

## Other Views Of Corporate Bond Risk

Both shareholders and creditors exercise claims on corporate cash. In a long-hallowed principle of corporate capital structure, bond market creditors stand in front of shareholders in the event of bankruptcy; equity investors accepted this bargain in return for a growth instrument. The bonds' returns at maturity are limited to par value plus the coupon stream. As a result, stocks tend to float on a sea of corporate bonds; unless a special situation such as a takeover or a political diktat such as the Obama administration's abrogation of bondholder rights in the 2009 General Motors bankruptcy is involved, you should not expect a company's stock to rise if its bonds are under pressure.

### Credit And Interest Rate Risk

Corporate bonds can be decomposed into a risk-free rate, the amusing name still given to sovereign debt, and a credit spread, defined here as the option-adjusted spread (OAS). Both of these components are bounded at zero percent. Reaching those bounds is more difficult than realized commonly: As is the case with approaching absolute zero, an exponentially greater amount of energy is required to approach the limit. In fact, as the logarithm of zero is  $-\infty$ , neither bound will be reached in your lifetime or anyone else's. A long-term Treasury rate near zero percent even in the face of near-zero percent short-term rates implies no fear of either inflation or of currency volatility for foreign investors in U.S. Treasuries. On the corporate side, OAS levels of zero imply corporations have full and complete repayment powers akin to a government and its printing press.

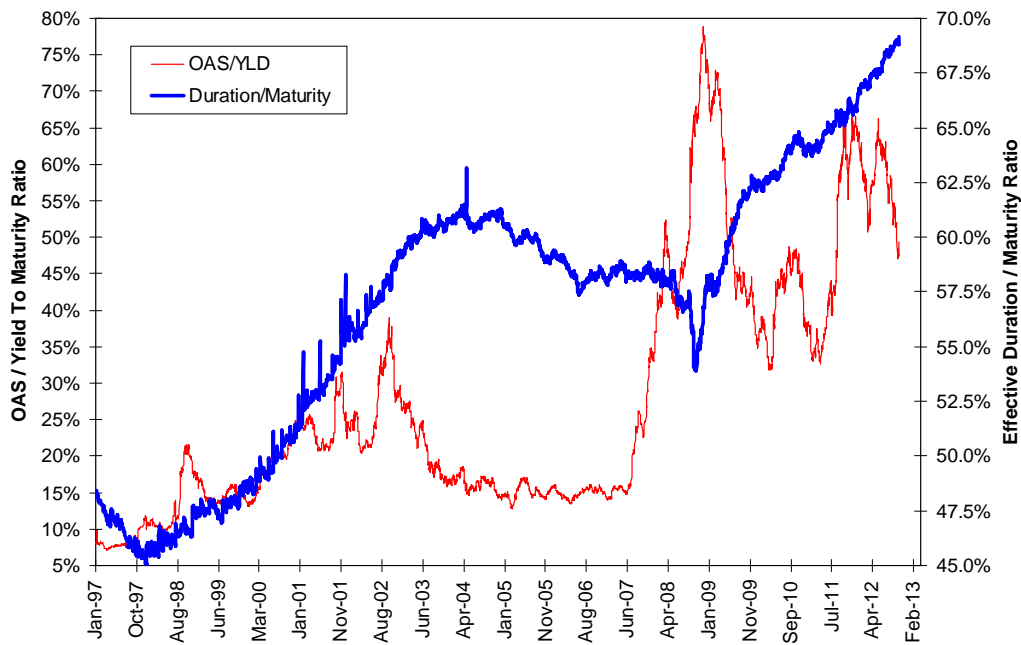
We can look at the percentage of total corporate bond yield accounted for by the OAS level as a measure of corporate bond risk normalized to the Treasury rate. This percentage can approach but not reach zero and 100 percent at its bounds.

