THE NUTS AND BOLTS OF STRUCTURING NOTES

Principal-protected notes have become increasingly complex, making greater use of financially engineered solutions to swap potential risks for potential rewards.

BY DWARKA LAKHAN

"There has been a shift from relative to absolute performance among investors," says Steven Marshall, president and CEO of Montreal-based **OpenSky Capital**, a division of National Bank Financial Inc. "Notes are designed to satisfy different investor requirements — either for fixed-income-like or stock market-like returns."

And, regardless of variations in note structure, investors know that their principal is protected.

PPNs typically combine two or more financial instruments, one of which is usually a derivative, to create a single packaged product. They use two basic strategies — option-based and constant proportion portfolio insurance (CPPI; aka dynamic allocation) — to guarantee investors' principal at maturity and to provide a return on principal.

The option-based strategy — which was primarily used when PPNs first became popular about four years ago — has the issuer using 65%-70%

of the proceeds of an offering to purchase a zero-coupon bond or strip. The bond covers the 100% guarantee of the principal at maturity.

The remaining 30%-35% of the note's proceeds is used to write embedded call options on the underlying investment to which the note is linked in order to enhance returns. This amount is usually leveraged by as much as three times to maintain 100% exposure to the underlying investment.

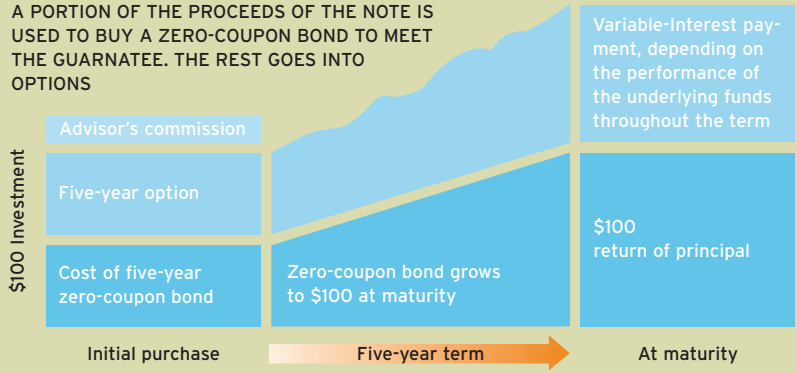
The portion that is applied to each of the bond and options segments depends on interest rates. The lower the current interest rates, the higher the cost of the strip — based on the inverse relationship between bond prices and interest rates. The higher the cost of the strip, the lower the amount available to invest in the underlying investment basket. This could affect full participation in the underlying investment, as the guarantor of the note — a Schedule 1 or Schedule II chartered bank — may not be able to purchase an option with full notional exposure to the underlying investment.

LEVEL OF PARTICIPATION

The following example — from "Structured alternative investment products," by Mehraj Mattoo in *Fund of Hedge Funds for Professional Investors and Managers*, published by Euromoney Institutional Investor PLC (London, 2003) — illustrates the level of participation. If the price of a five-year zero-coupon bond promising a payout of $100 at maturity is $80, the amount available for the purchase of a call option is $20. Assume that the premium payable for a call option expiring in five years is 25%. Therefore, $25 would be required to purchase a call option with a notional value of $100 that corresponds with the face value of the bond. However, with just $20 available for investment in the option, a call option with a notional value of only $80

OPTIONS-BASED STRATEGY

A PORTION OF THE PROCEEDS OF THE NOTE IS USED TO BUY A ZERO-COUPON BOND TO MEET THE GUARNATEE. THE REST GOES INTO OPTIONS



SOURCE: BMO NESBITT BURNS INC.

can be purchased. This allows for 80% participation in the performance of the investment. At maturity, the investor will receive the principal plus 80% of the positive performance of the investment.

According to Luke Seabrook, managing director and head of equity-linked and fund-linked products at Toronto-based **BMO Nesbitt Burns Inc.**, an option-based strategy allows easy calculation of investment returns at maturity, facilitates a shorter tenure and uses a "tested structure" that is similar to bank-issued equity-linked GICs.

The option-based structure, however, is highly sensitive to movements in interest rates at any time prior to maturity. In a low interest rate environment, the participation rate can be significantly lower than 100%. On the other hand, in a rising rate environment, the value of the strip falls — resulting in a decrease in the total value of the note.

