

Strategy

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Optimizing Separate Account WAM in a Rising Rate Environment

Abstract

- For institutional cash investors unsure of separately managed accounts in a rising interest rate environment, our scenario analysis suggests that a laddered portfolio of agency and corporate securities with a modest WAM could outperform the government money market fund proxy with negligible unrealized loss concerns in a rising rate environment.
- Both agency and corporate portfolios with maximum maturities of up to 12 months may outperform government money market funds in up to four interest rate hikes in a 12-month period.
- Moderate spread widening assumptions (10 bps for 1-year agencies and 20 bps for 1-year corporate securities) did not materially change the outcome.
- Maximum expected unrealized losses were limited to 0.06% or less of the portfolio's value in most scenarios.
- Current financial market volatility significantly altered expected interest rate increases, paving the way for a moderately longer portfolio WAM.
- The prime-to-government conversion among money market funds and fund managers' defensive positions prior to the reform deadline of October 2016 may provide a great opportunity for SMA investors running a moderate portfolio WAM.

Introduction

Faced with the challenges of banks turning away non-operating deposits and prime money market funds subject to redemption fees and gates, institutional cash investors increasingly turn to separately managed accounts (SMAs) as a viable cash management alternative. SMAs benefit from a customized and stable liquidity profile, wider investment selections, easy monitoring and direct control of credit risk, and higher return potential. In a rising interest rate environment, however, SMAs may experience unrealized losses.

How does one optimize portfolio weighted average maturity (WAM) to maximize return potential and minimize unrealized losses? We plan to tackle this question with a scenario analysis of several model portfolios to show that, even in a rising interest rate environment, it still pays to extend the WAM in an SMA beyond that of typical prime money market funds.

Scenario Analysis Explained

Six Portfolios: For our experiment, we designed two sets of model portfolios with laddered maturities: one consists of agency securities and another of

corporate credits rated Mid-A or higher. For each set, the 3-month portfolio contains three securities maturing in 1, 2, and 3 months, respectively. The 6-month portfolio contains six securities maturing in 1 through 6 months. The 12-month portfolio contains 12 securities maturing 1 through 12 months. The WAMs for the two sets of three portfolios are 1.5 months, 3 months, and 6 months, respectively. The portfolios reinvest maturity proceeds at the end of each month for the same maturity at prevailing yield levels so that the WAMs return to the beginning levels for the subsequent month.

Table 1: Model Portfolio

	Agency Portfolios		Corporate Portfolios	
	No. Securities	WAM (Months)	No. Securities	WAM (Months)
Portfolio A	3	1.5	3	1.5
Portfolio B	6	3	6	3
Portfolio C	12	6	12	6

Four Interest Rate Scenarios: With yield levels and spread to the Federal Reserve’s reverse repurchase agreement (RRP) rate as of the test date, we designed the scenario analysis based on the assumption that the Federal Reserve will raise the overnight rate one to four times in the next 12 months. At each rate increase, all securities are immediately re-priced off of the new benchmark (RRP) rate, thus sustaining instantaneous unrealized losses as the result of the rate increase (See [Table 2](#)).

Yield Spread Assumptions: We obtained fair value pricing for the respective securities with the assistance of our trading staff. The pricing date for our test data sets was February 3, 2016. We then converted those yield levels to spreads over the RRP repo, the lower bound of the fed funds rate target range. For the first part of the test, we assumed that the spread relationship of all securities to the RRP will remain constant. For the second part, we increased the credit spreads of each security to the RRP at each rate hike to test the spread widening effect in a rising rate environment. Note that we ran historical yield spread analysis on data from 2004 to May 2005, the first 12 months of the Federal Reserve’s last interest rate tightening cycle. We observed that yield spread widening to the fed funds rate occurred after the very first rate increase. Subsequent rate increases actually resulted in moderate spread compression.

