Optimizing Risk-Return Outcomes in Core Fixed Income

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PNC Capital Advisors Taxable Fixed Income Team

EXECUTIVE SUMMARY

At PNC Capital Advisors, we believe the role of fixed income is to serve as a low-risk, diversifying anchor for an investor's portfolio. We use a top-down, risk-focused approach that is based upon identifying and investing in spread sectors that we believe have historically provided desired risk-return characteristics. These sectors include structured products, such as agency mortgage-backed securities (MBS) and consumer asset-backed securities (ABS), as well as corporate credit securities. We define spread sector and security risk by the volatility of excess returns, calculated using duration-matched U.S. Treasuries.[1] In most cases, we assess a portfolio's risk-return tradeoffs relative to an index that includes both "risk-free" and spread sectors.

We believe an investment process that is focused on identifying and investing in sectors with these attributes will exhibit return consistency through economic cycles. Our portfolio management and research teams recently completed an analysis of the past 20 years of fixed-income performance across maturity, sector, and quality segments.[2]

- Our objective was to use the findings to:
  - Ensure that we are building portfolios that consistently emphasize sectors with the most attractive return profiles.
  - Identify areas consistent with our core philosophy and process where we could refine our approach.
- Our research confirmed that:
  - Structured products provide an excellent source of diversification and return potential within a risk-focused investment framework. Our investing approach will continue to emphasize ABS and MBS securities, particularly in shorter-duration strategies.
  - The longer-term average return and volatility characteristics of 5- to 7-year credit securities have been attractive relative to 7- to 10-year credits. We have emphasized these maturities in our credit security selection process, a position validated by a comparison of modified information ratios (MIRs) relative to longer-duration maturities.[3]
- We also identified areas where refinements can be made:
  - Shorter-duration credit exhibits MIRs comparable to that of structured products. As a result, we believe that allocations to this segment provide an opportunity to enhance the return of client portfolios.
  - Investing in longer-maturity credit securities can play a role in maximizing the excess return of the overall portfolio. We will increase the emphasis in these sectors when we determine the risk/reward opportunities are favorable.

INTRODUCTION

In October 2016, the PNC Capital Advisor's Taxable Fixed Income team published Managing Credit Risk in Taxable Fixed Income Portfolios, the first of two papers addressing the core tenets of our process. That analysis covered our enhanced-issuer exposure and sector-limit framework based upon contribution to duration. We now turn to our approach to sector allocation and portfolio construction.

In this paper we discuss:

- Our risk-focused philosophy and process for core fixed-income investing.
- The research on risk-focused metrics and sector characteristics.
- Insights gained from the findings on corporate credit and structured product sectors, as well as the implications for our investment approach.

OUR CORE RISK-FOCUSED PHILOSOPHY

Within a total portfolio perspective, we believe the role of fixed income is to serve as a low-risk, diversifying anchor for investors. We offer our clients a repeatable process that is designed to deliver stable returns over an economic cycle. This process is predicated on emphasizing sectors with desirable risk-return characteristics.

- Our objective is to generate a consistent risk-adjusted return profile to balance higher alpha-seeking allocations in other areas of the portfolio.
- Stability of return is a fundamental point of emphasis in our fixed-income process. We believe that – for a given level of expected return – a portfolio profile that is more certain and less volatile is superior to one with higher price volatility and less certainty.

Our fixed-income strategies seek to outperform a stated benchmark with lower or comparable volatility through optimal sector allocation decisions. We focus on sectors that demonstrate attractive return per unit of risk to produce fixed-income portfolios that emphasize:

Structured products — The agency MBS and consumer ABS sectors are fundamental building blocks for our strategies, providing diversification and the risk-return characteristics we desire.

Corporate credit — This segment provides a wide range of attractive risk-return opportunities across the quality and maturity ranges.

U.S. Treasury securities — Treasuries offer both stability and liquidity, while assisting with management of target duration and yield curve exposures.

The objective of our risk-focused fixed-income process is to deliver consistent returns through sector emphasis by:

- Assessing the economic environment and formulating an outlook for monetary and fiscal policy, inflation expectations, and volatility.
- Identifying sectors that offer compelling risk-return characteristics based on the macro outlook.
- Conducting security analysis on issuers and structures. The research teams partner with portfolio managers to create model portfolios to ensure consistency and diversification across strategies.
- Construct portfolios while controlling and quantifying risk attributes to ensure positioning and return drivers are consistent with the macro outlook.

