Evolution of the structured fund derivatives landscape

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The structured fund derivatives landscape has evolved substantially in recent years with an estimated current notional size of over US$700bn globally.[1] An increasing number of treasurers, portfolio managers and other investors are seeking increased returns through exposure to alternative assets via a variety of fund-linked derivatives products. Common fund-linked derivatives products include various options, total return swaps, portable alpha strategies and structured notes. These products can be linked to single hedge funds, fund of funds, fund indices or a basket of the same (each a 'reference fund asset').

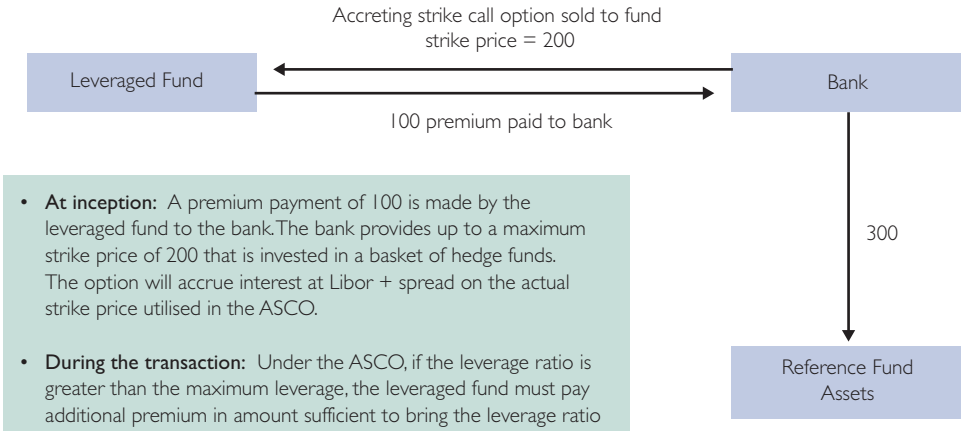
Black-Scholes call options

In the basic form of a 'plain vanilla' or 'black-scholes' call option referencing a reference fund asset, an investor purchases an over-the-counter call option by paying a premium amount to the financial institution (the 'bank') on the trade date. The strike price of the call option is typically fixed either 'at' or 'out of the money' at inception. The call option is structured to be 'European style' which means the investor can exercise the option only at maturity. The cash settlement amount, if any, owed by the bank to the investor at maturity is equal to the amount by which the net asset value of the reference fund asset exceeds the strike price of the call option. In some cases, the call option may also be physically settled where the investor would pay the strike price to the bank and receive physical delivery of the reference fund asset. To the extent that the net asset value of the reference fund asset was less than the strike price, the option would expire worthless and the investor would lose the premium paid at inception.

Accreting strike call option structures

The accreting strike call option ('ASCO') is among the most widely used fund-linked derivatives today. Take the example of an investment manager looking to launch a leveraged fund (the 'leveraged fund') to raise

Figure 1: Accreting strike call option



- **At inception:** A premium payment of 100 is made by the leveraged fund to the bank. The bank provides up to a maximum strike price of 200 that is invested in a basket of hedge funds. The option will accrue interest at Libor + spread on the actual strike price utilised in the ASCO.
- **During the transaction:** Under the ASCO, if the leverage ratio is greater than the maximum leverage, the leveraged fund must pay additional premium in amount sufficient to bring the leverage ratio down to the target leverage or the ASCO will terminate early. The leveraged fund can periodically adjust the strike price, subject to compliance with the leverage test.
- **At maturity:** The leveraged fund exercises the ASCO and receives a cash settlement amount equal to the market value of the Reference Fund Assets minus the accreted strike price, if any.

Source:

additional capital. Assume the leveraged fund offers investors US$3 of exposure to the underlying reference fund assets for every US$1 invested, or 'three times' leverage. Suppose the leveraged fund has US$100m in new subscriptions. Under an ASCO structure, the leveraged fund would purchase a cash settled over-the-counter call option from the bank for a premium amount equal to the US$100m in subscription monies and receive a notional exposure to a basket of reference fund assets equal to US$300m, equating to three times leverage. The bank would most likely hedge its position on a 'delta one' basis by purchasing US$300m of the reference fund assets, but could also hedge via another derivative. The strike price of the ASCO would equal US$200m, which represents the amount of effective financing provided by the bank. The 'in-the-money' amount of the ASCO would be based on the excess of the net asset value of the reference fund assets underlying the option (initially US$300m) over the strike price of the option (initially US$200m). Typical durations of these transactions are from one to five years.

