*
FNCL 4	~ 94 -12	9.56	88.44	4.86	11.64	35.15	6.15	-0.78

*BAM Model

Carry (Coupon Income) vs Convexity (Price Performance) in MBS

- $\text{Total Return (Horizon)} = [\text{Coupon Income} \pm \text{Price (Value) Change over Horizon} + \text{Reinvestment Income}] / \text{Initial Horizon Value}$

Falling interest rates can result in increased prepayments thus accelerating erosion of outstanding principal balances in current coupon new issue MBS securities. This is likely to shorten the time frame to earn coupon income, increasing reinvestment risk and subjecting the MBS to decelerating (negative convexity) price appreciation

Carry (Coupon Income) Strategy in 2024 utilizing seasoned, structured MBS (CMOs) GNR 2006-10 ZT

OAS = 99.76 DUR = 3.13 CVX = 0.10 @103.108 (BAM,CMT) → 36 <GO>

GNR 2006-10 ZT Mtge														Yield Table																																									
100% G2SF 6.0 S														6.437(107)241 CUSIP 38374MYT0														Pool Level -														As of 12/2023													
1/2024		114P		6.8C		0.6B		Traits		Z.SEO		Coupon		6.0%		Maturity		3/20/36		TX		17%		2005		14%																													
3Mo		103		6.2		0.9		03/30/2006		8,779,000		LTV/HLTV		95/45		Accrual		1/1-1/31		FL		7%		2004		35%																													
6Mo		118		7.1		0.8		12/20/2023		11,279,128		MAXLS		435,700		Next Pay		2/20/24		GA		6%		2003		39%																													
12Mo		129		7.7		1.0		Factor		1,284,785		WACLS		45,724		Collar		No Band		NY		5%		2001		5%																													
Life		256		15.3		--		# Loans		9,588																																													
														Price-to-Yield																																									
Settle		01/18/24				0 MED		+300 MED		+200 MED		+100 MED		-100 MED		-200 MED		-300 MED																																					
Vary		0				149 PSA		121 PSA		136 PSA		145 PSA		153 PSA		161 PSA		178 PSA																																					
Price		103-03+				5.0098		5.0566		5.0317		5.0166		5.0030		4.9893		4.9596																																					
Avg Life						3.75		3.95		3.84		3.78		3.73		3.68		3.57																																					
Mod Duration						3.20		3.34		3.26		3.22		3.18		3.14		3.06																																					
Prin Win						2/24-2/34		2/24-2/34		2/24-2/34		2/24-2/34		2/24-2/34		2/24-2/34		2/24-2/34																																					
I Spread						112		118		115		113		111		110		106																																					
Jan24		Dec		Nov		Oct		Sep		Aug		Jul		Jun		May		Apr		Mar		Feb		GOVT(I)		6M		1Y		2Y		3Y		5Y		7Y		10Y		30Y															
114P		112		84		133		116		150		150		189		103		157		101		129		11:50		5.17		4.66		4.14		3.93		3.83		3.89		3.94		4.18															
6.8C		6.7		5.0		8.0		6.9		9.0		9.0		11.4		6.2		9.4		6.1		7.8		Disc		30/360		3Y		100-06		5Y		99-20+																					
Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7350 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000																																																							
Japan 81 3 4565 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2024 Bloomberg Finance L.P.																																																							
GRI-5 00 H012-296-173 14-Jan-2024 11:58:33																																																							

- LCF (Last Cash Flow), low current loan balance - \$45,724, Weighted average FICO 656, 241 Months WALA (Weighted Average Loan Age), 9,588 underlying loans
- 4.92yr A/L @ 0 CPR (03/2036 Stated Final)

Effective Carry (Coupon Income) Strategies

Seasoned, structured MBS (CMOs) versus new issue agency CMOs (Dec 2023 Issuance) - FHR 5369 V Mtge

