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Investment Portfolio Risk Management

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A reoccurring question many credit unions have been asking: *as Quantitative Easing (QE) comes to its natural end of its unnatural life what will happen to interest rates, the market and the overall economy?*

> *Maintaining "excessive" cash levels can be as harmful to the investment portfolio and balance sheet as taking on excessive duration risk.*

The crystal ball is still foggy, but most likely we will return to fundamentals, but unquestionably, the normalization of asset prices (interest rates, equity prices etc.) is going to be a rocky, rocky road. There are going to be a lot of detours. When we get there, however, the underpinnings for the market will be clearer… it will be more fundamentally driven and ultimately it will be healthier.

As the QE tapering process (which began in January) continues, many credit unions are struggling with the uncertainty surrounding the unwinding of QE and specifically its impact on interest rates. Additionally, forecasts of a reviving economy and reversal of the Fed's zero interest rate policy (ZIRP) have led many to believe that rates will be heading higher. **Fear of higher interest rates has been exacerbated by warnings from regulators and examiners to not extend out the curve**. Because of the uncertainty surrounding QE and increased regulatory scrutiny, many credit unions have taken the "path of least resistance" and have maintained disproportionate cash levels.

Given that interest rates have collapsed to all time record low levels and valuations of most fixed income assets are considered fully valued, it is safe to say the so-called "easy money" has been made. However, despite the less attractive fixed income valuations, credit unions are still challenged with maximizing income from their investment portfolio without incurring inappropriate risk. Every basis point counts in this low rate environment in order to optimize income and net interest margins.

That said, taking excessive duration risk in today's environment is simply not advisable. Likewise, maintaining "excessive" cash levels can be as harmful to the investment portfolio and balance sheet as taking on excessive duration risk. In today's challenging environment a strong risk management process and robust analytical systems are prerequisites to success

Addressing Risk – The Big Four

I. Portfolio Duration

Fixed income portfolios are profoundly impacted by the simple increase or decrease of interest rates. As such, duration represents the most efficient way of measuring portfolio risk subsumed into a single metric. Specifically, duration represents the expected percentage change in the value of a security or portfolio given a change in rates. The longer the duration the greater the change in price from declining/rising interest rates. If yields are expected to decline, a longer-duration portfolio may be preferred; if yields are expected to advance, a shorter-duration portfolio would be favored.

Sector	***Maturity***	***Duration***	***Price Return%***	
			-100	**+100**
UST	**4/30/2016**	**1.97**	**1.995**	**-1.946**
UST	**5/31/2018**	**3.94**	**4.055**	**-3.877**
UST	**4/30/2021**	**6.42**	**6.655**	**-6.192**

A security with duration of 3.94 years is expected to experience a principal loss/gain of approximately 4% if rates increase/decrease by 100 basis points. A longer security with duration of 6.42 years would generate a gain or loss of 6.65% and 6.20%, respectively, if rates rose by 100 basis points.

Credit unions generally mark the appropriate duration target of the portfolio based on a liability structure, loan demand, risk tolerance and interest rate trends. Generally speaking, if yields are expected to decline, a longer-duration portfolio may be preferred; if yields are expected to advance, a shorter-duration portfolio would be favored. It should be noted that all duration decisions should be made within the context of the total balance sheet.

II. Yield Curve Structure

While duration is a critical valuation of risk management, it is important to recognize that a single duration number is an estimate of an asset or liability's sensitivity to a change in a parallel shift in the underlying yield curve. However, not all yield curve shifts are parallel moves.

Over the past 30 years, the slope of the Treasury curve, measured as the difference between the yield of the 10-year Treasury and the yield of the six-month T-bill, ranged from -60 basis points to more than 365 basis points. *Clearly, not all yield curve shifts are parallel moves.* In fact, none are!

From a portfolio perspective, it is possible to construct a portfolio of any particular average weighted duration in many different ways using securities positioned along the yield curve. As a general rule, if the yield curve is expected to steepen, it is advantageous to maintain a bullet portfolio; if the yield curve is expected to flatten or invert, a barbell portfolio may be preferred *(see below).*

Barbell	***A combination of shorter and longer duration securities.***
Bullet	*A portfolio with duration of three years may be constructed exclusively of securities with three-year duration.*
Ladder	*Purchase a range of securities along the yield curve to achieve portfolio duration of three years.*

All three of these portfolio structures have the same effective duration of three years and exhibit similar sensitivity to a "parallel" shift in the yield curve. However, as we show below, all three of these portfolios generate different return profiles if the yield curve were to steepen or flatten.

