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Credit Strategy Research

Relative value across the conventional MBS coupon stack

For conventional 30-year MBS, 4.5% coupon offers highest value

Weighing the different combinations of risks and returns offered at each point on the 30-year mortgage backed security (MBS) coupon stack, we view the 4.5% coupon as offering highest value on an option-adjusted basis. Our bearish view on rates and our expectation of slow prepayments and extension leads us to remain cautious about lower coupon MBS (e.g., 2.5% and 3.0%), while the high dollar prices on deep premiums (5.5% and 6.0% coupon) suggest yields will be low under most realistic prepay scenarios. The 4.5% coupon appears to offer the most attractive risk adjusted returns, accounting for a range of plausible prepayment assumptions. While the 4.5% coupon has maximum negative convexity across the coupons, our expectation that volatility will remain contained over the medium term leads us to believe that this convexity risk is fairly compensated.

Turnover speeds will decline in coming months

If recent prepay prints for 2.5%, 3%, and 3.5% MBS were sustainable going forward, then these cohorts, too, would offer attractive relative value. However, June speeds were influenced by favorable seasonals and low mortgage rates. We expect speeds in these cohorts to decline starting in August as we move away from summer seasonals and as mortgage rates increase. Declining housing turnover would be supportive for 4.5% and higher coupon bonds.

Issuance volumes and Fed purchases still supportive of MBS

Supply and demand technicals are still supportive of the MBS asset class. Net issuance picked up in 2014Q2, but supply growth remains low relative to US Treasuries and other fixed income asset classes. Federal Reserve purchases of 30-year MBS have recently been concentrated in the 3.5% and 4.0% TBAs; if mortgage rates rise, then Federal Reserve purchases made to replace portfolio runoff could shift to the 4.5% coupon.

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Relative value across conventional MBS coupon stack

Outstanding MBS broadly distributed across coupons

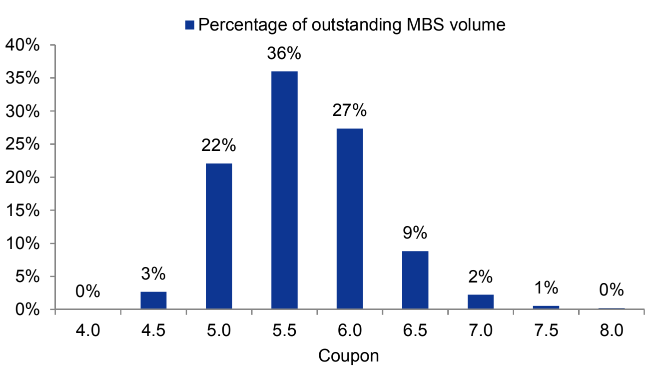
Relative to most time periods over the past twenty years, today there is a broader distribution of mortgage backed security (MBS) volume across different bond coupons. Exhibit 1 shows that as of January 2008, for example, balance was concentrated with 85% of bonds coming from the three largest cohorts (5%, 5.5%, and 6%). By comparison, Exhibit 2 shows that there is now significant balance in all coupons from 3% through 6%, with only 65% of balance concentrated in the three largest cohorts (3%, 3.5%, and 4%).

Exhibit 3 shows the variation in 30-year MBS dollar prices across TBA cohorts over time; currently, the variation in dollar prices is elevated relative to earlier periods. For example, as of July 28, 2014, 20% of outstanding collateral was priced below $99 and another 20% was priced above $110. Prior to 2014 price dispersion was much narrower: in 2003 only 1% of collateral was priced below $99 and 0% of collateral was priced above $108.

The broad distribution in prices today from discount to deep premium highlights the importance of maintaining relative value views across the coupon stack. On net, we see the 4.5% coupon as offering the best risk/return tradeoffs across conventional 30-year MBS. The 4.5% coupon TBA has stable and positive option adjusted returns under a range of different prepay modeling assumptions, is not unusually vulnerable to a spread widening induced by continued tapering of the Federal Reserve asset purchases, and has shorter duration than 3s and 3.5s, thus limiting duration/extension risk.

