The Spectrum of Opportunities in Credit Markets

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Overview

Dramatic Changes in Credit Markets

- Recent economic and financial market turmoil have fundamentally altered the landscape of investment opportunities in credit-based fixed income investments.

- As opposed to just a few years ago when investors were willing to bear high levels of credit risk for seemingly modest compensation, yields and prospective returns are now near historically high levels.

- The scope and breadth of these opportunities necessitates a broad examination of the credit universe.

Analyzing Current Conditions

- In an environment where fear and uncertainty prevail, a rational long term approach to forecasting not only expected returns, but expected risk is paramount for institutional investors.

- Starting yields and implied risk adjusted returns (Sharpe ratios) have been shown to provide solid guidance as to future investment behavior when defaults are taken into consideration, and currently point to very robust risk adjusted returns.

- In addition to long term risk and return forecasts, we must also be cognizant of near term downside to appropriately set investor expectations, maximize patience, and increase the chance of holding investments to fruition.

Portfolio Implementation Considerations

- The spectrum of opportunities in this environment is vast, ranging from public liquid to private illiquid investments.

- Each place on this spectrum of opportunities comes with its own unique risk and return tradeoff, and in some instances liquidity, leverage, and auditing issues.

- As each portfolio has its own risk and return profile, there is no single best way to act on this capital markets opportunity.

- However, in our estimation liquid public market investments appear to offer a compelling trade off between risk, return, liquidity, ease of deployment, and other operational issues, with other illiquid opportunities making sense as secondary considerations.
Recent History in Credit Markets  (*Corporate Credit*)

- Investor compensation for taking corporate credit risk has ballooned.
- This is due to recent economic uncertainty and overall deterioration in credit markets.
- Absolute yields are substantially higher than just a year ago, especially for high yield debt.
- In fact yields for high yield debt are near historic highs.
- Most importantly though, relative to returns offered by US Treasuries, corporate fixed income now offers spreads at historic levels.

### History of Corporate Fixed Income Yields

![Graph showing historical yields](source: Ibbotson)

<table>
<thead>
<tr>
<th>Date</th>
<th>BarCap US Credit (%Yield)</th>
<th>BarCap US Corporate High Yield (%Yield)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-07</td>
<td>5.6</td>
<td>9.6</td>
</tr>
<tr>
<td>Dec-08</td>
<td>6.8</td>
<td>19.5</td>
</tr>
<tr>
<td>Mar-09</td>
<td>7.1</td>
<td>18.1</td>
</tr>
<tr>
<td>20 Year Average</td>
<td>10.4</td>
<td>11.0</td>
</tr>
<tr>
<td>20 Year High</td>
<td>21.8</td>
<td>19.5</td>
</tr>
</tbody>
</table>

### Barclay's Credit Index: Option Adjusted Spread to Treasuries (Feb. '09)

![Graph showing option adjusted spread](source: Barclay's)

- **Option Adjusted Spread to Treasuries**
- **Average**

### Barclay's High Yield Index: Option Adjusted Spread to Treasuries (Feb. '09)

![Graph showing high yield index](source: Barclay's)

- **Option Adjusted Spread to Treasuries**
- **Average**
Recent History in Credit Markets (Mortgage)

• Similar to corporate credit markets, investor compensation for investing in mortgages has risen strongly as well.

• Weakening credit markets alongside falling housing prices caused an explosion in credit spreads for residential non-agency mortgage investments.

• Yields for commercial mortgages have risen as well due to investor expectations that the weakening economy will work its way through to commercial real estate.

• Therefore mortgage investments offer yet another vastly different opportunity set than just a few years ago, potentially offering double digit rates of return.

Approximately a 25% loss in residential property values over the last two years.