Bonds also have a very considerable level of interest rate risk. A common measure of this is effective duration, or expected percentage change in bond price for a change in yield. On an index level, this duration can be normalized to the weighted-average maturity of bonds in the index. Here, too, the upper bound is 100 percent; if the index' yield collapses to zero percent, the effective duration rises to the index' maturity.

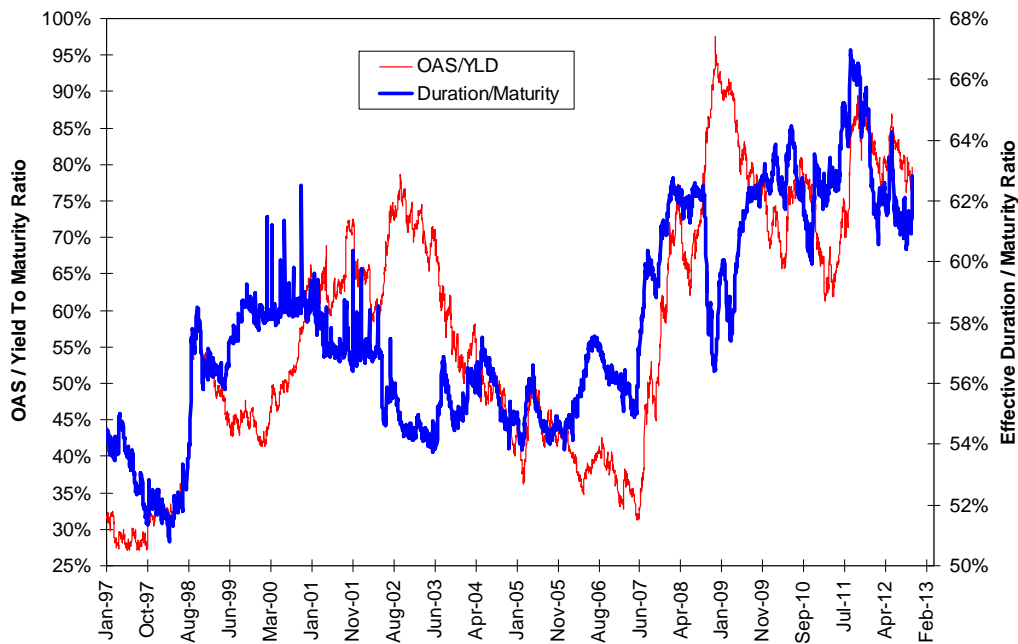
### Risk History

Corporate bonds frequently are divided into high-yield and investment-grade. Let's map the two ratios above for both of these classes. The two measures often move in opposite directions as duration is affected mostly by the absolute yield on the corporate bonds while the OAS/yield ratio slides about as both the numerator and denominator can move in different directions. More important, the risk measures for the two bond indices move differently as OAS tends to be far more volatile for high-yield than for investment-grade bonds. Finally, absolute yield levels can decline with static OAS/yield ratios.