OAS = 59.03 DUR = 2.11 CVX = -1.35 @102.721 (BAM,CMT) → 36 <GO>

FHR 5369 V Mtge															Actions		Export		Settings		Yield Table									
100% FNCL 7.0 N				7.828(351)4				CUSIP 3137HBD87				Pool Level		As of		01/2024														
1/2024	2270P16.2C	0.0B	Traits		AD,SEQ		Coupon		6.0%		Maturity		10/25/34		FL	19%	2023	100%												
3Mo	--	--	12/29/2023		21,204,000		LTV/HLTV		80/80		Accrual		1/1-1/31		CA	15%														
6Mo	--	--	01/25/2024		21,086,960		MAXLS		1,420,000		Next Pay		2/25/24		TX	11%														
12Mo	--	--	Factor		0.99448029		WACLS		414.848		Collar		0-145		TL	5%														
Life	2270	16.2	# Loans		1,149																									
D Price-to-Yield																														
Settle	01/18/24		0 MED		+300 MED		+200 MED		+100 MED		-100 MED		-200 MED		-300 MED															
Vary	0		581 PSA		132 PSA		168 PSA		288 PSA		917 PSA		1377 PSA		1892 PSA															
Price	102-23 1/8		5.0301		5.4257		5.4216		5.3339		4.6976		4.3224		3.9398															
Avg Life			3.35		5.97		5.92		5.02		2.46		1.90		1.54															
Mod Duration			2.96		4.77		4.74		4.17		2.24		1.76		1.45															
Prin Win			2/24-5/28		2/24-10/34		2/24-1/34		2/24-3/31		2/24-1/27		2/24-3/26		2/24-10/25															
I Spread			112		157		156		150		66		15		-41															
Jan24	Dec	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	GOVT(I)	6M	1Y	2Y	3Y	5Y	7Y	10Y	30Y										
2270P	3109	--	--	--	--	--	--	--	--	--	--	11:52	5.17	4.66	4.14	3.93	3.83	3.89	3.94	4.18										
16.2C	15.9	--	--	--	--	--	--	--	--	--	--	Disc	30/360	3Y	100-06	5Y	99-20+													

- LCF (Last Cash Flow), low current loan balance - \$414,000, Weighted average FICO 735, 4 Months WALA (Weighted Average Loan Age), 1,420,000 MAX LS, 1,149 underlying loans, ~ 61% Non-Bank serviced
- 5.97yr A/L @ 0 CPR (10/2034 Stated final)

Relative Value Comparison

Carry (Coupon Income) MBS strategy utilizing structured MBS (CMOs)

Deal ID	GNR 2006-10 ZT	FHR 5369 V
Type	Agency CMO	Agency CMO
Tranche	LCF Seq (ex Z)	VADM
Coupon	6.0	6.0
Base A/L	3.75	3.35
+300 A/L	3.95	5.97
I Spread	112bp	112bp
Treas OAS*	99bp	59bp
Yield	5.00	5.03
Price	103-03+	102-23
Stated Final	3/2036	10/2024
Effective Duration*	3.13	2.11
Effective Convexity*	+0.10	-1.35
Net WAC	6.00	7.00
Gross WAC	6.43	7.82
WAVG Curr LS	45K	414K
FICO	656	735
Seasoning	241 Months	4 Months
Underlying Loans	9,588	1,149

*BAM Model

Opportunities in MBS – 2024 – Sourcing “ Cheap Convexity” FHR 4586 EC - Seasoned Deep Discount Agency CMO

OAS = 82.21 DUR = 3.76 CVX = 0.17 @89.500 (BAM,CMT)