Table 2: Starting Portfolio Construct (Yield Spread as of February 3, 2016)

Agency Portfolios			Term	Yield	Sprd to RRP	Sprd to RRP	Yield	Term	Credit Portfolios		
			0	0.25%	0.00%	0.00%	0.25%	0			
Port C	Port B	Port A	1	0.29%	0.04%	0.21%	0.46%	1	Port A	Port B	Port C
			2	0.33%	0.08%	0.28%	0.53%	2			
			3	0.38%	0.13%	0.31%	0.56%	3			
		4	0.42%	0.17%	0.36%	0.61%	4				
		5	0.46%	0.21%	0.40%	0.65%	5				
		6	0.50%	0.25%	0.45%	0.70%	6				
	7	0.55%	0.30%	0.51%	0.76%	7					
	8	0.59%	0.34%	0.55%	0.80%	8					
	9	0.61%	0.36%	0.59%	0.84%	9					
	10	0.63%	0.38%	0.64%	0.89%	10					
	11	0.66%	0.41%	0.68%	0.93%	11					
	12	0.69%	0.44%	0.70%	0.95%	12					

Source: Bloomberg as of 2/3/2016. Rates vary greatly depending on collateral type and between specific counterparties. For illustrative purposes only.

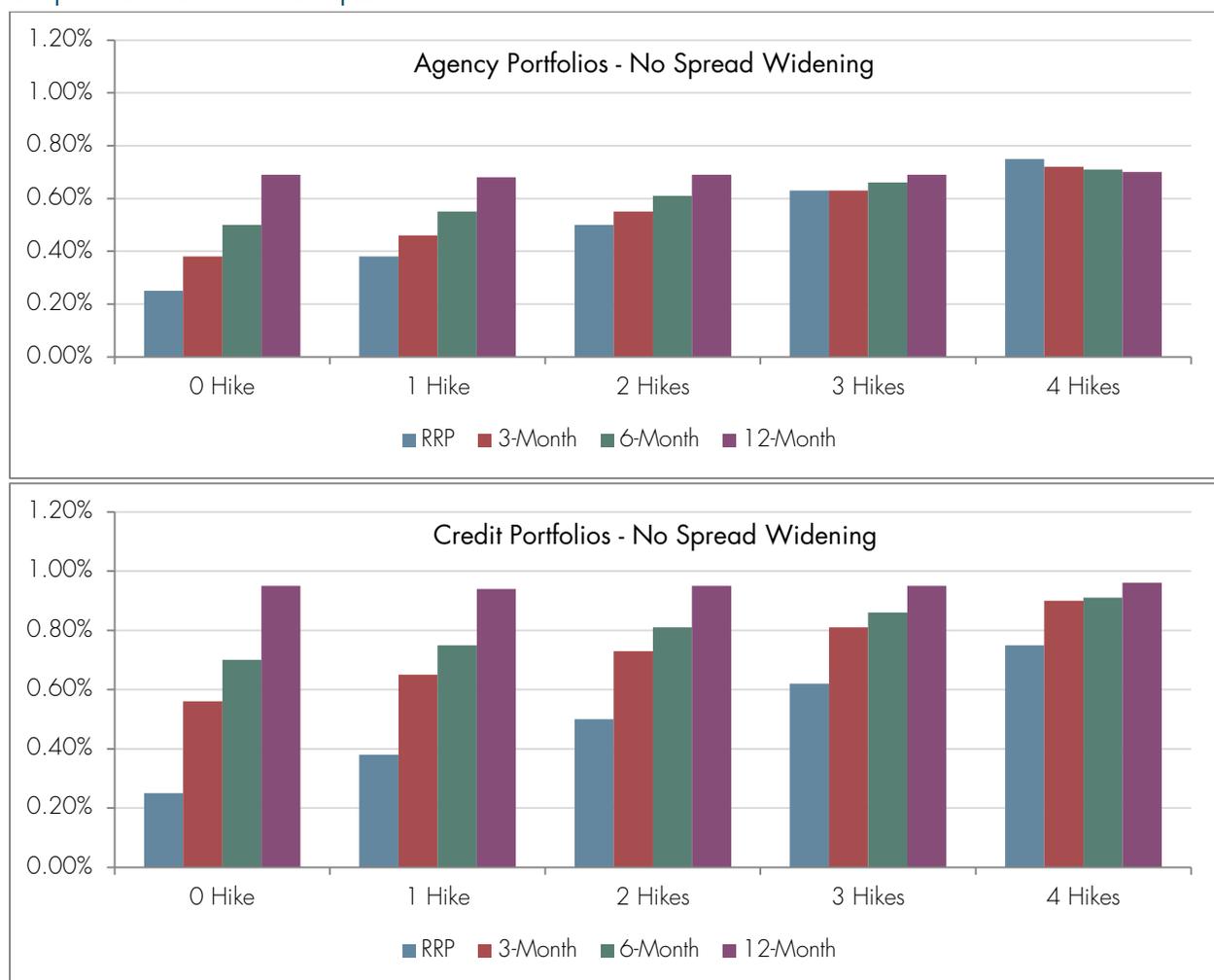
Objectives: The analysis has dual objectives - to compare the cumulative yield returns of the various model portfolios under different interest rate scenarios and their maximum potential unrealized losses over a 12-month period. The results would give insight to the appropriate WAM range given a certain path of the fed funds rate. Since we assumed we would hold all securities to maturity, principal fluctuations from market forces other than those resulting from rate increases were ignored. Also, since we assumed all securities were held to maturity, no actual losses are considered.