DEFINING RISK-FOCUSED METRICS

The portfolio management and research teams analyzed the past 20 years of fixed-income performance across maturity, sector, and quality segments. The objective was to quantify how these characteristics correlate with returns, and the findings help ensure that our approach is designed to optimize risk-return outcomes. We calculate a modified information ratio by dividing realized returns by the volatility of those excess returns and use this metric to compare sectors with distinct investment risks and characteristics.

Fixed-Income Sectors

		1997-2016					As of Dec. 31, 2016	
Sector	Primary Risk	Avg. Return (% per year)	Volatility (% per year)	Modified Info Ratio	Avg. Spread	Spread Volatility	Year-End Spread	Effective Duration
Corporate Credit	Corporate default risk	0.62	3.06	0.20	141	47	130	6.98
MBS (Agency)	Prepayment/convexity risk	0.48	1.25	0.38	139	30	92	4.88
ABS-Credit Card and Auto	Consumer default risk	0.56	0.54	1.03	61	30	55	1.60

Note: Returns data are excess returns at a monthly frequency. Asset-backed securities sectors exhibited are AAA rated. Spreads are relative to Treasuries. Corporate and ABS spreads are expressed as option-adjusted spread. Mortgage-backed securities spread is the current coupon.

Source: BofA Merrill Lynch Global Bond Indices, JP Morgan, PNC Capital Advisors

The table above displays the risk-return characteristics of the spread sectors we believe should form the basis of a diversified fixed-income portfolio: corporate credit, agency MBS, and AAA-rated ABS. The following summary observations provide a basis for the sector insights we highlight through the remainder of this piece:

- Corporate credit generated the largest average excess return, but exhibits greater volatility and higher overall interest rate risk.
- Agency MBS had an average spread comparable to that of corporate credit with considerably lower return volatility and interest-rate risk.
- Consumer ABS offers the lowest overall interest rate risk, as well as the lowest volatility of return.

The U.S. Treasury sector is the largest component of many fixed-income indices and is a core holding in our clients' portfolios. While "risk-free" in that it is absent credit risk (and therefore has no expected excess return and excess return volatility), the Treasury sector is a strategic sector allocation in our portfolios to provide stability, manage targeted-duration and yield-curve exposures, and a source of liquidity.

CORPORATE CREDIT INSIGHTS

In this section we examine the risk and return characteristics of corporate credit. Our focus is on investment-grade corporate credit, defined as rated BBB and above. Perhaps intuitively, the profile of the corporate credit index can be deconstructed into two primary factors that describe risk and return: default risk and spread duration risk. We define default risk across three quality buckets (AAA-AA, A, BBB), which represent the average rating assigned between the primary credit rating agencies.[4] Similar to modified duration (which measures a bond's price sensitivity to changes in yields), spread duration measures the price sensitivity to changes in the credit spread. We believe it is a good proxy for duration risk of excess return, as opposed to duration risk of total return (modified duration).

The table below shows excess return, volatility, and MIRs over various credit quality and bond maturity buckets.

Corporate Credit Matrix – Maturity and Quality (1997-2016)

Average Excess Return (% per year)			
	AAA-AA	A	BBB
1-3 year	0.61	0.82	1.09
3-5 year	0.59	0.86	1.11
5-7 year	0.82	1.09	1.18
7-10 year	0.27	0.35	0.51
10+ year	0.15	0.02	0.42

Volatility (% per year)			
	AAA-AA	A	BBB
1-3 year	0.63	0.97	1.56
3-5 year	1.37	1.89	2.43
5-7 year	1.96	2.61	3.36
7-10 year	2.81	3.25	4.06
10+ year	4.55	4.93	6.46

Modified Information Ratio			
	AAA-AA	A	BBB
1-3 year	0.98	0.85	0.70
3-5 year	0.43	0.45	0.46
5-7 year	0.42	0.42	0.35
7-10 year	0.10	0.11	0.13
10+ year	0.03	0.00	0.07

Note: Returns data are at a monthly frequency.
Source: BofA Merrill Lynch Global Bond Indices