Source: Standard and Poors
Forecasting Returns in Fixed Income

- Forecasting returns for fixed income is a relatively straightforward exercise.
- Historic data shows the starting yield of a fixed income investment closely represents the next ten year return for that investment when defaults are taken into account.
- Therefore, we have two primary considerations in forecasting fixed income returns:
  1. Starting yield
  2. Expected default rates
- However, when dealing with mortgage based fixed income investments, we must also consider prepayment risk (reinvestment risk); or the risk of not being able to maintain investments at attractive rates.

Speculative Grade Percent Defaults

<table>
<thead>
<tr>
<th>Period</th>
<th>Default Rate</th>
</tr>
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<tbody>
<tr>
<td>1930-40</td>
<td>5.5% average</td>
</tr>
<tr>
<td>1980-2008</td>
<td>4.1% average</td>
</tr>
</tbody>
</table>

Source: Moody’s

The Relationship Between Starting Yield & Return

Source: Ibbotson

Barclay’s High Yield Yields vs. Subsequent Returns - Dec. 2008

Defaults are a material factor in forecasting returns where credit risk is involved.

Source: Barclays; Ibbotson
A Practical Examination of Downside Risk (Fixed Income)

- It is undeniable credit markets have been trounced since the onset of the subprime crisis back in 2007. The conventional wisdom is to avoid these investments due to the perceived risk.
- However though, the real question is not if there is risk in credit investments...of course there is. Instead the question is how much risk.
- Some very simple math reveals the short term (1 year) potential risk in credit investments is actually quite reasonable, whereas the upside is quite large, even when considering default rates seen during the Great Depression.
- Don’t expect to see a strong rebound anytime soon in credit markets. But at the same time don’t shy away due to concerns over risk...it is not that severe at current levels.

In relation to potential upside, the downside is very reasonable, even with an expected default rate of 15%. Spreads would have to explode from current levels in the next year to realize any significant losses.

Sensitivity of Barclays Credit Index to Changes in Interest Rates:
(Based on duration and convexity)

Academically speaking, duration and convexity should predict changes in bond prices, and they roughly do so when accounting for coupon payments.

Source: Ibbotson, Barclays, Wurts & Associates

One Year Sensitivity of Barclays High Yield Index to Changes in Interest Rates
(assumes 8% coupon, 15% default duration of 5; YTM of 18%)

One Year Sensitivity of Barclays Credit Index to Changes in Interest Rates
(assumes 6% coupon, 1% default, duration of 5, YTM of 7%)

Source: Ibbotson, Barclays, Wurts & Associates
Forecasting Risk Adjusted Returns *(Relative to equities)*

- **Sharpe Ratio = Risk Adjusted Return**
  - \( \frac{\text{expected return} - \text{risk free return}}{\text{standard deviation}} \)

- This page details an analysis of expected risk adjusted returns for US large stocks as well as US investment grade corporate and high yield bonds.
  - *Note: Bond expectations include expected defaults well in excess of historic averages.*

- Over time implied Sharpe ratios provide reasonable guidance as to future risk adjusted returns.

- As you can see from the charts, credit investments offer risk adjusted returns that are as good (or better) than equities.

**S&P 500 Implied & Subsequent Sharpe Ratios**

<table>
<thead>
<tr>
<th>Implied Sharpe Ratio</th>
<th>Actual Subsequent 10 Year Sharpe Ratio</th>
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</thead>
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</table>

**The effects of the greatest PE expansion in US history and its subsequent reversal.**

**Barclay’s Investment Grade Credit Implied & Subsequent Sharpe Ratios**

**Barclay’s High Yield Implied & Subsequent Sharpe Ratios**

These spikes in Sharpe ratio are the result of both rising credit spreads and the recent flight to safety (low expected Treasury returns).