36 <GO>

FHR 4586 EC Mtge												Actions		Export		Settings		Yield Table									
100% FGLMC 5.0 S				5.593(126)223				CUSIP 3137BPKY4				Pool Level		As of 01/2024													
1/2024	134P	8.1C	0.2B	Traits		EXCH,PT		Coupon		2.0%		Maturity		5/15/46	FL	14%	2007	6%									
3Mo	113	6.8	0.2	05/31/2016		154,640,314		LTV/HLTV		72/41		Accrual		1/1-1/31	CA	13%	2005	75%									
6Mo	119	7.1	0.2	01/15/2024		26,561,582		MAXLS		626,000		Next Pay		2/15/24	NY	8%	2004	12%									
12Mo	136	8.2	0.2	Factor		0.17176363		WACLS		103,862		Collar		No Band	TX	5%	2003	4%									
Life	277	16.6	--	# Loans		30,885																					
D Price-to-Yield																											
Settle	01/11/24			0 MED			+300 MED			CF			CF			CF											
Vary	0			147 PSA			121 PSA			8 CPR			8.9 CPR			9.5 CPR											
Price	89-16			4.8810			4.7313			4.8016			4.8888			4.9480											
Avg Life				4.26			4.50			4.39			4.25			4.17											
Mod Duration				3.70			3.91			3.80			3.68			3.61											
Prin Win	Date			2/24-6/37			2/24-6/37			2/24-6/37			2/24-6/37			2/24-6/37											
I Spread				85			72			78			85			91											
Jan24	Dec	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	GOVT(1)	6M	1Y	2Y	3Y	5Y	7Y	10Y	30Y							
134P	100	103	119	104	153	330	128	154	111	83	97	21:18	5.23	4.81	4.37	4.14	3.98	4.00	4.02	4.17							
8.1C	6.0	6.2	7.1	6.3	9.2	19.8	7.7	9.2	6.7	5.0	5.8	Disc	30/360	3Y	100-20	5Y	98-31										

- LCF (Last Cash Flow), low current loan balance - \$103,862, Weighted average FICO, 223 Months WALA (Weighted Average Loan Age), 30,885 underlying loans, ~ 66% Bank serviced
- 5.79yr A/L @ 0 CPR

Liquidate/Swap out of potentially overvalued MBS collateral

15yr 2% FNMA Pool

FN BP8590

OAS = 41.66 DUR = 3.85 CVX = 0.14 @90.375 (BAM,CMT)

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FN BP8590 Mtge										Yield Table													
100% FNCI 2 M				2.800(130)43				CUSIP 3140KGRL9				Pool Level				As of 01/2024							
1/2024	176P	10.6C	0.0B	Traits	CI, 30/360	Coupon	2.0%	Maturity	6/1/35	MN	14%	2020	100%										
3Mo	90	5.4	0.0	06/01/2020	53,375,189	LTV/HLTV	63/47	Accrual	1/1-1/31	WA	8%												
6Mo	90	5.4	0.0	01/25/2024	25,051,226	MAXLS	510,000	Next Pay	2/25/24	OR	7%												
12Mo	114	6.8	0.0	Factor	0.46934215	WAOLS	303,942			IL	6%												
Life	339	13.6	--	# Loans	127																		
														1 Price-to-Yield									
Settle	01/18/24			0 MED	+300 MED	+200 MED	+100 MED	-100 MED	-200 MED	-300 MED													
Vary	0			125 PSA	125 PSA	125 PSA	125 PSA	131 PSA	145 PSA	176 PSA													
Price	90-12			4.5193	4.5193	4.5193	4.5193	4.5503	4.6238	4.7918													
Avg Life				4.41	4.41	4.41	4.41	4.35	4.23	3.98													
Mod Duration				3.85	3.85	3.85	3.85	3.80	3.69	3.46													
Prin Win	Date			2/24-11/34	2/24-11/34	2/24-11/34	2/24-11/34	2/24-11/34	2/24-11/34	2/24-11/34													
I Spread				50	50	50	50	53	59	74													
Jan24	Dec	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	GOVT(1)	6M	1Y	2Y	3Y	5Y	7Y	10Y	30Y			
176P	62	27	26	26	211	262	25	341	23	100	40	22:12	5.23	4.81	4.37	4.13	3.98	4.00	4.02	4.17			
10.6C	3.7	1.6	1.6	1.6	12.7	15.7	1.5	20.5	1.4	6.0	2.4	Disc 30/360	3Y	100-21	5Y	98-31+							