### Investment-Grade Bond Risk Measures



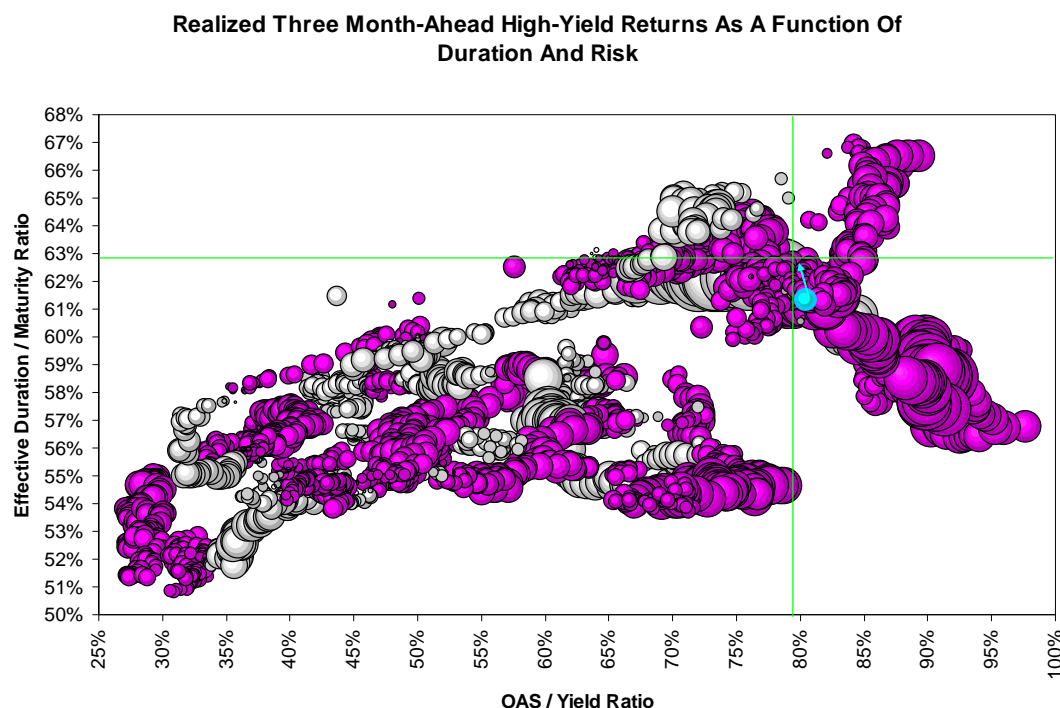
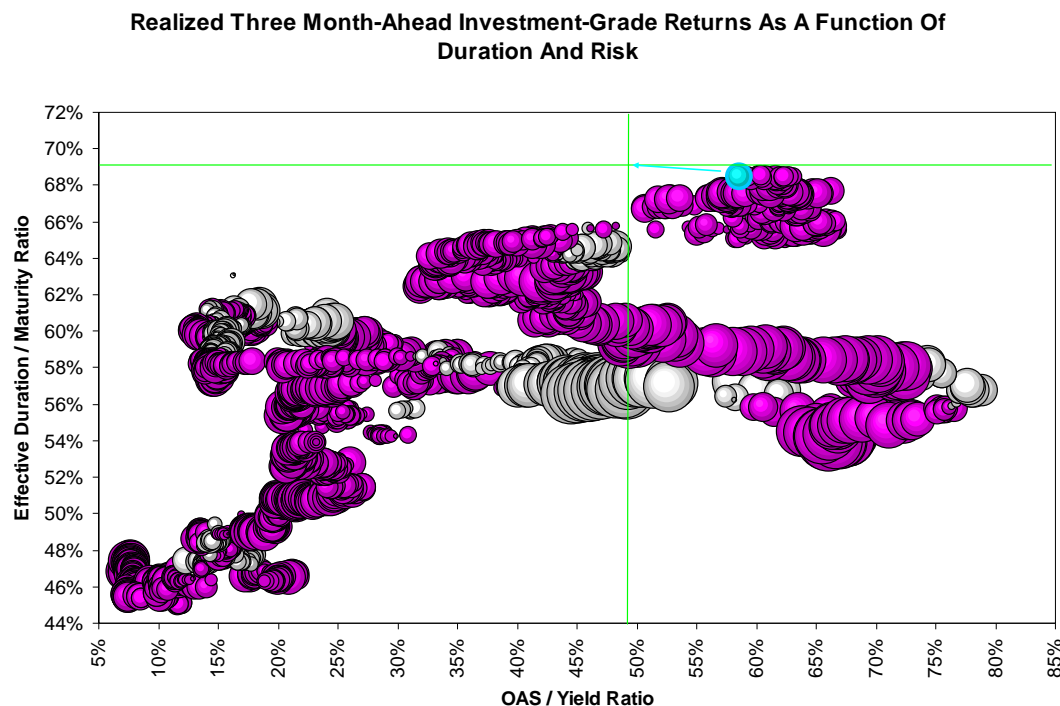
### High-Yield Bond Risk Measures



