Perpetual Hockey Sticks

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In the course of these articles I have often emphasized that preferred shares will almost always have embedded options. These options will, typically and most notoriously, give the issuer the right, but not the obligation, to redeem the shareholder's holdings for cash at some specified time and price in the future.

These options are often viewed as being mysterious malevolent entities that appear from nowhere and instantly destroy a portion of the shareholder's net worth, but they don't need to be. They are all specified in the prospectus for each issue, most of which can be found at the System for Electronic Document Analysis and Retrieval (SEDAR) website at www.sedar.com. Additionally, a summary of the options on most actively trading issues can be obtained from my free website at www.prefinfo.com.

It is therefore possible for any investor to determine what options are embedded within a preferred share prior to purchase—and this very definitely should be done. Not only that, but investors should perform their own "Yield-to-Worst" analysis (as outlined in the July 2006 issue of *Canadian MoneySaver*) to determine what their expected yield might be if overall interest rates do not change and the issuer exercises its options at the worst possible time for the investor.

It is sometimes stated by experienced investors as an iron rule that one should not buy preferred shares that are priced significantly above their call price. I suspect that this rule was developed after an unexpected call significantly hurt these investors, who then resolved that never again would they take any chances. But calls do not have to be unexpected and the premium to the potential redemption price isn't what matters. Yield-to-Worst matters and a premium to the redemption price can actually reduce the downside risks of an investment.

Suppose that an investor has narrowed down his list of potential purchases to two: GWO.PR.G and BMO.PR.J, both trading on the Toronto Stock Exchange. The basic information necessary for calculating the pre-tax, bid-side Yield-to-Worst (YTW), as of January 31, 2007, is presented in Table 1. It should be noted that I have chosen these is-

sues for their didactic value only—no opinion regarding the investment quality of these issues should be inferred!

From Table 1, we may calculate that BMO.PR.J has a YTW of 4.53%, while GWO.PR.G can only muster 4.30%. Many investors will stop at this point and purchase the BMO.PR.J.

### TABLE 1: BASIC CHARACTERISTICS OF GWO.PR.G & BMO.PR.J

	GWO.PR.G	BMO.PR.J
Bid Price (2007-1-31)	$26.51	$24.94
Annual Dividend	$1.30	$1.13
Current Yield*	4.90%	4.51%
Next ex-Dividend Date	3/1/2007	4/24/2007
Callable @ $26 Commencing	12/31/2009	2/25/2012
Callable @ $25.75	12/31/2010	2/25/2013
Callable @ $25.50	12/31/2011	2/25/2014
Callable @ $25.25	12/31/2012	2/25/2015
Callable @ $25.00	12/31/2013	2/25/2016
Yield To Worst**	4.30%	4.53%
Call Price at Worst**	$25.00	No call!

*As discussed in the July 2006 edition of *Canadian MoneySaver*, "Current Yield" is a meaningless number. It is the one reported in the newspapers, however. So there will always be investors who focus on it to the exclusion of all else – and get an unpleasant surprise when the issue is called.

**These rows show results from my firm's software HIMIPref™ using assumptions that may not match a user's calculation precisely. Differences should be minor. Note that the Yield-to-Worst of BMO.PR.J exceeds its Current Yield—this is due to the fact that dividends will actually be earned prior to the end of each period, increasing their value. The two numbers will always be very close, however, for perpetuals trading at a discount to their call price.

This is certainly a better strategy than investing solely on the basis of Current Yield, but there are other considerations. A never-to-be-forgotten consideration is credit quality, as discussed in the October 2006 issue of *Canadian MoneySaver*, but we'll ignore that for the sake of this article. In this article, I want to talk about hockey sticks.

Before deciding that I'm completely off my rocker, consider a normal option. Let's say a particular option gives us the right, but not the obligation, to buy something (a barrel of oil, say) at $50 one year from now. The value of this option in one year will depend upon the price of the underlying commodity at that time. If the price is $40, our option to buy will be worthless. Why exercise an option to buy at $50, if we can get the item elsewhere for $40? If the price is $45…worthless, $50…worthless. But now it gets more fun. If the price of oil is $51 in a year, the option will be worth $1, since we can exercise our option, buy at $50 and sell at $51. If oil is trading for $52 at that time, the option is worth $2. And so on, until we see the "hockey stick" pattern shown in Chart 1.