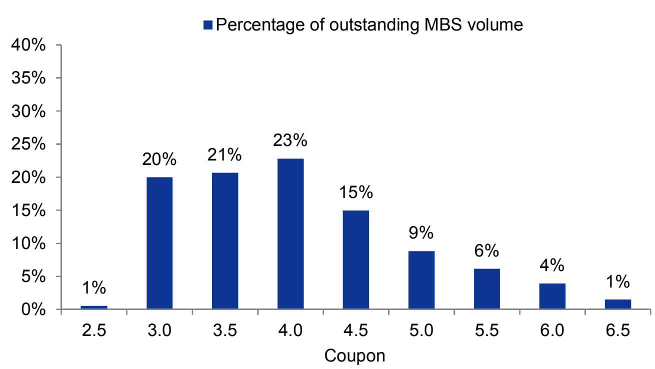
The 4.5% coupon cohort could underperform if mortgage rates rally and refinance efficiency increases, for example due to loosening of credit standards. However, this is not our central scenario; under our expected outlook, speeds on the cohort remain moderate (9-10 CPR for life) and would remain at 30-35 CPR even in a 100 bp rate rally.

Exhibit 1: MBS balance was highly concentrated within a few coupons in 2008…
Balance distribution, 30-year conventional MBS by coupon, January 2008



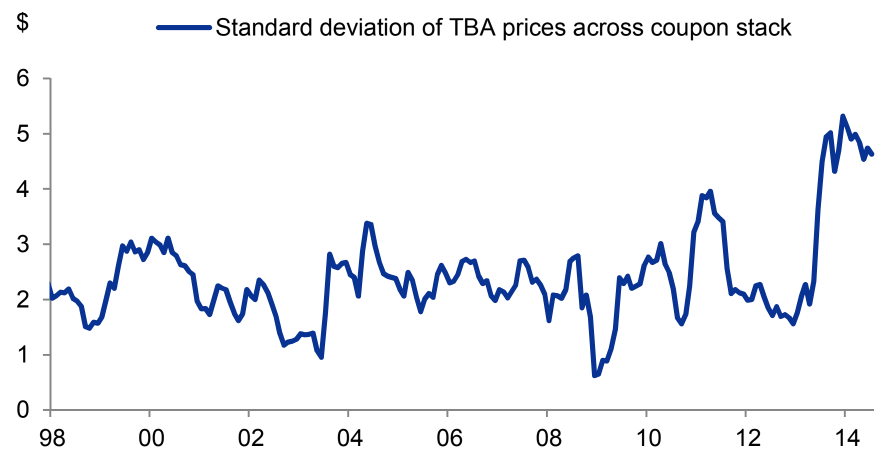
Source: eMBS and Goldman Sachs Global Investment Research

Exhibit 2: …but balance is now more broadly distributed across a wider range of coupons
Balance distribution, 30-year conventional MBS by coupon, July 2014



Source: eMBS and Goldman Sachs Global Investment Research

Exhibit 3: Variation in MBS dollar prices across coupons has expanded over the past year
Balance weighted standard deviation in 30-year Fannie Mae MBS across coupons



Source: eMBS and Goldman Sachs Global Investment Research

Option adjusted valuations supportive of 4.5% coupon

OAS for 4.5% coupon positive across a range of industry models

Option adjusted spread (OAS) is a commonly used valuation metric for evaluating risk-adjusted returns across investments. OAS has the advantage that it can account for the bond returns across multiple interest rate scenarios, but a challenge with the OAS measure is that it can potentially be sensitive to prepay modeling assumptions. For this reason, we look at OAS across a number of alternative industry models.

Exhibit 4 shows that the option adjusted spreads on higher coupon TBA cohorts – 5.0%, 5.5%, and 6.0% – are negative for three of the four industry models evaluated. The one model with positive OAS for the higher coupon cohorts (Model B) had substantially slower prepay expectations than the other models: for example, for FNCL 6, Model B projects prepayments will increase from 22 to just 23 under a 100 bp rate rally scenario. The 2.5% through 4.5% coupon MBS have positive option adjusted spreads to swaps across all the different models.

To further assess the sensitivity of valuation to modeling assumptions, Exhibit 5 shows the option adjusted spreads for one of the models, Model A, under a number of different model parameter settings. The prepay equation in Model A defines monthly prepay rates as a sum of refinance rates, housing turnover rates, and default rates; Exhibit 5 shows the OAS after scaling refinance and turnover rates up and down. For example, for the 3% coupon cohort, the OAS is 28 bp under the baseline setting (100% multiplier for refi and turnover), but if the housing turnover multiplier is scaled to 75% – corresponding to a 4 CPR lifetime speed – then OAS declines to 13 bp.

As expected, the lowest coupon cohorts are most sensitive to changes to turnover assumptions, while the high coupon, high dollar price cohorts are more sensitive to refinance assumptions. The 4.5% coupon TBA has a stable profile, with OAS between +6 bp and +34 bp for all turnover and refi multiplier settings between 50% and 150%. Thus, unless prepayments deviate substantially from central model expectations, the 4.0% and the 4.5% TBA would offer positive excess returns vs. swaps.