Please note how the long bull market in bonds driven by the Federal Reserve's never-ending crusade to drive short-term interest rates toward zero expanded the interest rate risk of investment-grade bonds enormously; the duration/maturity ratio increased from 45 percent at the end of 1997 to more than almost 69 percent by November 2012. This increased interest rate risk was accompanied by a secular increase in corporate credit risk once the financial crisis began in late 2007. Restated, investment-grade corporate bonds became a much riskier asset as investors flocked to all classes of fixed-income, aided and abetted by central banks. The conclusion is the same for the high-yield bonds even if the ratios and their paths over time look much different.

## Risk And Return

Let's stipulate investors pay lip service to risk but actually act on return. How have three month-ahead returns for these two classes of bonds reacted to the risk measures depicted above? The magenta bubbles depict positive returns; white bubbles depict negative returns. The diameter of the bubbles corresponds to the absolute level of the returns. The levels at the end of October 2012 are noted with a green bombsight, and the datum from the end of July 2012 is highlighted in turquoise.



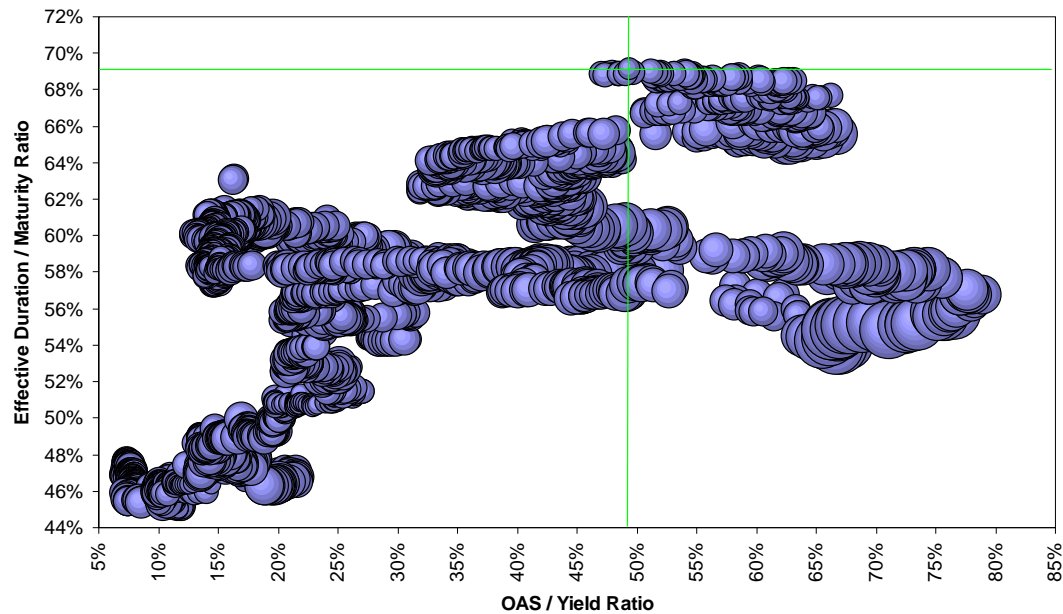
Investors are supposed to be rewarded for taking risk, and this certainly seem to be the case along the credit risk (X-axis) dimension: In general, observations in the eastern half of these charts are rewarded for buying at times of high credit risk. The principle does not apply as well to the interest rate risk (Y-axis) dimension, though, especially for

the high-yield bonds. What is interesting, though, are the large open areas in the southeast corners of the charts: In the world since 1997, the inception of the OAS measure, you can buy high credit risk or you can low interest rate risk, but you cannot buy both simultaneously.