RRP as Proxy for Money Market Funds: To compare potential SMA returns against money market funds, we use the RRP rate to approximate the expected yield on government money market funds. We recognize that this assumption tends to overstate money market yield potential at low yield levels. For example, at the current RRP rate of 0.25%, the 7-day SEC yield on the Crane Government Institutional Index is 0.09%. However, as short-term interest rates increase further and the drag of management expenses on fund performance is reduced, we expect the RRP rate will become a more realistic proxy for government money market funds.

Test Results with No Spread Widening

With no additional credit spread widening in agency and credit securities, the scenario analysis produced the following results:

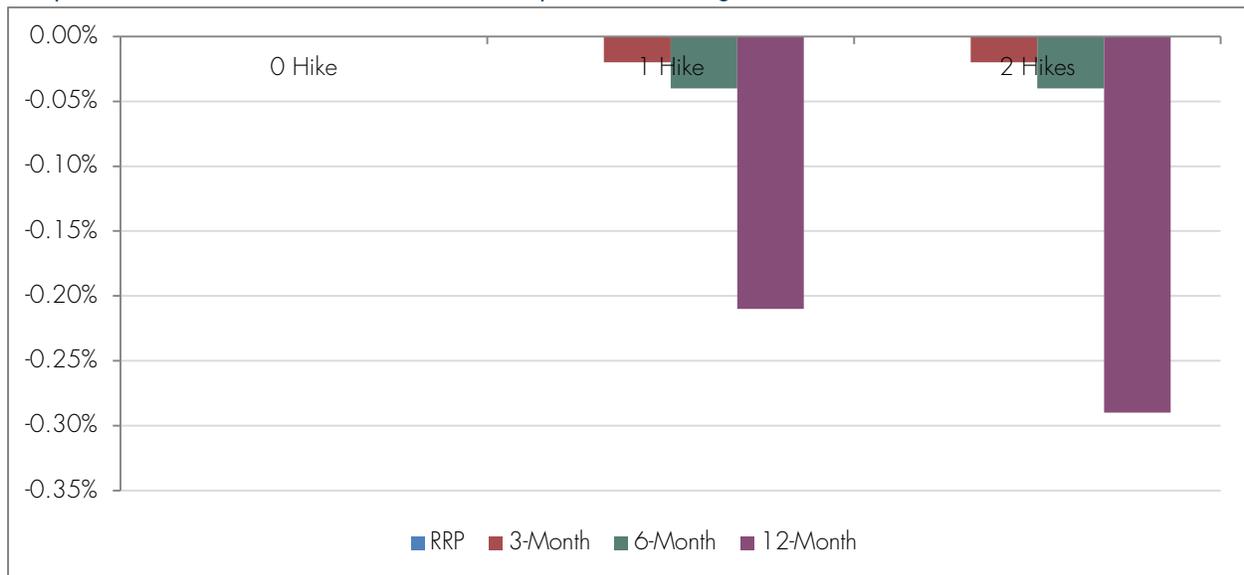
Graph 1: Income Return Comparison



Agency portfolios outperform if rate hikes are limited to 0.50%: All three agency portfolios outperformed the RRP if the fed funds rate were to increase no more than twice (0.25% each) in a 12-month period. With three hikes, the 3-month portfolio would match the RRP return. With four rate hikes, all three agency portfolios would underperform.

