*Fair value hedge treatment can yield unexpected benefits.*

# Using Swaps to "Borrow" Overseas at Bargain Rates

In a perfect world, market inefficiencies are arbitraged away, such that no incentives would motivate a company to fund abroad and then swap back into its functional currency. But in the real world, companies may discover these seemingly roundabout strategies offer considerable savings from time to time. Four synthetic borrowing strategies are available:

1. *Issue fixed rate debt in a non-functional currency and swap to fixed rate debt in the functional currency.*
2. *Issue floating rate debt in a non-functional currency and swap to fixed rate debt in the functional currency.*
3. *Issue floating rate debt in a non-functional currency and swap to floating rate debt in the functional currency.*
4. *Issue fixed rate debt in a non-functional currency and swap to floating rate debt in the functional currency.*

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In practice, however, the accounting requirements under the Financial Accounting Standard No. 133 (FAS 133) may generate reported income effects (i.e., costs of funds) that differ from the economic objectives of the hedger — particularly in the last strategy listed.

## Interest Rate Swaps

As a prelude to understanding how currency swaps work, let's first examine a standard, plain vanilla interest rate swap. Think of them as being constructed by combining two, back-to-back loans.

Party A loans $X to Party B on a fixed rate basis, and at the same time, Party B lends the same $X to Party A on a variable rate basis. Periodically (i.e., at the end of each fixed rate interest accrual period), the two respective cash flow obligations are netted and the difference is settled between the parties, in cash.

Note that because the principal loan amounts are equal, the full principal is never paid or received by either party — either at the onset of the swap (when the conceptual loans are originated) or at its termination date (when the loans are repaid).

For example, a plain vanilla interest rate swap may require Party A to calculate its cash flow obligation to B based on a fixed rate of 8% on a notional amount of $10 million. Party B's obligation is based on variable interest rates — typically LIBOR — reset on a prescribed frequency, also on a notional amount of $10 million.

**In a perfect world, market inefficiencies are arbitraged away.**

When LIBOR is below 8%, A pays B; when LIBOR is greater than 8%, B pays A. When LIBOR equals 8%, no cash flow settlement is required, in either direction. If the day-count conventions differ for the two interest calculations, some slight net cash flow could be required when the fixed and variable interest rates are the same.

For example, the variable rate interest calculation may measure time on the basis of an "actual/360" day-count convention, while the fixed rate interest calculation may use a "30/360" convention.

An "at market" swap is where the present value of the prospective cash flows (based on the stated fixed rate on the swap, and the prevailing set of spot and forward interest rates on the variable benchmark) is zero. For an interest rate swap to require no cash transfer at issuance, the present value of the expected cash flows associated with the swap's variable rate leg must be equal to the present value of the cash flows associated with the swap's fixed rate leg.

## Currency Swaps

Currency swaps are a variant of interest rate swaps. With currency swaps, Party A "loans" Party B some nominal amount of one currency and Party B loans A an equivalent value of a second currency. Like the plain vanilla interest rate swap, periodic cash flows are required, reflecting the interest obligations in the two, respective denominations.

(Contracts may be written whereby one of the cash flow obligations is re-denominated in the "other" currency, based on the exchange rate in effect on the settlement date. The two obligations may then be netted. In the remainder of the article, however, no such netting is assumed.)

With at-market currency swaps, an exchange of principal may or may not occur at the onset of the swap because the back-to-back loan amounts are the same. But "repayment" of the two principal amounts *is* required at the end of the swap's term. This added requirement is necessary because exchange rates can't be expected to remain unchanged over the swap's tenor. And with such changes, the par amounts of the loans at maturity won't be equal when converted to a common denomination.

The market value of a currency swap is found by assessing the present value of the prospective cash flows in each of the respective currencies (i.e., not allowing for any netting of the respective cash flows). The present value of the non-functional currency cash flows must then be translated to the functional currency using the prevailing spot currency exchange rate.

## Synthetic Funding Strategies

When a company borrows in a currency other than its functional currency and then adds a currency swap transaction, three respective cash flows must be considered:

1. *The foreign currency cash flows of the loan (i.e., interest and principal)*
2. *The foreign currency receipts from the currency swap*
3. *The payments in the functional currency required by the currency swap*

If the first two cash flows are perfectly offsetting, the consequence of the combined position (i.e., the loan plus the swap) leaves the company with a net obligation in the functional currency.

