

OPTION OVERLAYS for CUSPY MORTGAGES

ALL THE TALK BEFORE FED

Brutal asymmetric super-premium mortgage risk is generating convexity replacement trades and inquiry all week

The illustrations and commentary below are intended SOLELY FOR INSTITUTIONS with highly sophisticated capital markets, derivatives and option knowledge. The hypothetical transactions below contain some of the most complex concepts in risk mitigation and ARE INAPPROPRIATE for all but the most sophisticated INSTITUTIONS. Please read full disclaimer at the end of this discussion.

9/17/15—It’s been two weeks of, “What can I do with this risk profile? What option fixes this?” Current mortgage speeds (and Street expectations for further acceleration in pre-payments on any rate decline) are sparking interest in convexity overlays for portfolios. How nasty are the premium mortgage risk profiles? Well, how about this look on FANNIE 4.5s?-





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The issue is to restore some performance to the left side (“rates lower”) of the above graph—generated using Bloomberg™ and median Street prepay estimates.

The amount of convexity required isn’t easy to generate; even using high-gamma, short-dated options. Moreover, since the risk window is perceived to be isolated to “the Fed meeting”, the option market will be efficient and, no doubt, crush implied volatility and premiums immediately following the announcement.

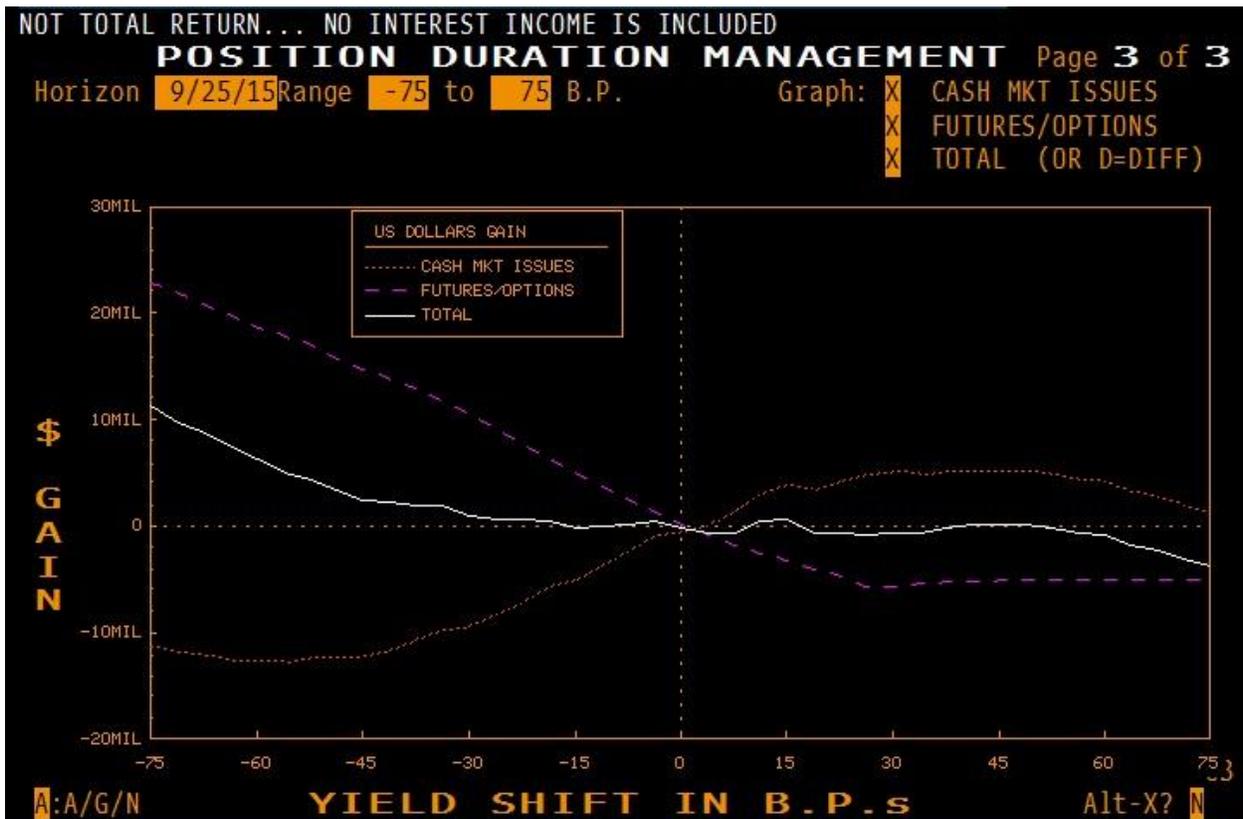
Those constraints mandate the use of a combination of options blending not just PUTs and CALLs but in ratio-d, super-levered, packages and varying expirations to deflect both decay and the impending, post-Fed, revaluation. Generally, the above Fannie 4.5 performance graph might lead a hedger to sell PUT spreads to buy CALL spreads. No doubt that’s the theme. But to actually get the P&L back to “tolerable”, the option package simply requires a lot more gearing.

