

Managing leverage and risk during a corporate credit meltdown



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Investors will remember the summer of 2007 as a time when volatility came back with a vengeance. Deterioration in the US subprime mortgage market and the failure of two Bear Stearns hedge funds quickly metamorphosed into a broader lack of confidence in the credibility of credit ratings and led to a full-blown flight to quality.

The changing markets

Quite suddenly, in mid-August, the three-month US Treasury rate dropped almost 2%. Investors sold risky assets to flee to the safety of government bonds. In my market – corporate high-yield bonds – the decline was more gradual, but still momentous.

The credit spread on the Lehman Brothers High-Yield Index widened from a near record of 231 basis points on 31 May to 464 basis points on 10 September. The credit spread is the part of the bond yield that exceeds the yield on a Treasury bond of comparable maturity. It represents the premium that an investor demands for owning a risky asset. To put the widening in perspective, a high-yield-bond investor required twice the return for taking on default risk after the correction than prior to it.

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A great deal of effort goes into timing the market on the part of portfolio managers. As a matter of practice, a high portfolio manager would have found it difficult to protect a portfolio once the correction began. The abruptness of the correction meant investors needed to react with lightning speed, before other investors went to sell bonds. When everybody runs for the same exit at

The recent credit crunch has upset all manner of businesses, and many investors’ portfolios were no doubt affected. Structuring a portfolio to avoid risks is a skill that is extremely necessary in the currently unstable climate

the same time, the exit is never wide enough. In hindsight we can note that, although a few investors anticipated the correction, timing the market turned out to be an uncommon skill. Credit spreads had been narrowing since a minor correction in the summer of 2006 and a larger correction in the second quarter of 2005.

A high-yield-portfolio manager may have felt uneasy about the continual narrowing of credit spreads, but the reality of managing such a portfolio offered only two options. He could have either invested in cash and foregone two years of double-digit returns, or invested in high-yield bonds knowing that a market correction would eventually occur and wipe out much of his portfolio’s previous returns. Most portfolio managers opted for the latter strategy.

The experience of the summer of 2007 leaves us with two important lessons. First, as uncertainty governs the behaviour of markets, our ability to predict markets is one of our weakest, if not nonexistent, skills. Secondly, in the absence of predictive ability, we should structure investment portfolios to avoid taking unnecessary risk, by which I mean we should pursue any investment strategy where we can reduce volatility without significantly sacrificing return.

Free lunches are rare in the investment world. In the subsequent article I will argue that short-duration, high-yield bonds offer such an opportunity.

A theoretical perspective

Theory tells us that the price volatility of a bond depends on its duration, which measures the bond’s sensitivity to interest rate movements. Consider that the price volatility of a bond increases with its maturity and with its duration.

Duration is the weighted average term-to-maturity of a bond’s cash flows in years. One can think of

duration as a fulcrum. An investor receives one-half of the present value of the cash flows prior to the duration, and the other half afterwards.

The price volatility of a bond bears a simple relationship to its duration and a related term, the modified duration. The percentage change in price equals: modified duration \times yield change \times 100.

The modified duration gives the percentage change in price for a 100-basis-point change in yield. Assume that interest rates increase by 1%. Then the price of a bond with a two-year modified duration should decrease by 2%, while the price of a bond with a five-year modified duration should decrease by 5%. Thus, in theory, the former bond should have 40% of the price volatility of the latter from a change in interest rates.

The effect is due to the discounting of future cash flows. The further out cash flows occur in the future, the more they will be depreciate or appreciate from a change in their value. The conclusion is that interest rate movements affect long-duration bonds much more than short-duration bonds.

Effect of interest rate movements on high-yield bonds

The theory adequately explains the behaviour of government bonds and investment-grade corporate bonds. The effect on high-yield bonds is more tenuous and depends on credit quality. “BB” bonds show high correlation when credit spreads are tight, and negative correlation when credit spreads are wide.

“B” bonds respond much less and in an unsystematic way to interest rate movements. Effectively, “B” high-yield bonds are unaffected. The lack of an interest rate effect, however, does not mitigate the benefit of short duration, which mitigates the price volatility of high-yield bonds in other ways.

Movements in credit spreads

Changes in the credit spread act upon high-yield bonds as changes in the interest rate act upon Treasuries and investment-grade corporate bonds. Short-duration high-yield bonds across all credit ratings exhibit much less volatility than long-duration high-yield bonds. To understand this effect, recall the widening of the credit spread by approximately 230 basis points during the recent correction.