DYNAMIC ALLOCATION

CPPI, a strategy that has gained popularity in recent years, uses a dynamic allocation process that is determined by the difference between the value of a basket of securities and the value of a theoretical zero-coupon bond. "Put simply, it is an allocation between a risky and a risk-free asset," says Seabrook.

"You know what you're up against," adds OpenSky's Marshall. "[As a result], we can be extremely creative in designing the right product with defined cost and risk/reward characteristics."

Using CPPI allows investors to gain 100% exposure to the underlying investment, with the guarantee only notionally related to the theoretical strip. The underlying investment can be a basket of stock market indices, mutual funds, hedge funds, commodities, income trusts or stocks.

If the underlying investment performs well, leveraging is used to enhance value based on a predetermined formula or allocation grid that varies the weight of the underlying investment over the life of the note, based on performance of the investment. This can allow for greater than 100% exposure to the underlying investment when market conditions are favourable. The leverage is usually capped at a defined weighting that can be as high as 150%.

Conversely, if the performance of the underlying investment declines, assets in the underlying investment are "deleveraged," or sold, based on the formula to ensure that there is sufficient capital available to cover the principal guarantee.

The leveraging and deleveraging process is ongoing throughout the life cycle of the note, which can range from about five to eight years. The basis or "calculation floor" on which the net

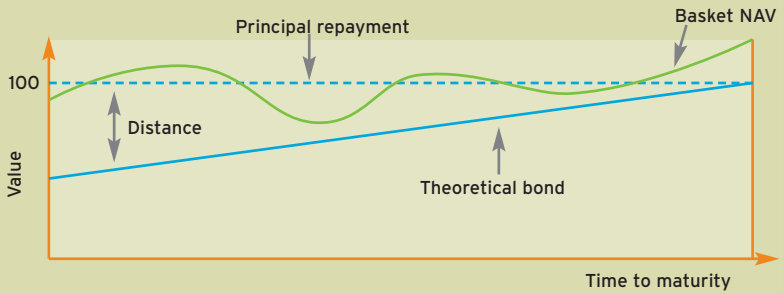
TWO WAYS TO GO

PRINCIPAL-PROTECTED NOTES EMPLOY TWO STRATEGIES:

- The issuer, usually a bank, splits the proceeds of the issue and purchases a zero-coupon bond or strip with about 65%-70% of the money. That provides the guarantee. The remainder goes into a leveraged options strategy tracking the underlying investment to provide a potential return.
- The constant proportion portfolio insurance, or CPPI, leverages and "deleverages," following a complex model that tracks the performance of the underlying investment, creating the potential for greater returns..

CPPI STRATEGY

LEVERAGING IS DONE ACCORDING TO A FORMULA OR ALLOCATION GRID THAT VARIES THE WEIGHTING OF THE UNDERLYING INVESTMENT BASED ON ITS PERFORMANCE



Distance = weight of underlying investment
Basket NAV = net asset value of underlying investment

asset value of the note is determined is the cost of the guarantee or strip.

The NAV of a note using a CPPI structure is generally unaffected by rising interest rates because the underlying investment is linked to a theoretical strip whose price is tracked on an ongoing basis. However, the price of the theoretical strip falls when rates rise, allowing for greater exposure to the underlying investment. One concern is that in poor market conditions deleveraging can significantly reduce exposure to the underlying investment, resulting in lower potential returns.

Author Mattoo argues that the CPPI structure addresses the two main weaknesses of the option-based structure. The CPPI structure does not entail the purchase of a zero-coupon bond at the outset, allowing an initial investment of 100% in the underlying security. Plus, CPPI uses dynamic hedging to keep the volatility of the underlying basket of securities low.

SECONDARY MARKETS

Generally, PPNs are redeemable once a secondary market exists. They may have daily, weekly or monthly liquidity. But most notes have a "blackout" period — ranging from six to 18 months — during which they cannot be redeemed. If a note is redeemed prior to maturity, a capital gain or loss is realized. If it is held to maturity, any gains are treated mainly as interest income.

PPNs have various payout structures. Investors may receive predetermined capped returns, average returns, fixed annual or semi-annual coupons, or total returns. The issuer may also call the note when it reaches a certain value at a specific date, in which case the investor receives the callable return. On the other hand, investors may receive an unlimited return if the issuer does not call the note prior to a predetermined date.

The worst-case scenario using any PPN structure is that investors get back only their principal.

"Return risk is determined by what the note is linked to," says Seabrook.

Marshall adds: "Notes could provide either fixed returns or unlimited upside."