During the term of the ASCO, the strike price accrues interest at a rate equal to LIBOR plus a spread. The leveraged fund would have the option to adjust the strike price and/or the notional exposure to the reference fund assets on a periodic basis, subject to compliance with the 'knock-out' provision and other negotiated covenants. The 'knock-out' provision is a leveraged based test where if the market value of the reference fund assets underlying the option falls below a predetermined level (depending upon the amount of leverage) relative to the strike price (plus accrued and unpaid interest), the leveraged fund must immediately reduce leverage to the appropriate level by 'topping-up' the amount of premium paid or the bank would have the option to 'knock out', or early terminate all or a portion of the ASCO. For purposes of this test, the market value of the reference fund assets is based on their net asset value, as may be reduced or 'haircut' based upon a tailored set of portfolio guidelines that generally centre on liquidity, volatility and manager and strategy diversification of the reference fund assets. To the extent that the reference fund assets violated these portfolio guidelines a corresponding 'haircut' would be made to the market value of the Reference Fund Asset, which will trigger the 'knock-out' provision.

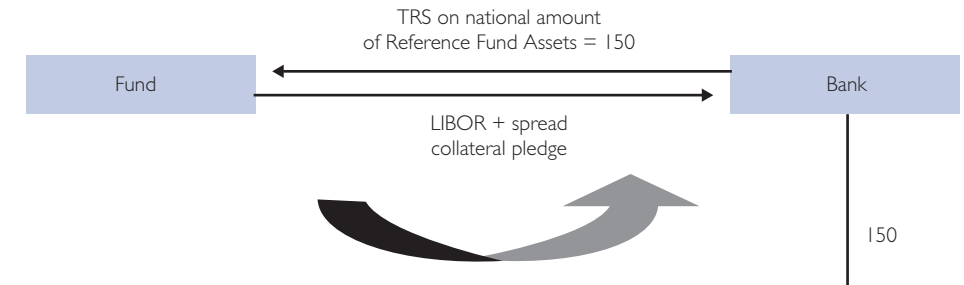
At maturity of the option, the cash settlement amount owing to the leveraged fund would be the amount, if any, that the value of the reference fund assets exceeds the strike price plus accrued interest. The leveraged fund would benefit so long as the performance of the reference fund assets exceeds the effective cost of its leveraged exposure. To the extent that the value of the reference fund assets is less than the strike price, the option would expire worthless and the bank would have no recourse to the leveraged fund for the amount of any such deficiency.

Total return swaps

Through the last couple of years, pension plans (each a 'plan') have increased their alternative investment allocations, which include exposure to hedge funds.[2] For a plan looking for exposure to reference fund assets, on a direct or leveraged returned basis, a total return swap is an effective vehicle.

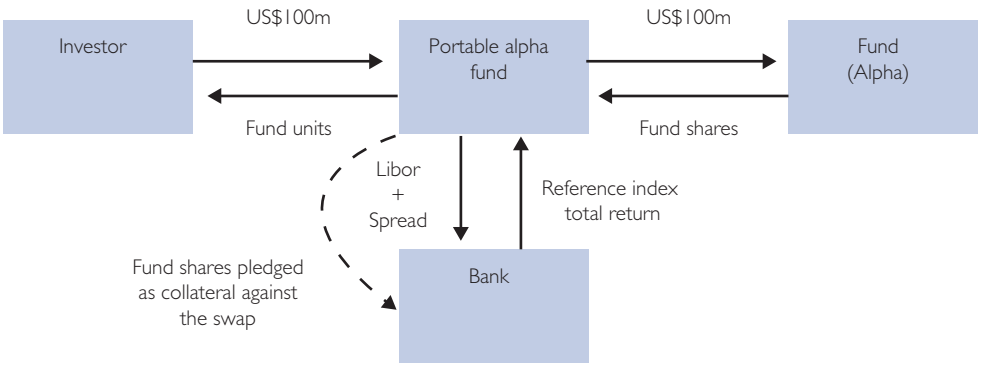
In a typical 'plain vanilla' or 'full recourse' fund-linked total return swap, the plan would enter into an over-the-counter swap agreement where the bank would agree to pay the plan the appreciation of a notional amount of reference fund assets. The plan would in

Figure 2: Total return swap – basket



Notes:
- The fund can upsize/downsize the TRS notional as well as realise appreciation periodically, typically correlated with the embedded liquidity of the Reference Fund Assets.