The wider credit spread translates into a higher yield

for discounting future cash flows. Cash flows further in the future are less valuable than near-term cash flows.

The opposite occurs when credit spreads narrow. Distant cash flows become more valuable than they were formerly as the yield or discount factor decreases. An emotional effect also operates during a correction. When they engage in a flight to quality, investors are fleeing uncertainty. The more distant cash flows are more uncertain and more subject to the risk of the company ultimately defaulting.

Trends in the default rate

Another benefit of short-duration bonds occurs with seasoned bonds. Dr Edward Altman of New York University has studied the default rates of high-yield bonds after issuance. He found that default rates increase from issuance until between years two and four, depending on credit quality, and decline afterwards.

Most high-yield bonds have a term of 8–10 years. Short-duration high-yield bonds are likely to be seasoned bonds with only a few years left until maturity. The lower default risk should lead to lower risk and lower price volatility.

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A related advantage relates to the dominance of new issues in high-yield bonds. Seasoned issues are also generally less liquid than new issues. The lower liquidity causes seasoned issues to exhibit price stickiness and contributes to lower volatility.

Across all quality tiers, returns during a correction decrease with increasing duration. A correction affects long-duration high-yield bonds more severely than short-duration high-yield bonds. The effect is most pronounced in lower-quality tiers, which is consistent with a flight to quality. Short-duration bonds, especially in durations below three years, experience the lowest volatility.

The longer-term history of high-yield returns

Table 1 compares the historical returns of the CS First Boston High-Yield Index with those of the two-year (or less) duration subindex from 1986 to 2006.

Two conclusions fall out from this data. First, a short-duration strategy achieved almost identical returns to those of the overall market with far less volatility. Secondly, the short-duration strategy performed best during poor markets such as 1990 and 2000, and performed worst during boom years such as 1991 and 2003.

The effect of leverage on a portfolio

Leverage entails borrowing money to increase the assets to invest. It acts as a double-edged sword. When returns exceed the cost of borrowing, leverage magnifies returns relative to the returns of an unleveraged portfolio. When returns fail to cover the cost of borrowing, leverage decreases returns.

For example, consider a portfolio manager who runs a \$50 million unleveraged portfolio and borrows an additional \$100 million at a borrowing cost of 4%. If the investment return was 10%, the leveraged return would equal 22%. If the investment return was 1%, the leveraged return, however, would fall to -5%.

Another consequence of leverage is an increase in portfolio duration. In the above example, if the portfolio duration was two years, the leveraged duration would be six years. But, if the portfolio duration was five years, the leveraged duration would be 15 years. The net result is an increase in volatility.

Many of the horror stories emerging during the recent correction involved leveraged portfolios. An investor would minimise his risk by using leverage in conjunction with a short-duration portfolio.

Liquidity from refinancings

Short-duration high-yield bonds usually are callable. A two- to three-year high-yield bond has historically stayed in our portfolio for only 12–15 months before the issuer calls or tenders the bond. Given a 12-month effective holding period, a 30-bond portfolio should have three bonds being called monthly. These calls and tenders are a natural source of liquidity that could be helpful during a correction when other bonds are not saleable.

Table 1. Comparison of CSFB HY and two-year duration indices (%)

Year	CSFB HY index	Two-year (or less) duration
1986	14.46	15.07
1987	4.25	1.19
1988	13.08	8.75
1989	-0.24	3.95
1990	-6.02	23.11
1991	45.45	31.16
1992	17.44	12.53
1993	18.86	11.05
1994	-2.04	4.67
1995	19.68	10.00
1996	13.03	7.63
1997	12.21	9.00
1998	0.55	4.98
1999	3.59	4.81
2000	-5.66	3.60
2001	6.16	8.69
2002	3.10	7.68
2003	27.94	17.27
2004	11.95	8.61
2005	2.26	3.69
2006	11.92	8.75
Mean	10.09	9.82
Standard deviation	12.03	7.07
Sharpe ratio	0.47	0.76

Short-duration high-yield bonds offer risk-return benefits relative to an undifferentiated high-yield strategy.

The strategy achieves the market return of high-yield bonds with substantially lower volatility, as borne out by recent and longer-term historical data.

Other benefits relate to lower default risk, greater ability to manage leverage, and natural liquidity through refinancings, all of which lessen the vulnerability of the portfolio during periods of market stress.

So, in conclusion, while it may not be a free lunch, the strategy does represent at least an early-bird special. ■