Credit portfolios outperform in all rate hike scenarios: For the three credit portfolios, higher income spreads allowed them to outperform the RRP rates in all four rate hike scenarios. The longer, 12-month portfolio also outperformed the two other credit portfolios in all the scenarios.

Graph 2: Maximum Unrealized Losses – No Spread Widening



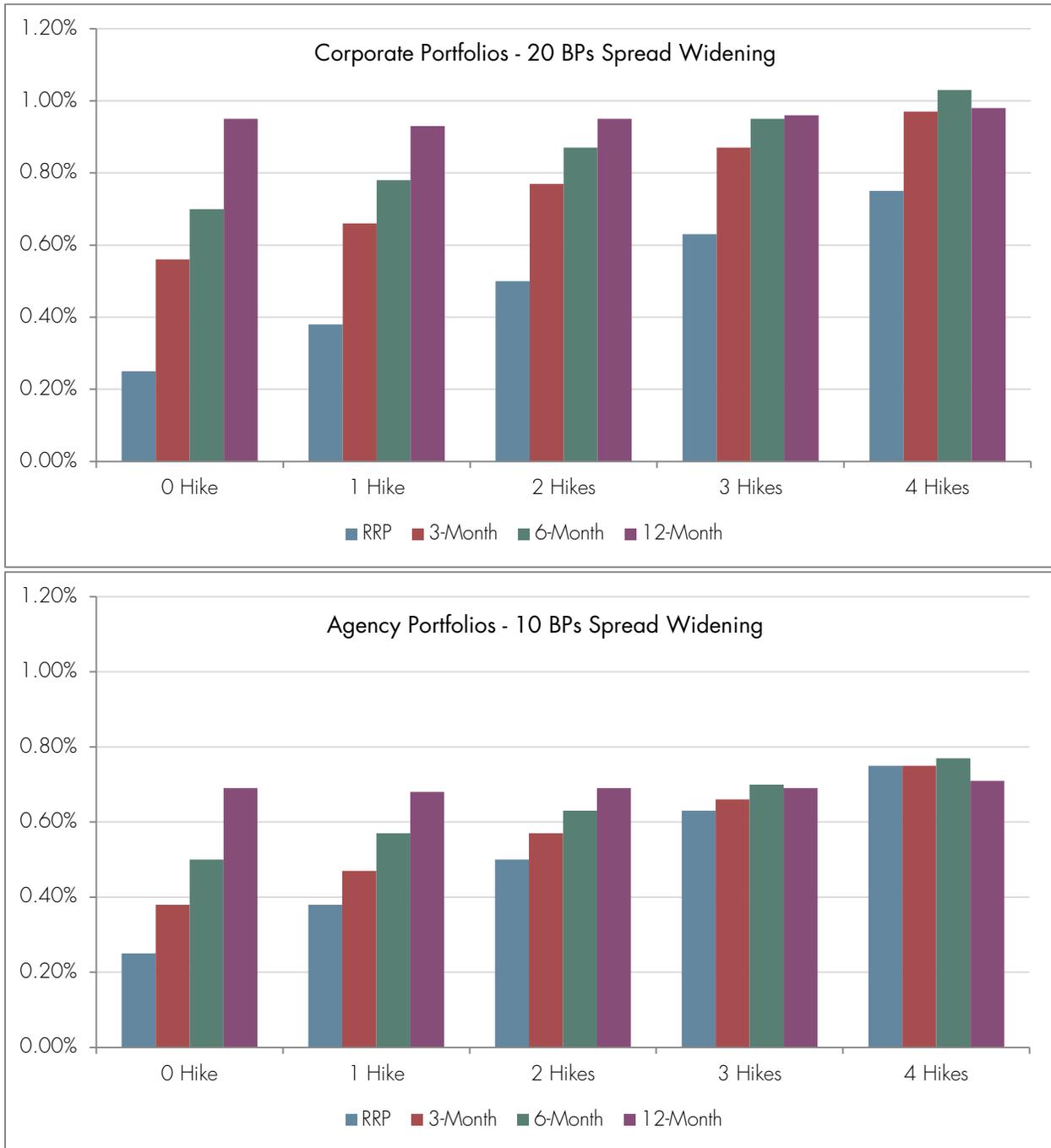
Negligible unrealized losses without spread widening: Graph 2 provides the expected unrealized losses as the result of a higher RRP rate causing a portfolio to reduce in value. As we hold the existing spread relationships constant for both agency and credit portfolios, Graph 2 is illustrative of both sets of portfolios. It shows that, for the 3-month and 6-month portfolios, unrealized losses would be less than 0.05% of the portfolio’s value in all rate hike scenarios. For the 12-month portfolio, four rate hikes would result in an unrealized loss of 0.23%, or \$230,000 for a \$100 million portfolio. This is slightly over one third of the expected return of 0.70% over a 12-month period.