Portfolio	***Bear Flattening +200 (%)***	***Bear Steepen +200 (%)***
Barbell	-0.590	-1.211
Bullet	-1.652	0.363
Ladder	-1.318	0.077

The bullet portfolio generates the best return (.36%) in a bear steepening of the yield curve. Conversely, a barbell will post the highest return (-.59%) if the yield curve bear flattens. The ladder structure tends to generate less extreme results under both scenarios.

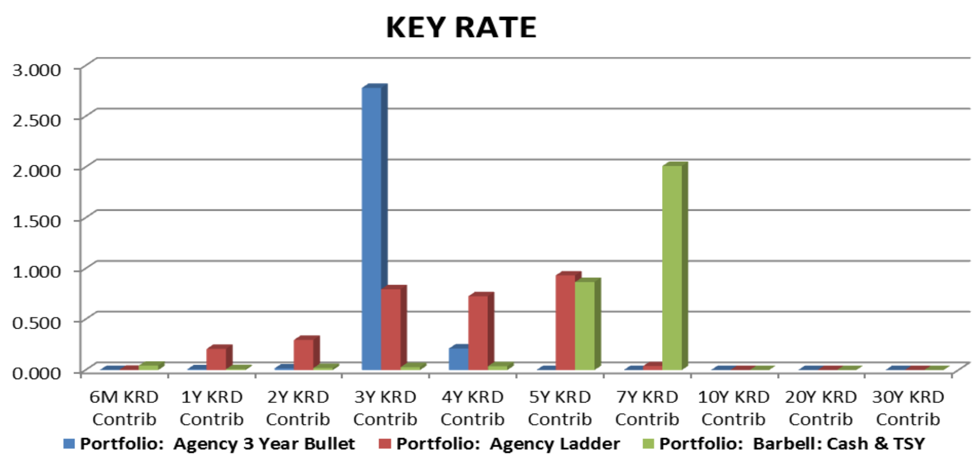
Quantifying Yield Curve Risk - Understanding Key Rate Durations

Calculating key rate durations makes it easy to compare a portfolio to a benchmark or a liability, in a way that may reveal structural yield curve mismatches not identified by traditional duration measures. At both the individual security and portfolio levels, key rate durations can provide valuable insights on term structure sensitivity, and in a way that no single duration measure can.

Key rate durations measure a portfolio's price sensitivity to independent shifts along the yield curve at important or "key" points – such as those corresponding to the on-the-run Treasury/swap maturities. They are calculated by decreasing and increasing each key Treasury/swap spot rate by some number of basis points (e.g., +/-50 basis points or +/-100 basis points) and recalculating the asset or liability's price (present value), holding all other spot rates constant.

Below we contrast the key rate exposures of the ladder, bullet and barbell portfolios. Keep in mind, all three portfolios have the same effective duration of *three years*, but as shown below, have very different yield curve exposures.

Bullet, Barbell and Ladder Key Rate Duration Comparison



By using rigorous "what-if" scenario analysis, credit unions can proactively quantify how each of these investment portfolios (bullet, barbell , ladder) will perform under any future interest rate scenario and/or yield curve shift. By understanding the potential returns, credit unions will be better able to measure the overall risk of the portfolio and uncover unintentional interest rate exposures. This analysis will also allow credit unions to strategically position the portfolio to benefit from their views on the market.

III. Sector Risk

Credit unions may allocate their holdings in many sectors including CDs, Treasuries, agencies, corporate bank notes, municipals and mortgage backed securities (MBS). Each of these sectors offers their own unique characteristics, risks and yields. Credit unions must decide how much of the portfolio's duration should be attributable to each sector.

With spreads on most fixed income sectors at historically narrow levels credit unions need to be cognizant of and be able to quantify the risk of sector exposure should spreads widen and potentially revert to their historical average. A *widening of sector spreads* can have the same impact on security/portfolio valuations as does *rising interest rates*.

For example, in today's environment three-year Agency bullets are trading *flat or negative* to comparable benchmark Treasuries. This represents the narrowest yield spread to Treasuries ever! Historically, these same securities have traded at spreads closer to 30-50 basis points over comparable Treasuries. In the height of the credit crisis, spreads expanded to +75-80 basis points over.