Exhibit 4: FNCL 4.5% has positive OAS across a range of industry models
Option adjusted spreads to swaps, conventional 30-year fixed rate mortgages, July 31, 2014

			OAS (bp)				
Product	Coupon	Price	Model A	Model B	Model C	Model D	Median
FNM30	2.5	94.0	28	36	32	35	33
FNM30	3.0	98.0	23	35	29	30	29
FNM30	3.5	101.9	19	28	17	25	22
FNM30	4.0	105.2	14	23	6	20	16
FNM30	4.5	107.6	18	25	13	13	18
FNM30	5.0	110.2	-34	10	-19	-14	-14
FNM30	5.5	110.8	-5	25	-2	-20	0
FNM30	6.0	112.4	-14	29	-16	-49	-13

Source: Bloomberg, Yield Book, and Goldman Sachs Global Investment Research

Exhibit 5: FNCL 4.5% has positive OAS across a range of prepayment model settings
Option adjusted spread to swaps vs. model multipliers, prepayment Model A, July 31, 2014

		OAS Model Multiplier								
	Coupon	0%	25%	50%	75%	100%	125%	150%	175%	200%
Refi	2.5	35	33	30	29	28	27	27	27	26
	3.0	33	29	26	24	23	21	20	20	19
	3.5	32	29	25	21	19	17	15	14	13
	4.0	38	32	24	18	14	10	7	4	2
	4.5	51	45	34	26	18	12	6	1	-4
	5.0	58	39	12	-12	-34	-55	-75	-94	-112
	5.5	93	75	46	20	-5	-28	-50	-72	-93
	6.0	108	88	52	18	-14	-46	-77	-108	-139
Turnover	2.5	-26	-16	-1	13	28	43	58	73	88
	3.0	-15	-8	2	12	23	33	43	54	64
	3.5	-3	1	7	13	19	25	30	36	41
	4.0	4	6	9	12	14	16	17	19	19
	4.5	26	25	23	21	18	15	11	7	3
	5.0	-5	-11	-18	-26	-34	-43	-52	-62	-72
	5.5	31	24	15	6	-5	-15	-27	-38	-51
	6.0	39	28	15	1	-14	-30	-47	-64	-82

Source: Goldman Sachs Global Investment Research

Prepay outlook: housing turnover will slow, refi will stay moderate

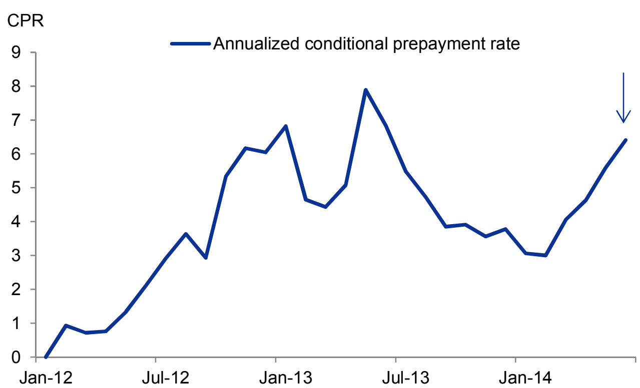
Housing turnover will decline on seasonals and rising rates

The risks and returns across the coupon stack are of course largely determined by prepay outlook. Exhibit 5 suggests that the OAS on 3.0% and 3.5% TBA are significantly reduced if turnover assumptions are dialed down. In fact, we expect realized prepays on these cohorts to decline in the coming months. Low speed prints on these cohorts could cause the bonds to reprice downward.

Exhibit 6 shows that 3% 2012 vintage 30-year MBS prepaid over 6 CPR in June, a significant pickup since the start of the year. However, speeds are likely to decline again starting in August. Exhibit 7 displays the strong seasonal pattern in home sales; transactions typically peak in June. Thus, much of the increase in speeds seen in the past several months is driven by the usual home selling seasonals.

The recent increase in speeds was likely also aided by the 30-40 bp decline in mortgage rates since January. We expect this trend as well to be more than reversed going forward: our forecast for 30-year mortgage rates is 5.6% by December 2016, a 150 bp increase from current levels. As we have argued in earlier research ("Projections for discount MBS prepayment rates," *The Mortgage Analyst*, May 2, 2014), housing turnover rates decline as interest rates increase, with borrowers 200 bp out-of-the-money for refinance meaningfully slower than borrowers just 100 bp out of the money. Thus, our expected outlook for rates leads us to expect slow prepayments for low coupon cohorts.