- WAOLS (Weighted average original loan size) 303,942, 43 months WALA, 127 loans, Weighted average FICO, 780, 100% Bank Serviced, TBA Deliverable: Yes
- 5.71yr A/L @ 0 CPR

Relative Value Comparison

Deep Discount 2% coupon Agency CMO vs FNMA 15yr 2% Pool

Security	FHR 4586 EC	FNBP8590
Type	Agency CMO	15yr Pool
Coupon	2.00	2.00
Base Case A/L	4.26	4.41
+300 A/L	4.50	4.41
Yield	4.88	4.51
Spread vs I Curve	+85	+50
Treas OAS*	+82	+41
Effective Duration*	3.76	3.85
Effective Convexity*	0.17	0.14
# of Underlying Loans	30,385	127
Est \$ Price	89-16	90-12
WALA	223 Months	34 Months
WACLS/WAOLS	\$103K	\$303K
Geography	FL/CA/NY/TX	MN/WA/OR/IL

*BAM Model

Case Study: Identification of Prepayment Risk and Impact on Valuations

- G2SF: Premium dollar price, Jumbo, VA Loans, Non-Bank Servicing
- Larger percentage of non-bank servicers underlying an MBS increases prepayment risks

Non Bank Servicers	Bank Servicers
Rocket (Quicken)	Wells Fargo
Freedom	JPM Chase
Freemont	Truist
Penny Mac	US Bank
New Residential	PNC Bank
Caliber	Citizens
Lake View	Fifth Third
Loan Depot	Citigroup

VA loans underlying GNMA collateral and associated serial refinancing risk

- The VA loan program provides a relatively easy path to refinancing,
 - VA loans let the borrower refinance homes for up to 120% of the value
 - VA cash-out refinance allows borrower to take out equity up to 100% the homes value
- VA closing costs can be rolled into the cost of the loan allowing veterans to refinance with little or no out of pocket expense
- VA loans do not require mortgage insurance (mortgage insurance is an impediment to refinancing)
- Minimum waiting period to refinance a VA loan:
 - A minimum of six consecutive payments must have been made on the original loan that is being refinanced
 - A minimum of 210 calendar days or 6 months (whichever period is longer) must have passed between the first payment due date of the original loan (loan being refinanced) and the first payment due date of the new loan (for both cash-out and IRRRLs)

Identifying negative convexity/prepayment risk in 2024

	Type	CPN	GWAC	WALA	A/L Base	A/L +300	I Spread	Treas OAS (BAM)	Eff Dur (BAM)	Eff Convex (BAM)	Est Price	% VA Loans	Highest % Non Bank Servicer	# of Loans
GNR 23-170 QV	Agency CMO	6.5	7	2	3.65	5.92	130	-36bp	-0.28	-0.9	104-04	100%	Rocket (47%)	232

Servicer	Loan Count	Bal(USD)	Bal(%)
Rocket Mortgage	109	34,022,061.66	47.20
Village Capital	41	15,119,164.45	20.97
United Wholesale Mortgage	43	14,478,299.35	20.09
Newrez LLC	26	3,271,530.17	4.54
Planet Home Lending	5	2,075,485.78	2.88
Nations Lending Corp	5	1,717,931.50	2.38
Homebridge Financial Services	3	1,425,722.07	1.94
			100.00

GNR 23-170 QV underlying collateral 100% non-bank serviced

Where is the prepayment risk in 2024?

VA Loans (Jumbo/Non-Jumbo) embedded in GNMA CMO Deals



Strategies and Opportunities for Agency MBS in 2024

- MBS potentially undervalued on a fundamental and technical basis
- Expectations for banks to return to the MBS market in 2024 should provide support to spreads in the sector
- Projection for falling rates will likely increase demand for convexity over carry (coupon income) in MBS
- Consider shifting MBS allocations from collateral (pools) and new issue CMO's to secondary structured products (CMO's) for better relative value opportunities
- Critical evaluation of new issue agency CMO's where the underlying collateral is "WTD" worst to deliver.
- Improved OAS data accuracy and availability (Bloomberg BAM Model vs Yield Book) will provide more precision in the valuation process.

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