Chart 1: Value of an Option to Buy at $50
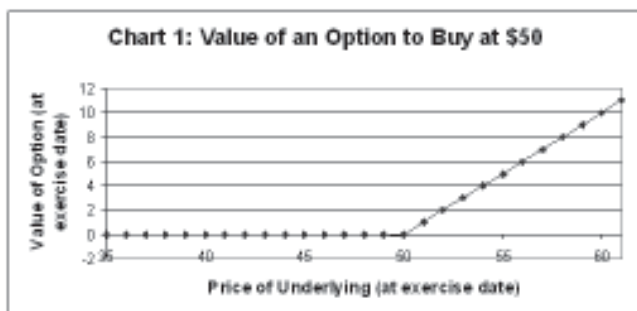
Or suppose we have sold this option for $5 and want to see what our total gain or loss on the position will be in one years time (ignoring any gains that might be made from investing the $5 in the meantime). That pattern is shown in Chart 2—if the ending price of the commodity is less than $50, the option will be worthless on the exercise date and the entire $5 received will be profit. If the underlying price is $55, then we'll lose $5 on the commodity (by having to buy it at the market price of $55 in order to sell it at our agreed [Strike] price of $50), but the $5 we received for the option when we wrote it will cancel this loss. At prices above $55 … well, the story just keeps getting worse.

Chart 2 : Profit (Loss) from selling an "Option to buy at $50" for $5
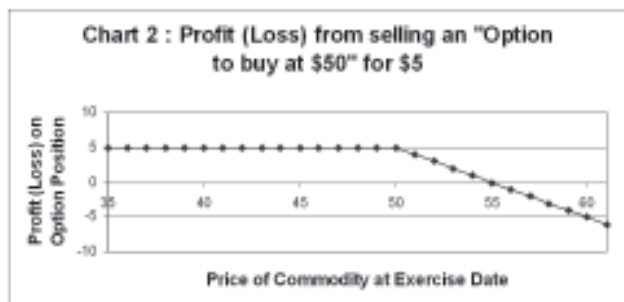
Diagrams such as charts 1 and 2 are very useful in visualizing the outcome of investment positions involving options. We can extend their usefulness to preferred share analysis by realizing that when we buy a preferred share with an embed-

ded redemption, we are actually selling an option to the issuer, allowing them to buy the share back from us at a specific date in the future. In exchange for this option, the issuer has agreed to pay us a higher dividend rate than they would be willing to pay otherwise. We may not have consciously negotiated this deal, but that's what we did! A preferred share with embedded calls may be viewed as a covered-call writing strategy—all in one package.

We'll return now to our example of the two preferred shares, GWO.PR.G and BMO.PR.J. When we calculated the Yield-to-Worst of these shares, we assumed that the market yield in the future would be the same as the market yields are now. We calculated that GWO.PR.G would be called at $25.00 because we assumed that seven years from now, it would still make sense for Great-West to call our shares at $25.00 in order to avoid having to pay us our dividend of $1.30 for any longer. There's nothing wrong with this assumption—that's what Yield-To-Worst is supposed to do—but it is an assumption nevertheless and it might turn out to be incorrect.

What if we buy these shares and the yield on preferred shares instantly goes to 10%? The annual dividend on new $25 shares will be $2.50. We will no longer be able to count on Great-West wanting to redeem shares having a piddly dividend of $1.30. Our shares will be worth less than what we paid for them… such is the nature of fixed-income investing.

On the other hand, what if we're luckier in our timing, and rates suddenly decline to 4%? This is much better for us since prices will rise, but we then realize that our assumption that BMO.PR.J would not be called is simply not valid any more. The issuer will prefer to call these shares at some point, so they can stop paying us our $1.125 (4.5% of redemption price) annual dividend and issue new shares with an annual dividend of $1.00 (4% of issue price).

