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Commentary: For Investors, Stress-Testing Munis is Easier Said Than Done

by: Andrew Kalotay

Professional investors who mark to market need to know how their portfolios would perform under various interest-rate scenarios. Such "stress testing" is available in standard analytics systems, but when it comes to munis, the results could be seriously misleading.

Suppose that you just purchased at par a 3% 10-year muni. What happens to the price if rates suddenly decline or rise by 100 basis points? To estimate the new price, consider the perspective of the potential buyer — and this is where taxes come into play. Even though interest is tax-exempt, capital gains are subject to complex tax treatment. For example, de minimis discounts are taxed at the capital gains rate, but large discounts incur the much higher income-tax rate.

If rates decline, the price increases above par, but the premium paid in the secondary market has no tax effect at maturity. Thus, in order to achieve a 2% after-tax yield the price will increase to 109.02% of par (2% yield to maturity). Obviously, the pre-tax and after-tax yields are identical when there are no taxes paid.

But what if rates rise by 100 basis points and the price drops below the dreaded de minimis level? In the absence of taxes, the price would decline to 91.82 (4% YTM). However, here we are dealing with munis, where the investors pay taxes on capital gains. At this price, at a 40% income tax rate, a new buy-and-hold investor would have to pay 3.27 in taxes on the capital gain of 8.18. At a 4% discount rate, the present value of the tax bill is 2.20, indicating that the investor should pay no more than 89.62 (4.29% YTM).

But wait! At 89.62, the tax bill would be even larger than 3.27. Proceeding iteratively in this fashion, the price corresponding to a 4% after-tax yield turns out to be 88.81 (4.39% YTM) - a full 3 points lower than is likely to be reported by standard systems.

Stress Testing: Your System Underestimates Losses from Rising Rates

Par Bonds	Rates Rise 100 bps				
	Standard Analytics System		True After-Tax		System Error
	Price	YTM	Price	YTM	Price
2-yr 0.90%	98.05	1.90	96.82	2.54	*1.23*
5-yr 1.65%	95.35	2.65	92.83	3.21	*2.52*
10-yr 3.00%	91.82	4.00	88.81	4.39	*3.01*

The table above displays how a 100 bps rate increase would affect the prices of various maturities selling at par.

Portfolio managers should keep in mind that when it comes to stress-testing, the results produced by their analytics systems could be seriously off the mark, because they do not explicitly account for taxes associated with capital gains.

Of course, getting it right is easier said than done.

Andrew Kalotay, president of Andrew Kalotay Associates, is a leading authority on institutional debt management and fixed-income valuation. A thorough treatment of this topic, including the effect of rising rates on callable bonds, is provided in the working paper "The Interest Rate Sensitivity of Tax-Exempt Bonds under Tax-Neutral Valuation" at www.kalotay.com.