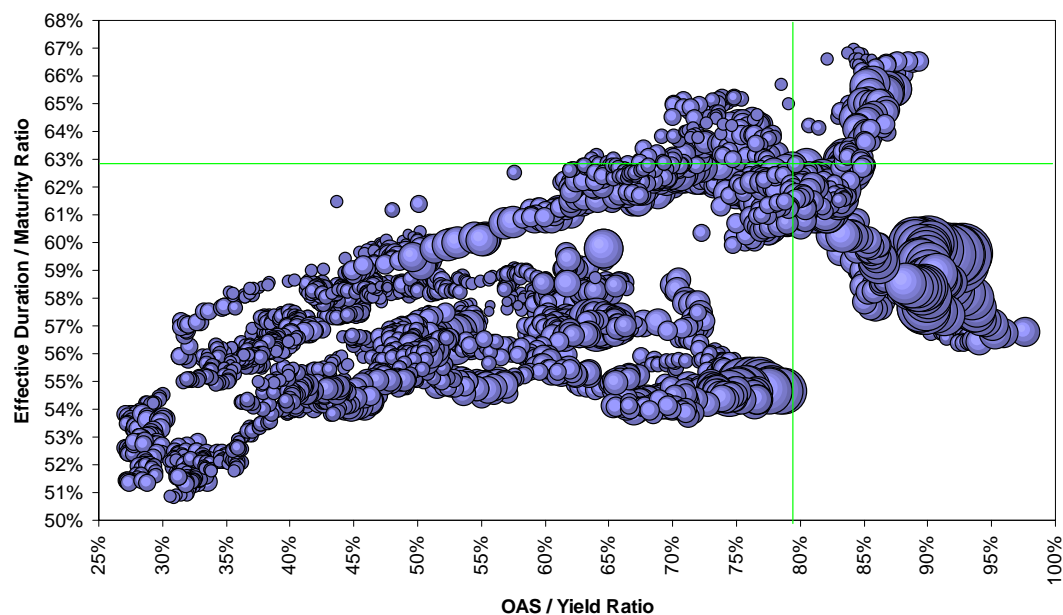
### Past Risk And Future Variance

Even though investors talk risk but trade return, we should take a look at what the future realized volatility of these two classes of corporate bonds will be as a function of our risk measures. All bubbles here are in color as realized volatility can never be negative. The October 31, 2012 datum is marked with a green bombsight.

**Realized Three Month-Ahead Investment-Grade Volatility As A Function Of Duration And Risk**



**Realized Three Month-Ahead High-Yield Volatility As A Function Of Duration And Risk**



What we see is a rather definitive increase in forward realized volatility from higher OAS/yield levels, the preferred initiation region for buying corporate bonds. In general, and in the high-yield case more so than in the investment-grade case, you get lower forward realized volatility in the lower duration/maturity region. This argues an investor willing to buy higher interest rates relative to maturity will encounter smoother sailing going forward than an investor willing to buy higher credit risk. Once again, you can have one or the other but not both: The southeast corner is nearly empty.

### **Conclusion**

OAS levels have been pushed lower twice since 1997 in two great campaigns of easy money, 2002-2003 and from 2007 onwards. This opened the door for lower-quality corporate borrowers to refinance themselves at lower bond and swap rates; eventually, however, this culminates in lenders lowering credit standards with predictable disastrous results.

Every credit bubble begins as an interest rate bubble. In homage to Napoleon's observation a soldier will fight long and hard for a little piece of colored ribbon, normally cautious bond investors will knock themselves silly for a few extra basis points of yield. When the bubble bursts, everyone wonders how the other person could have been so foolish.

A corollary is every credit bubble is accompanied by a stock market rally. Not only are stock market investors floating on a sea of bonds, they often are floating on a sea of misallocated credit. Experiments in investor psychology indicate we are almost hard-wired to create bubbles once early returns are made. The secret to preventing these bubbles from expanding is not to fuel them in the first place; a difficult task in a world where central banks try to solve every problem with excess liquidity. The secret to making serious money is to participate in the bubbles condemned to burst with grim consequences. If this sounds incredibly inconsistent, it is, but these appear to be the rules of the game in the 21<sup>st</sup> Century.