Exhibit 6: Prepayments have increased in the past two months for out-of-the-money cohorts…
Annualized prepayment rate, 3% coupon 2012 vintage Fannie Mae 30-year MBS



Source: eMBS and Goldman Sachs Global Investment Research

Exhibit 7: … but home sales typically peak in June

Non-seasonally adjusted total existing home sales

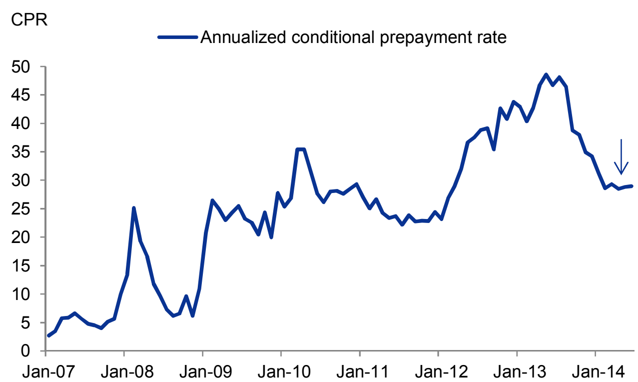
Source: NAR

Expect refinance rates to stay moderate

Refinance rates have declined significantly since interest rates increased in 2013. Exhibit 8 shows the prepayments on 6% coupon collateral; speeds picked up after introduction of HARP 2, but are now just below 30 CPR, and have remained flat even as rates fell during 2014. We think it is likely that speeds stay bounded; the relative insensitivity of prepays to interest rate changes over the past several months suggests that it would take a large change to Loan Level Pricing Adjustments, for example, to induce a significant increase in refinance rates. That said, even a small pickup in prepays could significantly reduce the value of this high dollar price cohort. Per Exhibit 5, applying a 125% refinance model multiplier, which would increase predicted life CPR from 20 to 23, would reduce model OAS further, from -14 to -48 bp. Thus, current pricing leaves little room for an increase in prepays.

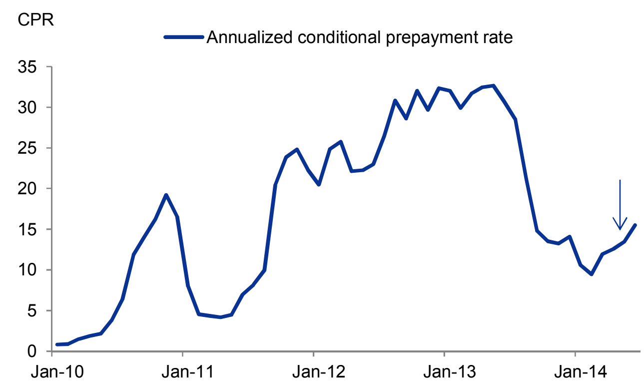
Exhibit 9 shows the historical prepay rates on 4.5% coupon collateral; this cohort has shown more of a pickup in speeds over the past few months, and speeds on the cohort could realistically return to above 30 CPR if mortgage rates decline 100 bp. However, option adjusted spreads on the 4.5% TBA are less sensitive to refi model assumptions than is the case for the 6% TBA. For example, from Exhibit 5, OAS remains positive even after applying a 150% refinance model multiplier. The low sensitivity of OAS to refinance assumptions is due partly to the fact that, given the currently steep forward curve and low implied volatility for interest rates, the 4.5% cohort is predicted to be out-of-the-money for refinancing within 24-36 months. Thus, while the 4.5% TBA underperforms swaps under falling rate paths, the yield curve and rate volatility markets implicitly assign low probability to these low rate scenarios.

Exhibit 8: Prepay rates on 6% coupon MBS have declined since 2013, and remain steady near 30 CPR
Prepay rates, Fannie Mae 30-year MBS,
6% coupon, 2007 vintage



Source: eMBS and Goldman Sachs Global Investment Research

Exhibit 9: Prepay rates on 4.5% coupon MBS have been more responsive to 2014 rate declines
Prepay rates, Fannie Mae 30-year MBS,
4.5% coupon, 2010 vintage