Insights

Return

- The highest average excess returns have occurred in BBB-quality categories, with the A-quality segments outperforming the AAA to AA tier in all maturity groups less than 10 years.
- Longer-maturity segments have not necessarily driven larger average annual excess returns. In fact, across credit quality groupings, the highest excess returns have been generated in the 5- to 7-year maturity category.
- The 10-plus-year maturity group had the lowest mean returns across the maturity landscape. Lower realized excess returns can be partially explained by demand from asset-liability managers and insurers with long-term liability targets. This has compressed spreads in longer-dated securities and flattened credit curves. In addition, longer spread duration has amplified the price impact from changes in risk premiums, which leads to a greater proportion of time periods exhibiting negative excess returns than other maturity segments.

Volatility

- Within all credit quality segments, increased maturity results in substantive increases in return volatility – larger spread durations at longer maturities amplify volatility.
- Lower credit quality is also associated with increased return volatility across maturity categories. The table Corporate Month-End Option-Adjusted Spread Levels, 1997-2016 illustrates the wide variation of risk premiums that have occurred over the past 20 years. These considerations influence our issuer limit methodology outlined in the October 2016 white paper mentioned earlier.

Corporate Month-End Option-Adjusted Spread Levels, 1997-2016

Minimum OAS			
	AAA-AA	A	BBB
1-3 year	24	38	43
3-5 year	31	43	60
5-7 year	37	20	68
7-10 year	34	55	72
10+ year	34	61	84

Maximum OAS			
	AAA-AA	A	BBB
1-3 year	222	294	397
3-5 year	244	317	377
5-7 year	239	294	370
7-10 year	240	277	340
10+ year	223	253	353

Source: BofA Merrill Lynch Global Bond Indices

Modified Information Ratio (MIR)

- While shorter-maturity groupings have generated the most attractive risk-return profiles (the highest MIRs), the magnitude of average annual excess return in these segments is generally limited.
- Lower-quality and longer-maturity credit provide opportunities to maximize excess return.

Implications

- Corporate credit provides important sector allocation opportunities to produce alpha in client portfolios.
- Given the more pronounced idiosyncratic risk, it is important to maintain both a well-diversified portfolio and a disciplined research process as demonstrated by our fundamental, team-based approach.
- High-quality, low-risk premium portions of the market exhibit greater consistency in the context of our historical analysis. As a result, we believe that more persistent allocations to this segment provide the potential to enhance portfolio returns.
- Selective and opportunistic investing in lower-quality and longer-maturity credit securities can play a role in maximizing excess return of the overall portfolio.

STRUCTURED PRODUCTS INSIGHTS

Between 1997 and 2016, AAA-rated ABS and agency MBS sectors exhibited significantly less volatility of excess return than nearly all credit sectors, resulting in favorable MIRs relative to corporate credit. In addition, there was a low correlation of excess return between structured products and the credit sector over the 20-year period, due in part to the high-quality and shorter-duration profile of structured products relative to the overall credit index.

Implications

	1997-2016			
Sector	Avg. Excess Return (% per year)	Volatility (% per year)	Modified Info Ratio	Correlation to Corporate Credit
MBS 30 year	0.50	1.33	0.38	0.43
MBS 15 year	0.37	1.12	0.33	0.41
ABS – CC & Auto	0.56	0.54	1.03	0.51

Note: Returns data are at a monthly frequency.

ABS Credit Card and Auto sectors exhibited are AAA-rated.

Source: BofA Merrill Lynch Global Bond Indices, PNC Capital Advisors

Insights

Structured products provide an excellent source of diversification and enable investment managers to construct portfolios with the risk-return characteristics we desire.

MBS

- Interest-rate volatility has the largest impact on relative performance. The inherent prepayment-convexity risk of these securities impacts the timing of cash flows from monthly amortization of principal and interest.
- The MBS and credit sectors are driven by different economic and market dynamics: interest-rate volatility (MBS) versus business fundamentals and corporate default cycles (corporate credit).

ABS
- The consumer ABS market has a long track record of strong performance, dating back to the mid-1980s.
- While the ABS market has very little exposure to prepayment volatility and relative performance is not interest-rate driven, the sector has a low correlation with credit overall due to limited exposure to the corporate business cycle.
- Additionally, ABS products benefit from structural enhancements that boost credit quality. These include cash reserves, overcollateralization and/or subordination, which can mitigate the loss potential for investors at the top of the capital structure.