Note that the calculations assume the fed funds rate increased immediately after new securities were added to the portfolio, thus causing maximum potential unrealized losses for each rate hike. With a hold-to-maturity portfolio, however, unrealized losses gradually diminish as securities approach maturity.

Test Results with Spread Widening

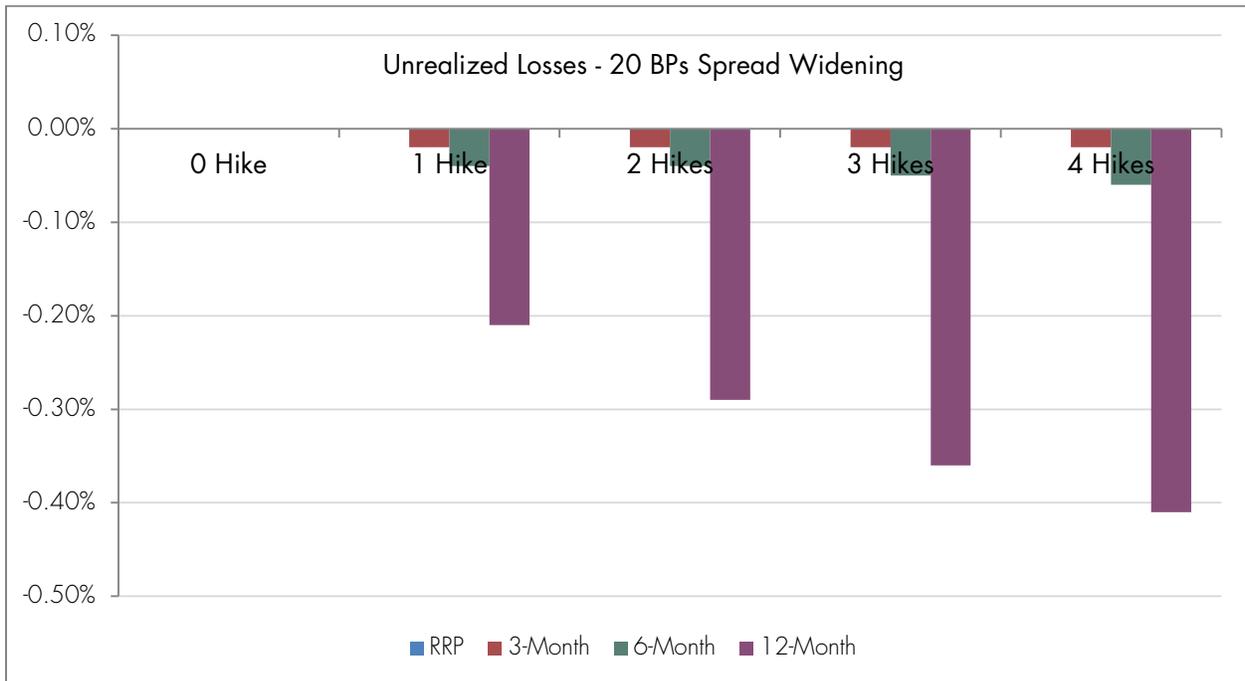
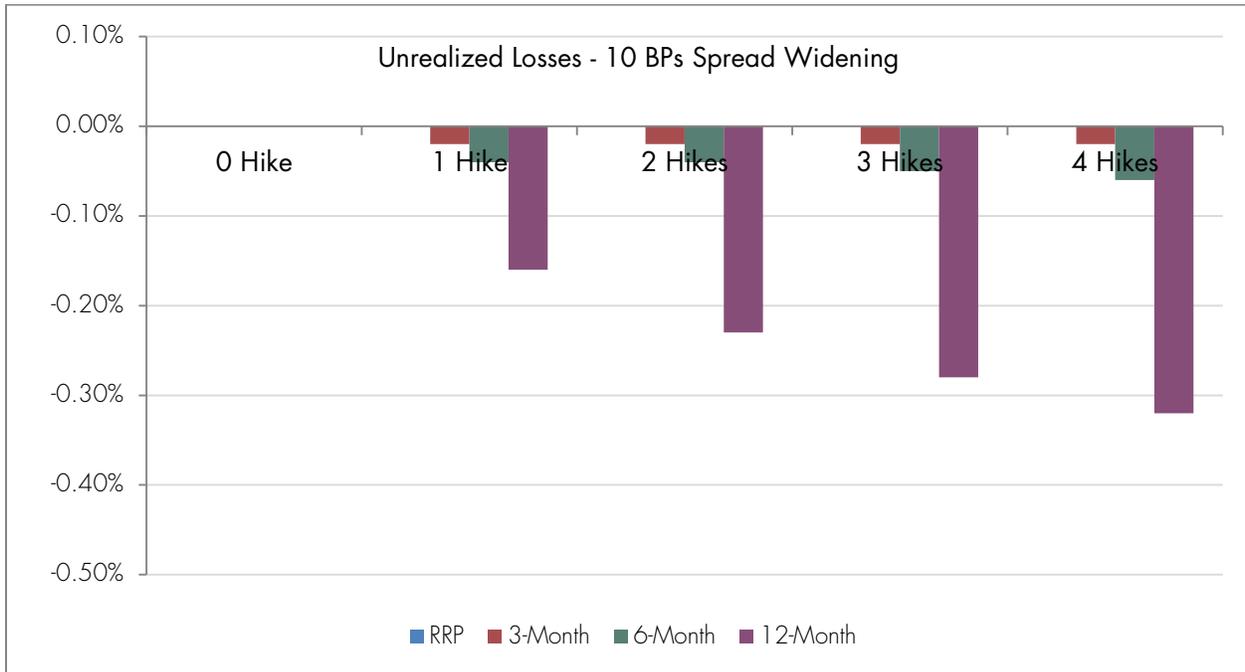
Spread widening assumptions: We then conducted the scenario analysis with the effect of spread widening on returns and unrealized losses. Due to the lack of historically relevant data, we arbitrarily set the agency yield curve to steepen by 10 basis points (BPs) for each rate hike, meaning that as we add 0.25% to the RRP rate, we add 0.35% to the 12-month agency yield. Yields along the curve, up to 12 months, are evenly adjusted accordingly. For the corporate yield curve, we assume a 20 BPs widening, meaning we add 0.45% yield spread to the 12-month corporate security for each 0.25% additional RRP rate. Likewise, yields along the corporate yield curve, up to 12 months, also are evenly adjusted accordingly.

Graph 3: Income Return Comparison - with Spread Widening



Better outperformance potential with spread widening: Graph 3 shows that agency portfolios of all maturities would outperform the RRP when the Fed hiked rates no more than three times. The three corporate portfolios, on the other hand, outperformed the RRP rates in all interest rate scenarios. This is because, in a laddered SMA portfolio, wider spreads lead to periodic higher reinvestment opportunities as each maturing security is reinvested at a rate higher than the new RRP rate.

Graph 4: Unrealized Losses – Spread widening



Unrealized losses more noticeable but still modest: When we set the agency and corporate spread yield to widen by 10 and 20 basis points, respectively, unrealized losses went up marginally when compared to the no spread widening scenario. Still, the 3-month and 6-month portfolios continue to limit their unrealized losses to under 0.06%. Even with the 12-month agency and credit portfolios, unrealized losses were modest at 0.32% and 0.41%, respectively.