Source: eMBS and Goldman Sachs Global Investment Research

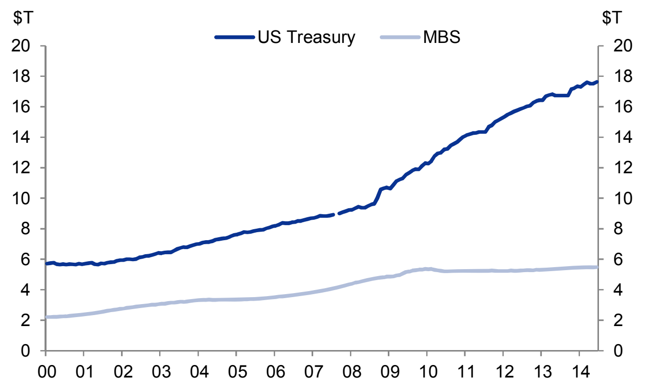
Issuance and purchase trends still supportive of MBS, 4.5% coupon

The MBS market has benefited over the past couple years from a positive supply technical deriving from low net issuance and a positive demand technical deriving from the Federal Reserve MBS asset purchase program. The positive supply technical appears to remain in place. Exhibit 10, for example, compares agency MBS and US Treasury total debt outstanding: MBS debt grew by just $100B in the past 12 months, vs. $900B growth in US Treasury debt, a trend we broadly expect to persist over the next year.

With respect to the demand technical, while tapering is anticipated to be completed in October, commentary from the Federal Reserve has suggested that MBS purchases to replace portfolio runoff may continue after the taper is completed. The June FOMC minutes stated “Many participants agreed that ending reinvestments at or after the time of liftoff would be best, with most of these participants preferring to end them after liftoff.”

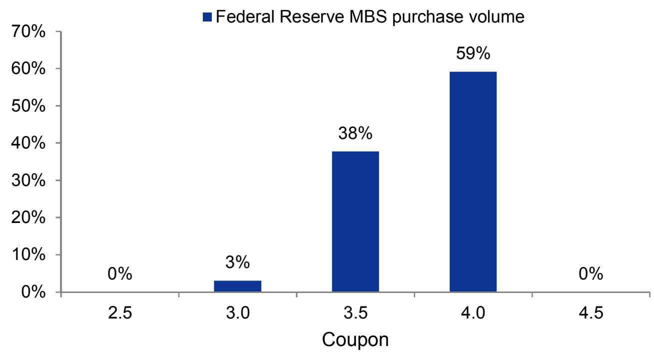
Exhibit 12 shows the distribution of Federal Reserve purchases across 30-year conventional MBS coupons over the past 12 weeks; 100% of purchases were in the 3.0%, 3.5%, and 4.0% coupons. Thus, the 4.5% coupon may be less prone to cheapening induced by tapering of Federal Reserve MBS purchases. Indeed, if rates rise, future principal reinvestment purchases may shift from the 4.0% bucket to the 4.5% bucket. This positive demand technical would be partly offset, though, by increased supply of 4.5% collateral if that becomes the new current production coupon. On net, we view the 4.5% coupon as benefiting slightly from anticipated supply and demand technical trends.

Exhibit 10: Agency MBS debt outstanding has been flat, while US Treasury debt outstanding has grown
Agency MBS vs. US Treasury total debt outstanding



Source: eMBS, Haver and Goldman Sachs Global Investment Research

Exhibit 11: Recent Federal Reserve MBS purchases have been concentrated in 3.5% and 4.0% coupons
Federal Reserve 30-year conventional MBS purchases, May-July, by coupon



Source: Federal Reserve and Goldman Sachs Global Investment Research

Summary

Different portions of the 30-year conventional MBS coupon stack each provide distinct risks and opportunities. The 3.0% and 3.5% coupons appear to offer significant yield spreads across most models, but valuations would deteriorate if turnover assumptions get repriced downward. Further, our bearish stance on rates inclines us to underweight these long duration lower coupon bonds. The 5.0% coupon has low (negative) OAS, but on the other hand can currently be financed cheaply through dollar rolls on special. The 5.5% and 6.0% coupons have short durations, but low yields at current prices.

The 4.5% coupon appears to offer reasonably attractive risk-adjusted returns across a range of plausible prepayment modeling assumptions. A possible downside for the 4.5% coupon is the high level of negative convexity, given that the underlying borrowers are on the cusp of refinancability. However, given our expectation that rate volatility will continue to remain at the low end of the historical range for a while longer (“Macroprudential policy and prospects for a ‘Greater Moderation’,” *Global Economics Weekly*, June 19, 2014, and “A low-volatility landscape,” *Global Economics Weekly*, May 14, 2014), we are inclined to believe investors are fairly compensated for accepting this convexity risk.

Marty Young

Disclosure Appendix

Reg AC

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