Figure 3: Portable alpha structure



turn agree to pay the bank a financing fee equal to LIBOR plus a spread as well as any depreciation of the reference fund assets. Typically, the bank would purchase the underlying reference fund asset(s) to hedge its exposure under the total return swap. To the extent that the underlying reference fund asset is a fund index, the bank may hedge by purchasing units of a fund of funds designed to track the relevant fund index or through the use of other derivatives transactions. Notional adjustments can normally be made on a periodic basis as reference fund asset(s) underlying the total return swap are added or removed. Cash settlement of a plain vanilla total return swap can occur periodically but most often occurs at maturity, which typically ranges from one to five years. In the event that the reference fund asset market value declined below a certain threshold, the plan would have to post acceptable collateral to the bank, based on pre-agreed exposure thresholds and amounts, depending upon the credit rating of the plan. In addition, the bank will often have the option to terminate the swap early upon the occurrence of significant events, such as a change in the liquidity, NAV reporting, investment strategies or management of the reference fund asset(s).

Portable alpha swaps

As esoteric as it sounds, portable alpha is a relatively simple strategy. A portable alpha strategy consists of an 'alpha' and a 'beta' component. The 'beta' component is employed to generate the traditional returns that an investment would earn due to general exposure to the market. This is often achieved through the use of derivatives, most frequently through a total return swap on a market index. The 'alpha' component is the premium an investment will earn above standard market indices, normally achieved with a large amount of capital and obtained through an alternative investment such as a hedge fund or fund of funds. One goal of the alpha return is to be able to offset financing costs under the beta.

Take the example of a portable alpha fund which offers investors exposure to alpha and beta from one source. Here the bank would enter into a total return swap on a specific market index (which constitutes the 'beta'), where the bank would pay the return on the index to the portable alpha fund in exchange for a periodic payment equal to LIBOR plus a spread. The portable alpha fund would in turn pledge units of a reference fund asset (which constitute the 'alpha') as collateral to the bank. During the term of the total return swap, if the Beta decreases the reference fund is liquidated to meet collateral calls so the reference fund asset exposure decreases and if the Beta increases, additional reference fund asset units are purchased so exposure is increased. In addition, the bank will often have the option to terminate the swap early upon the occurrence of significant events, such as a change in the liquidity, NAV reporting, investment strategies or management on the collateral and sometimes the portable alpha fund as well.

Structured notes

Structured notes are an increasingly popular vehicle among investors who are looking for a tailored exposure to alternative assets. Structured notes linked to reference fund assets tend to fall into two main categories, principal protected and principal at risk. These two main categories encompass a variety of sub categories which can be tailored to meet the investor's specific goals. Some of these varieties include partial principal protection, varying levels of leveraged exposure to the reference fund asset(s) and a minimum coupon.

One common structure for a principal protected

note linked to reference fund assets is a 'constant proportion portfolio insurance', or 'CPPI' note. Here the payout at maturity of the CPPI note is the investor's principal amount, plus the positive return, if any, of a reference portfolio consisting of a 'risky asset', in this case the reference fund asset(s), and a 'risk free' asset which normally consists of zero coupon bonds or cash. During the term of the CPPI Note the reference portfolio is dynamically allocated between these two components of the reference portfolio. Allocation to the reference fund asset(s) increases when its performance rises and decreases when the asset's performance is down. Typically if the value of the reference portfolio declines below a pre-set level, the reference portfolio will be entirely allocated to the risk-free asset with no possibility for future exposure to the reference fund asset(s).

In a typical 'principal-at-risk' note structure, the investor risks losing all or a part of its principal amount depending upon the particular note characteristics. Normally the investor receives a leveraged return on the reference fund asset(s) in exchange for this risk. The amount payable on maturity of the note is linked directly to the performance of the reference fund asset(s), which can be based on averages determined on an annual or more frequent basis.

Notes:

1 Hedge Funds Review, July 2007

2 FIN Alternatives, January 21, 2008.

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