# Porter, White & Company

## Considering Investment Grade Corporate Fixed Income Asset Class

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### I. Purpose

Fixed income investments are frequently utilized to reduce risk of the overall portfolio. To reduce risk, the investments selected typically have the highest credit quality (AAA) and shorter duration (<5 years). However, particularly for portfolios where taking large equity risk is not appropriate, exposure to a broader range of investment grade bonds may be desirable to the extent the available credit spreads are large in relation to the additional risk assumed.

This document assesses whether to include the investment grade corporate fixed income asset class (credit ratings ranging from AAA to BBB-) in client portfolios. We conclude that this asset class has characteristics suitable for a component of fixed income portfolios. The actual decision on whether to introduce the asset class in a portfolio will be dependent on the credit risk premium available at time of decision and the characteristics of the mutual fund or funds available to provide asset class exposure.

***The discussion herein should be understood in light of the Important Notice at the end.***

### II. Asset Allocation Overview

To simplify the asset allocation challenge when considering investment options for client portfolios, we consider three time horizons with distinct risk characteristics: Short (1 – 5 years), intermediate (5 to 10 years), or long-term (10+ years). Investments for these time horizons should be tailored to meet the return goals and risk constraints of the client.

- *Short term* investments provide for near term cash needs and thus should include low risk instruments such as short term fixed income and laddered securities but not equity.
- *Intermediate term* investments are expected to generate a small return over inflation which often requires some limited equity allocation in addition to short to medium term fixed income instruments.
- *Long term* investments are expected to generate returns that are sufficient to replenish short and intermediate term needs after inflation. Appropriate long term investments include equities and fixed income investments that reduce risk and enhance risk adjusted portfolio return.

This construct is always limited by investors' preferences which require a tradeoff between (i) the need to make disbursements which implies a required return on investment and (ii) the level of investment risk an investor can tolerate.

## III. Fixed Income Risk Premiums

Fixed income securities have two primary risk factors: term premium risk and credit risk. The *term premium* compensates investors for real interest rate, inflation, and liquidity risk. As the term of a bond increases, the uncertainty regarding the future level of real interest rates and inflation increases. Higher future real interest rates and inflation will lower investor returns. Longer term and less frequently traded bonds generally offer less liquidity than short term bonds. The *credit premium* compensates investors for default and liquidity risk. As the likelihood of default increases so does the credit premium and the price of the security will fall along with its liquidity. As investors move down the investment grade spectrum to lower quality issues, they should receive higher returns for assuming greater credit risk. In order to quantify the term and credit premiums, we consider the historical return data from market indexes shown in Table 1.

Table 1: Historical Treasury, Government and Corporate Bond Returns (%)

*(Annualized monthly returns, from June 1986 to May 2009)*

| | Mean | Std. Deviation |
|---|---|---|
| Merrill Lynch (ML) US Treasury Index 1-3 Years | 6.03 | 1.85 |
| Merrill Lynch US Corporate and Govt Index 1-3 Years | 6.15 | 1.83 |
| Barclays Capital (BC) Treasury Bond Index 1-5 Years | 6.40 | 2.53 |
| Merrill Lynch US Corporate and Govt Index 1-5 Years | 6.51 | 2.46 |

The credit premium, as represented by the difference in the US Corporate and Government Index and the Treasury Indexes for similar maturities, was about 11 to 12 basis points over the time period. The term premium, represented as the difference in return between the 1-5 year index versus the 1-3 year index, was about 37 basis points over the period. The volatility of the index did not increase as the credit risk increased, which is counter to the normal expectation.

Another important risk indicator is the historical minimum returns over various periods for each of the funds, which are shown in Table 2.

Table 2: Historical Minimum Returns (%)

*(June 1986 to May 2009)*

| | Monthly | Quarterly | Annual |
|---|---|---|---|
| ML US Treasury Index 1-3 Years | -0.96 | -0.92 | 0.67 |
| ML US Corp & Govt Index 1-3 Years | -0.97 | -0.78 | 0.95 |
| BC Treasury Bond Index 1-5 Years | -1.65 | -1.59 | -0.06 |
| ML US Corp & Govt Index 1-5 Years | -1.56 | -1.36 | 0.42 |

All of the indexes have posted losses over monthly and quarterly periods, but the magnitude of the losses is not higher for the indexes with higher credit risk. Particularly notable is the lack of any annual loss in the Merrill Lynch US Corporate and Government Index 1-5 Years over these time periods.