**Source:** Ibbotson; Yale/Schiller, Wurts & Associates
The Spectrum of Credit Opportunities

<table>
<thead>
<tr>
<th>Liquid/Public Markets/Bond Managers</th>
<th>Illiquid/Private Markets/Hedge Funds</th>
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</thead>
<tbody>
<tr>
<td>Corporate Investment Grade Credit</td>
<td>Prime Mortgages</td>
</tr>
<tr>
<td>Corporate High Yield Credit</td>
<td>Subprime Mortgages</td>
</tr>
<tr>
<td>Subprime Mortgages</td>
<td>Illiquid Bank Loans/Mezzanine Debt</td>
</tr>
<tr>
<td>Private Equity Distressed Corporate Debt</td>
<td>Hedge Funds</td>
</tr>
</tbody>
</table>

**Risk**

**Traditional Bond Managers**
(ETF’s, mutual funds, commingled funds, separate accounts)

- **Low Cost/Semi-Passive**
  - Investment Grade
  - High Yield
  - Daily/Monthly Liquidity
- **Active Management**
  - Investment Grade
  - High Yield
  - Mortgages
  - Some Daily/Monthly Liquidity
  - Some Multi-Year Holding Periods (i.e., mortgages in weak credit markets)

**Private Equity**
- 8-10 year partnerships
- Corporate debt restructuring
- Bank loans and mezzanine debt
- Distressed company turnaround
- No liquidity, must hold for life of partnership

**Hedge Funds**
- Open ended funds
- Long/short
- Leverage
- Corporate and mortgage debt
- Corporate debt restructuring
- Bank loans and mezzanine debt
- Liquidity with notification periods, but ultimately at discretion of manager

**Fund of Funds & Direct**

- Low to Modest Fees
- High Fees
Thoughts on Implementation

**Liquidity & Fees**

- Accessing credit markets through public markets offers the best liquidity conditions. This is in contrast to 10 year lockup periods associated with private equity strategies, or even multi-year lockups with hedge funds.
- Given robust return potential in public markets, the argument for illiquid assets is far weaker today than in prior years. Public markets offer the lowest fees to access credit opportunities. Some low cost (semi-passive) opportunities exist as well.
- Private equity and hedge fund fees are vastly higher than traditional strategies, which motivates managers to reach farther out on the risk return spectrum to generate higher gross returns. This is especially a concern in the hedge fund universe due to potential leverage. This relationship in itself is neither good nor bad, but investors should be aware of this dynamic.

**Return Efficiency**

- When viewed through the spectrum of achieving the best risk adjusted returns, public and private market opportunities appear to offer similar risk and return trade offs. It is simply of matter of an institution’s preference as to how much risk to take.
- When we speak of return efficiency, we refer to the combination of several factors; liquidity, audit considerations, fees, standard deviation of returns, and total return on investment. We believe public markets offers the best combination of these factors
- Therefore, we believe traditional public market opportunities should be the primary focus for investors, with secondary consideration being given to private (illiquid) opportunities.

**Recommended Potential Mandates**

- Investment grade corporate debt
- Non-agency residential and commercial mortgages
- High yield corporate debt (*which will include modest allocations to bank loans*)
- Private equity distressed debt

**Not Recommended**

- Bank loans/mezzanine debt - Reason: similar return profile accessible through high yield
- Hedge Funds - Reason: access opportunity set through existing hedge fund allocations
Appendix: Private Equity Distressed: Direct/FOF Strategies

- Acquire Majority Position in Senior Bank Debt
- Participate in Bankruptcy/Legal Reorganization Proceedings
- Repair Balance Sheet Through Beneficial Refinancing

**Influence/Non-Control**
- Sell Position
  - Larger, Established Companies
  - Typically Shorter Commitment (~6 Years)
  - Bank Loans are of Highest Seniority

**Debt-for-Control**
- Replace Management/Implement Turnaround Strategy
- Sell Position
  - Small-Mid Capitalization
    - Often Private, Family-Owned, Simple Structure
    - $100M-$1B Enterprise Value
    - Larger Opportunity Set
  - Large Capitalization
    - Large Firms, Usually Publicly Traded, Complex Financial Structures
    - >$1B Enterprise Value

Shorter Investment Commitment (~6 Years)  Longer Investment Commitment (~10 Years)