What is a reasonable cost? Well, we figured a week’s worth of carry on the asset (about a tick or \$300k-ish on \$1bb) was maximum. In anticipation of the IVol beat-down that will follow, a decay hit equal to one week forward is a good start. So, we begin by targeting those expectations. One added concern is that a bull-flattening on the curve would further suppress the mortgage performance. That forced option positioning from the obvious 5yr point on the curve out a bit— using Dec 10-year (CTD = 2 5/8s of 6/22) options hits the target.

To mute the effects of long THETA and VEGA, albeit over a short horizon with major event risk, a combination of ITM and OTM options with near-term (Sep and Oct expirations using TYV5 & TYX5) are required. To maximize the GAMMA and reduce the above two option pricing risks is akin to saying, “I need to strap on a rocket engine to perform, but I don’t want to buy the fuel for it- unless I need it.” We can get close.

While below is just one example of an infinite number of permutations, the core position “balancing act” will have to be there whether off the nose of the curve (REDs in ED\$) or short-intermediate zone for ARMs (5yr sector). Call the desk—we have several possibilities drawn up. The premium-mortgage convexity profiles we’ve been seeing are rough to detoxify.

So how well can the massive negative convexity of the mortgage be restructured?



Note- the above P&L is indicative of IVOL constant but priced forward to 9/25/15. The rate window is shown here as +/-75bps. The result looks a bit unexciting—but that is assuredly the goal.

We used to torment our trainees with, “You’re almost ready to overlay options on mortgages when you can create a package that gives a P&L graph that looks like Batman’s head. Let us know when you got it.” Well, to get to the risk neutralization above, it takes a bit more than even that. (see position description and additional Rate Shock screens below).

JC—for the Fixed Income Group

NOT TOTAL RETURN... NO INTEREST INCOME IS INCLUDED

POSITION DURATION MANAGEMENT Page 2 of 3

Settle 9/17/15 Parallel Shift Horizon 9/25/15

Issue	Price	EqvYld	Mkt Val (\$1bln)	-10 B.P.		10 B.P.	
				New Px	\$ P&L	New Px	\$ P&L
FNCL 4 ¹ / ₂	108-04+	2.2619	1	107.864	-2.77MM	108-11+	2.19MM
CASH					0		0
SUB-TOTAL			1	\$	-2.77MM	\$	2.19MM
<u>Futures/Options</u>		<u>Proxy</u>	<u>Num Contr</u>				
TYX5C 126.0	1'11	4.93%IV	-2500	1'54	-1.67MM	'35	1.57MM
TYX5C 127.0	'42	5.01%IV	5000	1'07	2.27MM	'15	-2.1MM
TYX5P 125.5	'27	5.55%IV	-3500	'09	1.01MM	'45	-961.82M
TYV5P 124.0	'02	8.53%IV	3500	'00	-109.38M	'00	-109.38M
TYV5C 126.0	'54	5.71%IV	1500	1'43	1.24MM	'00	-1.27MM
TYV5C 127.0	'24	6.98%IV	-1500	'00	562.5M	'00	562.5M
TOTAL				\$	539.56M	\$	-112.78M