Published academic research reports the benefit of moving into the lower tier of the investment-grade fixed income spectrum and whether doing so will allow portfolios to capture higher expected returns by assuming larger credit risk premiums. Kozhemiakin (2007) shows that the excess return, calculated as the annualized monthly return for the credit category less the return on the Treasury bond of comparable duration, increases as investors move to lower quality credit down to the BB category, while the volatility of the excess returns is lowest for the highest rated issues. The information ratio, calculated as the excess return divided by the standard deviation of the excess return, is highest for the investment-grade bonds (BBB-AAA) as shown in Table 3.

Table 3: Historical Returns and Risk (%)[1]

*(January 1985 to December 2005)*

| | *Annualized Return* | *Annualized Excess Return* | *Annualized SD of Excess Returns* | *Information Ratio* |
|---|---|---|---|---|
| AAA/AA | 8.9 | 1.4 | 1.9 | 0.76 |
| A | 9.2 | 1.7 | 2.2 | 0.76 |
| BBB | 9.3 | 1.8 | 3.3 | 0.53 |
| BB | 11.0 | 3.3 | 6.5 | 0.51 |
| B | 9.7 | 2.0 | 9.0 | 0.23 |
| CCC | 2.8 | -2.7 | 15.2 | -0.18 |

Source: Kozhemiakin, A. (2007). The Risk Premium of Corporate Bonds. *The Journal of Portfolio Management*, 101-109.

The shape of the credit risk premium curve suggests that investors concerned with producing the best risk-adjusted returns should focus on asset allocation, buy investment-grade bonds, and focus on lowering transaction costs and diversifying their portfolio rather than engaging in credit analysis on individual securities (Kozhemiakin, 2007).

## IV. Credit Risk Premium Rationale

The rationale for increasing the exposure to the credit risk premium is based on the following considerations:

- current market conditions have favorable credit spreads;
- potential for increased fixed income diversification;
- enhanced expected return with low correlation with equities; and
- reduced liquidity premiums and trading costs due to recent changes in regulatory trade reporting requirements.

*Current Credit Spreads.* Although the historical credit risk premium is not remarkable, for fixed income investments, current spreads and term premiums are observable and generally unbiased

[1] In interpreting this table, we assume that Kozhemiakin has held the term premium constant for purposes of his analysis.

estimates of expected returns. Consequently, fixed income investment decisions should consider current market conditions as well as historical performance. (Market timing of equity investments is not similarly beneficial.) The current environment offers substantial additional yield for taking credit risk as is shown in Table 4. Since yield information is not available on indexes, we substitute the Vanguard funds that invest in the 1-5 Year indexes.

Table 4: Current Reward for Credit Risk

| | 30-Day SEC Yield | Average Duration (years) |
|---|---|---|
| Short Term Treasury (VFISX) | 1.17% | 2.1 |
| Short Term Investment-Grade (VFSTX) | 3.88% | 2.1 |
| Credit Risk Premium | 2.75% | |

Note: The 30-Day SEC Yield represents the dividends and interest earned during the period after deducting for the fund's expenses as of June 19, 2009. The Average Duration is calculated as of May 31, 2009. The Vanguard Short Term Treasury Fund tracks the Barclays US 1-5 Year Government Index. The Vanguard Short Term Investment Grade fund tracks the Barclays US 1-5 Year Credit Index.

*Diversification.* The lower tier of the investment-grade spectrum (A/BBB) accounts for two thirds of the investment-grade market capitalization and trading activity in addition to being less concentrated than the upper tier of the investment grade fixed income spectrum. The size and liquidity of the lower tier of the investment grade spectrum provides the opportunity to diversify credit exposure.