Summary Findings

The following highlights provide the summary findings from our scenario analysis:

1. In portfolios of laddered maturities with reinvestment opportunities, agency portfolios with final maturities of 3, 6 and 12 months outperformed the RRP rates when the number of rate hikes was limited to three over a 12-month horizon.
2. Only when the RRP rate rose four times over a 12-month period did the longest, 12-month agency portfolio start to underperform the benchmark rate.
3. Credit portfolios with 3, 6, and 12 month final maturities outperformed the RRP in all interest rate increase scenarios.
4. Moderate spread widening assumptions (10 bps for 1-year agency and 20 bps for 1-year corporate securities) did not materially alter the outcome. Expected return advantages in agency and corporate portfolios over the RRP were enhanced by the spread widening from higher reinvestment yields.
5. For all but the 12-month portfolios, maximum expected unrealized losses were limited to 0.06% or less. The 12-month corporate portfolio suffered a maximum unrealized loss of 0.41%, followed by the 12-month agency portfolio with an unrealized loss of 0.32% at its maximum point.

Table 3: Summary of Horizon Income Return versus RRP (12-month Holding Period)

Agency Beats RRP?		0 Hike	1 Hike	2 Hikes	3 Hikes	4 Hikes
Constant Spread	3 - Month	Yes	Yes	Yes	No	No
	6 - Month	Yes	Yes	Yes	Yes	No
	12 - Month	Yes	Yes	Yes	Yes	No
Widening Spread	3 - Month	Yes	Yes	Yes	Yes	No
	6 - Month	Yes	Yes	Yes	Yes	Yes
	12 - Month	Yes	Yes	Yes	Yes	No
Credit Beats RRP?		0 Hike	1 Hike	2 Hikes	3 Hikes	4 Hikes
Constant Spread	3 - Month	Yes	Yes	Yes	Yes	Yes
	6 - Month	Yes	Yes	Yes	Yes	Yes
	12 - Month	Yes	Yes	Yes	Yes	Yes
Widening Spread	3 - Month	Yes	Yes	Yes	Yes	Yes
	6 - Month	Yes	Yes	Yes	Yes	Yes
	12 - Month	Yes	Yes	Yes	Yes	No

Insight – It Pays to Extend Maturity Even in a Rising Rate Environment

For institutional cash investors unsure of the SMA approach in a rising interest rate environment, our scenario analysis suggests that despite, or because of, a rising rate environment, a laddered portfolio of agency and corporate securities of modest WAM could outperform the government money market fund alternative on income returns with negligible unrealized loss concerns.

For accounts that do not accept credit exposures, agency portfolios may sufficiently defend against rising interest rates up to three rate hikes in a 12-month period if today's yield curve to RRP relationship holds constant. A

corporate credit portfolio may outperform the government money market fund alternative if interest rates were to increase by up to 1.00% in the next 12 months.

Based on the simulated yield advantage, the decision on an optimal WAM then rests with an account's tolerance of unrealized losses from higher interest rates. In our example, a 12-month maximum maturity corporate portfolio may show a paper loss of 0.41% at some point. However, higher coupon income from the credit portfolio allows it to recuperate such losses faster than an agency portfolio could.

The challenge for the institutional cash investor is to find a balance between progressively higher expected returns as well as expected unrealized losses with each interest rate hike. Note that if an account liquidates part of the portfolio to satisfy an unplanned cash need, the unrealized losses would turn into real losses. Thus, liquidity planning also is a relevant factor.

Having performed the scenario analysis study, we are also cognizant of current financial market volatility that significantly altered expected interest rate increases. Based on indications from the interest rate futures market, it is possible that the Fed would hike rates only once in 2016, thus paving the way for a moderately longer portfolio WAM.

As the prime-to-government conversion among money market funds continues and as institutional prime funds are expected to stay short and liquid in anticipation of redemptions, we should expect a steeper yield curve and a wider credit curve as we head towards the second half of the year. These developments, along with a benign interest rate outlook, may turn out to be a great opportunity for SMA investors running a moderate portfolio WAM.

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