The Benefits of Positive Convexity in Your Portfolio

Many of our clients are concerned about duration when looking at purchasing investments, but few realize the importance of convexity. As we all know, duration is a measure of the sensitivity of a bond’s price to a change in interest rates. However, it is important to remember that duration is an approximation that assumes a linear relationship exists between bond yields and prices. Therefore, a portfolio manager must take convexity into account when managing interest-rate risk. A security that exhibits positive convexity will have greater price appreciation when interest rates fall but not all convexity is beneficial to a portfolio. Many asset classes have embedded call options which cause securities to exhibit negative convexity. In a falling interest-rate environment, the call option effectively places a cap on the security’s price, as the bond should not trade at a negative yield-to-call.

As an example, the convexity on a new 15-year 3.00% pass-through is –2.75, while a General Electric bond maturing in 2016 has a convexity of +0.15. If interest rates move down 100 basis points, the price on the mortgage will move from $105.0625 to $105.902, a 0.80% increase in price. The GE issue on the other hand, will see the price move from $104.750 to $108.620, a 3.69% increase. If interest rates increase by 100 basis points, assuming spreads remain unchanged, both the MBS and GE debenture will see the price decrease by 3.55%. It is evident that the upside potential in the MBS pool is hindered due to the negative convexity, while the downside price risk still exists in a rising-rate environment.

Adding positive convexity to the portfolio can be a great strategy in this low interest-rate environment. Many of our clients have a large portion of the portfolio in agency MBS and callable agencies. While these securities are important for pledging purposes and MBS generate good monthly cash flow, diversifying away from these asset classes can help improve a portfolio’s performance. As an alternative, corporate and municipal bonds tend to offer some much needed positive convexity. Many investment grade corporate bonds are issued without embedded call options, and municipal bonds that do have a call option often have five years of call protection.

One strategy that we have implemented for many of our clients involves adding positive convexity to the portfolio to hedge against further rate declines. This strategy can be specifically tailored to each client’s situation and balance sheet position. For example, if your portfolio is heavily weighted in callable agencies and MBS pass-throughs, then one might consider selling callable agencies that are approaching the next call date and higher coupon MBS that are experiencing fast prepayments. These two types of bonds experience a large amount of negative convexity; thus, prices aren’t going to increase much above today’s levels.

The goal of the strategy is to sell a basket of negatively convex securities at breakeven or a gain, depending on the call structure, and reinvest the sales proceeds into corporates and munis. In addition to improving the portfolio’s convexity, this strategy will help to diversify the portfolio and often leads to an increase in net income.

By executing a strategy similar to the one outlined above, the portfolio will perform well under different interest-rate environments. If interest rates fall further, positively convex securities should experience greater price appreciation. Furthermore, corporates and munis will not experience an increase in cash flow if there aren’t any embedded call options. We have seen this problem with MBS in recent years as monthly cash flows have been increasing due to an increase in mortgage refinancing. This reduction of cash flow is favorable as the institution will not have to invest this excess cash flow at lower interest rates.
If interest rates remain at today’s levels, the ability to increase net income by adding higher-yielding corporates and munis to the portfolio might be the most important aspect. Many institutions are experiencing margin compression as loan demand has weakened and high-yielding assets are few and far between. Although the risk weighting is higher on corporates and munis than callable agencies and MBS, the yields can be relatively attractive if your institution is adequately capitalized.

If interest rates rise, probably the least likely scenario in the short term given all of the turmoil in Europe and the struggling U.S. economy, securities without embedded call options won’t extend. Conversely, MBS and callable agencies will extend, which means you’ll have lower-yielding securities in the portfolio for a longer period of time. Furthermore, if rates rise because of economic improvement, spread product, such as corporates and munis, should experience spread tightening. This can help mitigate a decrease in market price.

It is important to remember that when buying a bond with a call option, the investor has effectively sold the option to the borrower. Therefore, any action the borrower takes as it relates to the call option will be to his benefit and the investor’s disadvantage. When rates go higher and you want excess cash flow to invest at higher yields, the borrower won’t exercise the call option and you will be stuck holding the security until maturity. When rates move lower and you want to lock out cash flow, your securities will be called and you will be forced to invest at a lower interest rate. If you take the call option out of the equation, and shift a portion of the portfolio to assets with positive convexity, you might be pleasantly surprised with the performance of your portfolio.

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