Table 5: Diversification Opportunity

| | Higher Investment Grade (AAA/AA) | Lower Investment Grade (A/BBB) |
|---|---|---|
| Investment Grade Market Capitalization [1,2] | 33% | 67% |
| Investment Grade Trading Volume [2] | 33% | 67% |
| Top Ten Issues as % of Total Investment Grade Traded [2] | 23.6% | 17.6% |

1. Barclays Capital US Credit Index, $2.2 trillion market capitalization.
2. Data for fourth-quarter 2007
Barclays Capital data, formerly Lehman Brothers, provided by Barclays Bank PLC.

*Correlation Statistics.* Investors realize greater diversification benefits within their portfolio as the correlation between funds moves closer to -1. The historical correlations are illustrated in Table 6 using the following indexes to represent four fixed income asset classes:

| Abbreviation | Formal Name |
|---|---|
| Merrill Short Term Treasury | Merrill Lynch US Treasury Index 1-3 Years |
| Merrill Short Term Investment Grade | Merrill Lynch US Corporate and Government Index 1-5 Years |
| Barclays Intermediate Government | Barclays Capital US Government Bond Index Intermediate |
| Barclays Inflation Protected Securities | Barclays Capital US TIPS Index |

Table 6: Historical Correlation Matrix

*(March 1997 to May 2009)*

| | S&P 500 | Short-Term Treasury | ST Inv. Grade | Intermediate Government |
|---|---|---|---|---|
| Merrill Short Term Treasury | -0.28 | | | |
| Merrill Short Term Investment Grade | -0.13 | 0.89 | | |
| Barclays Intermediate Government | -0.23 | 0.92 | 0.93 | |
| Barclays Inflation Protected Securities | 0.04 | 0.45 | 0.67 | 0.62 |

Note: Monthly return data was used in the correlation analysis.

The Merrill Short-Term Treasury has the lowest correlation with equities, but the Merrill Short Term Investment Grade correlation with equities is still negative. The higher volatility along with the low correlation of the intermediate government index makes it the best single risk reducer for predominantly equity portfolios. The asset class volatility data is located below in Table 6. The relatively low correlation of Barclays Inflation Protected Securities with all asset classes also makes it a good component. As might be expected, the Merrill Short Term Treasury correlation with equities is lower than the Merrill Short Term Investment Grade correlation since we would expect the credit risk and equity premiums to have some level of correlation.

*Trading Transparency, Improved Liquidity.* The Trade Reporting and Compliance Engine (TRACE) system was implemented in 2002. FINRA Rule 7010(k) requires that eligible trades be reported within 15 minutes. The TRACE regulation has increased the information and market transparency, which has caused the liquidity premium to decrease and lowered transaction costs (Edwards, Harris, & Piwowar, 2007).

## V. Sample Portfolios

To better understand the impact of adding additional credit risk exposure to portfolios, we look at the historical results for both (i) all fixed income portfolios and (ii) model portfolios with a predominantly equity allocation. The return data is summarized in Table 7 and is limited by the limited time period that inflation protected securities have been issued. We also show two measures of risk, or volatility: standard deviation and maximum loss (minimum monthly return).

Table 7: Historical Returns (%)

*(March 1997 to May 2009)*

| | Average Return | Standard Deviation | Min Monthly Return |
|---|---|---|---|
| S&P 500 | 3.0 | 16.7 | -16.8 |
| Barclays Intermediate Government | 5.8 | 3.2 | -2.4 |
| Barclays Inflation Protected Securities | 6.5 | 6.1 | -8.7 |
| Merrill Short Term Investment Grade | 5.4 | 2.3 | -1.6 |

Note: Average Return and Standard Deviation are annualized from monthly returns.

Sample portfolios of 100% fixed income portfolios are shown in Table 8. Adding the Merrill Short-Term Investment Grade index improves the risk adjusted performance slightly.

Table 8: Sample Fixed Income Portfolio Returns

*(March 1997 to May 2009)*

| Portfolio | 1 | 2 | 3 |
|---|---|---|---|
| Barclays Intermediate Government | 67% | 34% | 50% |
| Barclays Inflation Protected Securities | 33% | 33% | 25% |
| Merrill Short Term Investment Grade | 0% | 33% | 25% |
| *Performance* | | | |
| Average Return | 6.1% | 6.0% | 5.9% |
| Standard Deviation | 3.7% | 3.5% | 3.3% |
| Sharpe Ratio | 0.72 | 0.74 | 0.76 |
| Min Monthly Return | -3.2% | -2.9% | -2.7% |

Note: Average Return and Standard Deviation are annualized from monthly returns.