One could easily argue that agency debt is currently extremely rich from a historical perspective. As such, credit unions may want to consider selling agency debt and reallocating into Treasuries. Or for those accounts that have the wherewithal, selling agency debt and purchasing high quality bank notes may add income and provide broader diversification benefits. By actively managing the investment portfolio and "rotating" or reallocating investment amongst *"rich" or "cheap"* sectors, portfolio *return can be enhanced and/or risk reduced.*

Finally, avoid being a single sector investor (i.e. only agency debentures or CDs). Sector diversification is key in mitigating risk and enhancing returns. Credit unions should review their investment policies to determine if changes should be made to better diversify risk exposure and expand investment and opportunities.

IV. Security Selection

Within each fixed income market sector, there are a wide variety of securities of varying investment characteristics and structures. Credit unions might opt for a low or a high coupon security with similar durations. Some securities may be callable or offer other types of "optionality" such as steps or prepayment risk. Some credit unions may accept credit risk and invest in corporate bank notes or municipal securities.

It's incumbent upon the credit unions to select suitable individual securities to achieve the specific investment objectives. The use of *pre-trade analysis* can add significant value to the security decision making process. Prior to purchase, investors are able to quantify the risk/return impact of the security on a stand-alone basis. The analysis can also quantify how the security purchase would impact the risk profile of the overall portfolio *prior to purchase*.

The pre-trade analysis allows credit unions to improve the security decision making process and helps avoid costly mistakes before the actual trade is done. The pre-trade analysis is also an effective tool in providing the necessary due diligence to meet increased regulatory demands. *We strongly encourage credit unions to utilize pre-trade analysis prior to executing trades.*

The Tools of the Trade – How to Maximize the Potential of Your Investment Portfolio

To address the difficulties of investing in today's low rate environment, Balance Sheet Solutions has invested in "best in class" accounting, (TPG) analytical (Bondedge) and credit tools (Gimme Credit) to assist our clients in enhancing income and return while managing and controlling risk. Below, we briefly review the tools available to our clients.

Bond Accounting (TPG)	Ease bond accounting burdens and repurpose monthly data for BondEdge analytics. Meet regulatory, functional and technical requirements.	✓ Online Access, Easy to use ✓ Seamless Interface with Bloomberg ✓ Interfaces with BondEdge *(see below)* ✓ Access to Accounting Professionals ✓ Reports on Second Business Day of the Month
Portfolio Analytics (BondEdge)	Maximize returns to grow your business as you manage investment risk and comply with regulations. Create a total picture of your portfolio: performance, risk and income potential.	✓ Fixed Income Portfolio Analysis ✓ Review Portfolio vs. Index Comparison ✓ Cash Flow Analysis ✓ Stress Testing Scenario Analysis ✓ Pre- and Post-Purchase What-If Analyses ✓ Credit Reports (Upgrades/Downgrades) ✓ Access to a Dedicated Portfolio Analyst
Third-Party Credit Analysis (Gimme Credit)	Mitigate risk, comply with newly revised regulations, and manage your credit union's corporate bond portfolio with confidence.	✓ Independent, High-Quality Credit Analysis of Corporate Debt Securities ✓ Credit Reports, Intraday Comments, Credit Scores ✓ Comprehensive Credit Analysis at the Portfolio Level Industry and Sector Reports ✓ Hotline Senior Analyst Access, Option to Visit the Analyst In-Pers

Final Thoughts

Unfortunately, we do not have a crystal ball and cannot predict the future. However, whether or not interest rates remain at historically low levels for years to come or rates normalize, Balance Sheet Solutions has the requisite accounting, analytical and credit tools to assist and guide our clients through whatever comes our collective way. By utilizing the Balance Sheet Solutions fixed income portfolio analytics platform, credit unions will be better equipped to manage risks and seize opportunities as they arise.

More Information

For more information about credit union investment strategy, portfolio allocation and security selection, please contact the author at *tom.slefinger@balancesheetsolutions.org* *or* (800) 782-2431, ext. 2753.

Tom Slefinger, Senior Vice President, Director of Institutional Fixed Income Sales, and Registered Representative of ISI, has more than 30 years of fixed income portfolio management experience. He has developed and successfully managed various high profile domestic and global fixed income mutual funds. Tom has extensive expertise in trading and managing virtually all types of domestic and foreign fixed income securities, foreign exchange and derivatives in institutional environments.

At Balance Sheet Solutions, Tom is responsible for developing and managing operations associated with institutional fixed income sales. In addition to providing strategic direction, Tom is heavily involved in analyzing portfolios, developing investment portfolio strategies and identifying appropriate sectors and securities with the ultimate goal of optimizing investment portfolio performance at the credit union level.