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POSITION DURATION MANAGEMENT Page 2 of 3

Settle 9/17/15 Parallel Shift Horizon 9/25/15

Issue	Price	EqvYld	Mkt Val (\$1bln)	-30 B.P.		30 B.P.	
				New Px	\$ P&L	New Px	\$ P&L
FNCL 4 $\frac{1}{2}$	108-04+	2.2619	1	107.202	-9.38MM	108.651	5.1MM
CASH					0		0
SUB-TOTAL			1	\$	-9.38MM	\$	5.1MM
<u>Futures/Options</u>							
		Proxy	Num Contr				
TYX5C 126.0	1'11	4.93%IV	-2500	3'46	-6.38MM	'05	2.74MM
TYX5C 127.0	'42	5.01%IV	5000	2'50	10.6MM	'01	-3.18MM
TYX5P 125.5	'27	5.55%IV	-3500	'01	1.43MM	1'63	-5.44MM
TYV5P 124.0	'02	8.53%IV	3500	'00	-109.38M	'19	936.1M
TYV5C 126.0	'54	5.71%IV	1500	3'45	4.28MM	'00	-1.27MM
TYV5C 127.0	'24	6.98%IV	-1500	'00	562.5M	'00	562.5M
TOTAL				\$	1.01MM	\$	-540.72M



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POSITION DURATION MANAGEMENT Page 2 of 3

Settle 9/17/15 Parallel Shift Horizon 9/25/15

Issue	Price	EqvYld	Mkt Val (\$1bln)	-50 B.P.		50 B.P.	
				New Px	\$ P&L	New Px	\$ P&L
FNCL 4½	108-04+	2.2619	1	106.88	-12.61MM	108.65	5.09MM
CASH					0		0
SUB-TOTAL			1	\$	-12.61MM	\$	5.09MM
Futures/Options							
			Proxy Num Contr				
TYX5C 126.0	1'11	4.93%IV	-2500	5'50	-11.52MM	'00	2.92MM
TYX5C 127.0	'42	5.01%IV	5000	4'51	20.7MM	'00	-3.28MM
TYX5P 125.5	'27	5.55%IV	-3500	'00	1.48MM	3'47	-11.58MM
TYV5P 124.0	'02	8.53%IV	3500	'00	-109.38M	2'14	7.63MM
TYV5C 126.0	'54	5.71%IV	1500	5'49	7.38MM	'00	-1.27MM
TYV5C 127.0	'24	6.98%IV	-1500	1'39	-1.86MM	'00	562.5M
TOTAL				\$	3.46MM	\$	89756

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POSITION DURATION MANAGEMENT Page 1 of 3										
Mode: A Cash, Hedge, AGGREG.			Settle 9/17/15			Buy 1083406250.00 Sell .00				
"MACRO" Portfolio? N			Recompute Fut/Opt Hedge N							
Inflation = 0.0 ? N										
Tkr Cpn Mty <Key>	Price	EqvYld	ModDur	Cvx	Val01	MMM	Par	1blnMV	BPV	
FNCL 4 ¹ / ₂	108-04+	2.2619	3.71	.28	.0402	Buy	1	1	401.97M	
CASH	'24		.00	.00				0	0	
SWAP CHANGE		+2.26	+3.71	+ .28	<\$for\$ Swap>			1	+4019755	
Futures/Options	Price	Proxy	Issue	Num		Contr				
TYX5C 126.0	1'11	4.93%IV	+.64del	.0636	Shrt	-2500	n/a	-159.07M		
TYX5C 127.0	'42	5.01%IV	+.44del	.0441	Long	5000	n/a	220.66M		
TYX5P 125.5	'27	5.55%IV	-.30del	.0297	Shrt	-3500	n/a	103.92M		
TYV5P 124.0	'02	8.53%IV	-.05del	.0047	Long	3500	n/a	-16.35M		
TYV5C 126.0	'54	5.71%IV	+.74del	.0732	Long	1500	n/a	109.84M		
TYV5C 127.0	'24	6.98%IV	+.40del	.0389	Shrt	-1500	n/a	-58.39M		
CB	TOTAL							1	602.59M	



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