Implications

- Structured products play an important role in optimizing the risk-reward profile of a fixed-income portfolio.
- The enhanced income and relatively low volatility offered by AAA-rated consumer receivables make the sector an important component in the construction of a risk-focused portfolio.
- We believe the credit card and prime auto segments of the ABS market are high-quality, liquid asset classes with an attractive risk-reward profile. Our research teams determines if sufficient structural credit enhancement is present to support the high-quality, senior-level tranches of the transactions.

Illustration – The Risk-Return Benefit of Structured Products in a Portfolio

The diversification benefit provided by incorporating structured products in an asset-allocation strategy can be illustrated by comparing two portfolios, one consisting solely of government and credit sectors (Bloomberg Barclays Government Credit Index) and the other that includes structured products (Bloomberg Barclays Aggregate Index).

As shown in the table below, adding structured products to a government-credit portfolio over the period 1997 to 2016 would have produced an enhanced average annual excess return, a reduction in return volatility, and a higher MIR.

	1997-2016		
Index	Avg. Excess Return (% per year)	Volatility (% per year)	Modified Info Ratio
Bloomberg Barclays Government Credit Index	0.27	1.19	0.23
Bloomberg Barclays Aggregate Index	0.34	1.08	0.31

Note: Returns data are excess returns at a monthly frequency.

Source: Bloomberg Barclays Indices

CONCLUSION

Our fixed-income investment process is focused on generating consistent risk-adjusted returns by emphasizing sector allocations in our client portfolios. Our analysis of the past 20 years of fixed-income performance across maturity, sector, and quality segments confirmed that:

- Structured products provide an excellent source of diversification and return potential within a risk-focused investment framework. Our investing approach will continue to emphasize ABS and MBS securities in our clients' portfolios, particularly in shorter-duration strategies.
- The longer-term average return and volatility characteristics of 5- to 7-year credit securities have been attractive relative to 7- to 10-year credits. We have emphasized these maturities in our credit security selection process and a comparison of MIRs relative to longer-duration maturities validates this approach.

Based on our research findings, we are making certain refinements:

- Shorter-duration credit exhibits MIRs comparable to that of structured products. As a result, we believe that allocations to this segment provide an opportunity to enhance the return of client portfolios.
- Investing in longer-maturity credit securities can play a role in maximizing the excess return of the overall portfolio. We will increase the emphasis in these sectors when we determine the risk/reward opportunities are favorable.

At PNC Capital Advisors, we will continue to focus on providing core fixed-income portfolios that serve as a low-risk, diversifying anchor for an investor's portfolio. As fixed-income markets continue to evolve, we will evaluate and refine our process framework in an attempt to strengthen our longer-term track record focused on risk-adjusted returns through a full market cycle.

1 Excess return as return. We serve clients across a spectrum of fixed-income strategies and whether the investment strategy is Core or Short Duration 1-3 Year Government/Credit, the duration profile (interest-rate risk) is largely a function of the strategy chosen. This analysis is focused on excess returns, as opposed to total returns of fixed-income portfolios. Excess return is defined as the return of a bond (or index of bonds) in excess of the return of a series of Treasury bonds that have the same interest-rate risk as the given bond (or index). Because interest-rate risk can be replicated with Treasuries, excess return measures the return an investor receives for taking risk in excess of the risk-free asset.

2 We exclude the time period between June 2008 and September 2009 from the return series in this paper due to the exceptional volatility and correlations of excess returns exhibited at that time. During this time period, primary fixed-income sectors experienced return periods that were multiple standard deviation events relative to the historical evidence of the past 40 years.

3 Modified information ratio: The information ratio is defined as the active return of an asset, which represents the difference between the asset's return and the return of a benchmark, divided by the tracking error, or standard deviation, of active return. We modify the information ratio, where the asset return represents the excess return, which is a bond's total return less the total return of a theoretical duration-matched Treasury portfolio. We refer to the ratio of average annual excess return to standard deviation of excess return as the modified information ratio in this paper.

4 We utilize composite ratings categories per BofA Merrill Lynch Bond Indices, which are based upon Moody's, S&P, and Fitch.

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