If we change our assumption of what preferred shares will yield in a years time to examine a host of possibilities, we are engaging in "scenario analysis". We are stress-testing our investment possibilities in order to see what will happen to the value of our account under many different conditions. Some of these possibilities are shown in Table 2, which calculates some returns over a holding period of one year, from January 31, 2007 until January 31, 2008, using three different scenarios: a significant decline in interest rates (to 4.0%), unchanged interest rate (at 4.5%) and a significant increase (to 5.0%).

The first thing we notice is that if interest rates go up, we'll make less than our YTW assumption—perhaps even lose money. That's a sad fact of life in any form of fixed-income investing, countered by the more cheerful idea that if interest rates decline, we'll make more money than expected. We also note that even if interest rates increase by 50 basis points to 5.0% (a basis point, "bp", is one-one

TABLE 2 - SCENARIO ANALYSIS FOR GWO.PR.G

	Assumed Trading Yield for Perpetual Preferreds on January 31, 2008		
	4.00%	4.50%	5.00%
Price from Current Yield*	$32.50	$28.89	$26.00
Price Considering $25 Call**	$26.57	$25.90	$25.25
Price Considering $26 Call**	$26.48	$26.24	$26.00
Lowest of above three prices	$26.48	$25.90	$25.25
Dividends Received in Year	$1.30	$1.30	$1.30
Total Return^	4.78%	2.62%	0.17%

^Total Return = (Lowest Price + Dividends) / Current Price
*This is the price that would result if the issue did not have calls that were harmful to the investor, as with the BMO.PR.J discussed in Table 1.
**These prices have been calculated using the Microsoft Excel "Price" function. This is not accurate (since preferred shares are not bonds and do not trade with accrued interest) but is close enough for the relative value analysis discussed in this article.

Chart 3: Effect of Changes In Yield

hundredth of a percent; 50bp is half a percent), we can still break even. Thanks to the high coupon on GWO.PR.G (5.2% of the lowest redemption price), it will still be a conservative assumption that the company will call our shares at $25.00 on the last day of 2013.

One way to think of this scenario is to assume that the premium to redemption price is already lost anyway. After all, we are buying these shares at $26.51. We are already assuming that they will be priced at $25.00 in the future, but we don't mind that so much because we're getting such a large annual dividend…and we've proved to ourselves that the effects cancel each other sufficiently to ensure that the YTW is still a respectable 4.30%. So we can lose the money now or we can lose the money later. At least there's an offset!

Such a timing effect does not exist when the issue is trading at a discount, however; our investment returns will decline rapidly once interest rates exceed our annual dividend.

When this calculation is repeated for both of the issues being discussed with more intermediate data points, we derive Chart 3.
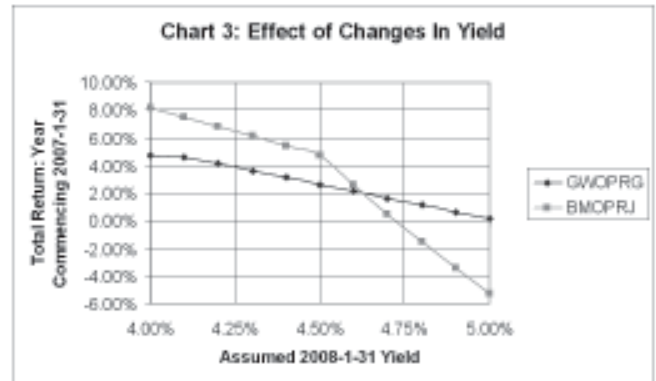
The critical information we draw from Chart 3 is that the issues will perform very differently according to changes in interest rates. If they're unchanged, the BMO.PR.J will outperform—that's the effect of the higher YTW we calculated as the first step in our analysis. But GWO.PR.G, with its higher dividend, is better protected from an increase in rates and will outperform the BMO.PR.J when we assume a bad enough interest rate climate. The "hockey stick" is clearly recognizable in the BMO.PR.J plot. If the chart were extended further, it would also be visible for GWO.PR.G.

So we may conclude:
- Yield-to-Worst is a powerful tool, but it does not account for changes in interest rates.
- Issues with a lower YTW but a higher dividend can sometimes outperform in certain scenarios of future interest rate changes.
- It may sometimes be prudent to give up a little expected yield to gain better protection against rising rates.

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