A comparison of sample portfolios with equity and different weightings of the Merrill Short Term Investment Grade Fund are shown in Table 9. Adding the Merrill Short Term Investment Grade index does not substantially change the risk adjusted performance.

Table 9: Sample Model Portfolios

*(March 1997 to May 2009)*

| Portfolio Weights | P1 | P2 | P3 |
|---|---|---|---|
| S&P 500 | 70% | 70% | 70% |
| Barclays Intermediate Government | 20% | 10% | 15% |
| Barclays Inflation Protected Securities | 10% | 10% | 7.5% |
| Merrill Short Term Investment Grade | 0% | 10% | 7.5% |
| *Performance* | | | |
| Average Return | 4.5% | 4.3% | 4.4% |
| Standard Deviation | 11.6% | 11.6% | 11.6% |
| Sharpe Ratio | 0.10 | 0.08 | 0.09 |
| Min Monthly Return | -12.8% | -12.8% | -12.6% |

Note: Average Return and Standard Deviation are annualized from monthly returns.

## VI. Conclusion

In contrast to equity assets classes, the premium in the fixed income market is explicit and observable. The investment grade corporate bond asset class offers the opportunity for investors to increase their fixed income portfolio returns when the credit risk premium offered by the market is wide relative to the highest rated securities. The lower tier of the investment-grade bond market is large and sufficiently liquid to diversify credit risk exposure. The new TRACE regulation has increased transparency and liquidity in the marketplace and lowered transaction costs. By assuming larger credit risk premiums and focusing on diversification and low transaction costs, investors may be able to achieve higher returns from their fixed income portfolios.

Investment grade corporate bonds are appropriate for short term investors as a component of fixed income holdings because of the potential increase in return without a significant increase in risk. The asset class is most appropriate for intermediate term investors because of the higher

return and risk properties. The asset class is less appropriate for long term investors who hold a substantial portion of equity in their portfolio because other fixed income asset classes do a better job reducing the risk of the overall portfolio, and the potential incremental return may not be large enough to improve the risk-return profile of the portfolio.

Whether and under what circumstances a particular investor should add the investment grade corporate bond asset class to a portfolio, and the manner of achieving exposure to this asset class, is left for further discussion

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## IMPORTANT NOTICE

This paper is intended to provide information to investors. Whether to invest in the investment grade corporate bond asset class is a decision to be made on the basis of current market conditions and the circumstances of each investor. In addition, investors should be aware of the investment principles listed below.

i. Past performance is not a guarantee of future results. Values change frequently and past performance may not be repeated. There is always the risk that an investor may lose money. Even a long-term investment approach cannot guarantee a profit. Economic, political, and issuer-specific events will cause the value of securities, and the portfolios that own them, to rise or fall.
ii. Different types of investments involve varying degrees of risk, and there can be no assurance that any specific investment will either be suitable or profitable for a client's investment portfolio. In this document, risk is equated to standard deviation, which may be an incomplete measure of risk.
iii. Fixed income securities are subject to interest rate risk because the prices of fixed income securities tend to move in the opposite direction of interest rates. In general, fixed income securities with longer maturities are more sensitive to these price changes and may experience greater fluctuation in returns.
iv. The returns and other characteristics of the allocation mixes contained in this presentation are based on models and back-tested simulations to demonstrate broad economic principles. They were achieved with the benefit of hindsight and do not represent actual investment performance.
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x. Economic factors, market conditions, and investment strategies will affect the performance of any portfolio and there are no assurances that it will match or outperform any particular benchmark.

## VII. Appendix - Bibliography

Edwards, A. K., Harris, L. E., & Piwowar, M. S. (2007). Corporate Bond Market Transaction Costs and Transparency. *The Journal of Finance* , 1421-1451.

Kozhemiakin, A. (2007). The Risk Premium of Corporate Bonds. *The Journal of Portfolio Management* , 101-109.



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