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**Example of Assumed Interest Rates and Exchange Rates**

| | Starting Conditions |
|---|---|
| Spot 3-month $-LIBOR | 5.00% |
| Spot 6-month $-Swap | 6.00% |
| Spot 3-month €-LIBOR | 4.00% |
| Spot 6-month €-LIBOR | 4.50% |
| Fixed rate on €-denominated 6-month debt | 5.75% |
| **Currency swap** | |
| Fixed rate on $-denominated cash flow | 6.00% |
| Fixed rate on €-denominated cash flow | 4.50% |
| Spot exchange rate (U.S. terms) | $0.8500/€ |
| *(Values reflect some degree of rounding error.)* | |

*Source: Kawaller & Company, LLC*

Generally, because firms typically borrow at spreads above benchmark interest rates, some "financial engineering" is required to arrange the desired offset. Specifically, an up-front cash adjustment must compensate for the incremental difference between the expense associated with loan, and the offset of the non-functional currency provided by the at-market currency swap — irrespective of whether the original funding is fixed or floating.

(Conceivably, the company may borrow at a spread *under* the benchmark interest rate. In this case, the up-front cash flow will be a receipt, rather than a payment.)

To illustrate, say a company's objective is to borrow dollars on a fixed rate basis. Instead of issuing fixed rate, dollar-denominated debt, however, it borrows euros in the euro-currency market. The company's financial standing allows access to these funds at a spread of 125 basis points above the Euribor benchmark interest rate.

(Euribor is the equivalent concept to LIBOR, relating to bank deposits denominated in euros, as opposed to dollars.)

An at-market currency swap will offset only the interest expense associated with the benchmark interest rate. Thus, if an at-market swap were used, the offset would be incomplete. The shortfall would reflect the 125 basis point spread.

To arrange the perfect offset at the initiation of the swap, the company would have to "buy" the prospective cash flows associated with the 125 basis point spread for each period over the horizon of the debt. The "cost" would equal the present value of these cash flows.

Ultimately, the effective interest expense will be the interest associated with the functional currency cash flow of the swap, plus an allocation of the up-front cash payment. Generally accepted accounting principles (GAAP) dictate that this allocation must be determined using the interest method.

Suppose a U.S. company wants to borrow $100 million for two, 90-day quarters. All relevant interest rates and exchange rates required for the analysis are presented in the table on the left.

Given the spot exchange rate of $0.8500 per euro, the company must borrow €117.6 million to meet the $100 million objective. The term rate on this loan is 5.75%, which translates to an interest expense of €1.691 million per quarter.

The at-market fixed-to-fixed currency swap, however, stipulates a fixed rate of 4.50% for the euro-denominated cash flow of €1.324 million, vs. 6.00% or $1.500 million for the dollar-denominated cash flow.

Recall, however, that the euro-denominated borrowing cost is 5.75%, such that the euro-denominated cash flows from the swap fall short of the needed interest expense by €0.368 million per quarter, for two quarters [€0.368 million = €117.6 million x (.0575 – .045)/4].

The present value of these two prospective cash flows is €0.724 million, which translates to a dollar-equivalent of $0.615 million. *[The calculation relies on the euro-currency zero-coupon rates that pertain to the Euribor-based swap valuations.]* Put another way, $0.615 is the present value of a currency swap having a notional amount of $100 where the fixed rate on the euro (receive) side is 5.75% vs. the fixed rate of 6.00% on the dollar (pay) side.

For perfect coverage, the company must structure a swap as follows:

- The firm makes an initial payment of $0.615 million.
- At quarter-end, the company receives €1.691 million and pays $1.500 million.
- At the termination of the swap, the company also receives €117.6 million and pays $100 million.

The combined euro-denominated cash flows (inclusive of interest and principal of the loan along with the euro-denominated component of the swap) will be perfectly offsetting. The combined position leaves the company with a quarterly interest expense denominated in dollars equal to $1.5 million and a repayment of $100 million notional on the swap.

Again, the "effective" cost of funding must reflect the initial up-front cash payment. In this example, $0.615 million up-front payment, divided between the two quarters translates to an "all in" effective interest expense of $1.807 million per quarter, or 7.23%.

At this point, the firm faces two critical issues:

1. *Whether this synthetic strategy offers a cost saving over funding directly in dollars depends entirely on the domestic cost of funds*

*available to the company in question. If borrowing at home can't be arranged below 7.23%, the synthetic strategy would have the advantage.*

2. *Assuming the synthetic strategy is undertaken, will the accounting treatment under FAS 133 result in a realized interest expense that corresponds to the targeted cost of funds (i.e., 7.23%)?*

## Accounting Considerations

The answer to this second question depends on which specific synthetic strategy is considered. That is, two different methods of hedge accounting would apply depending on whether the effect of the hedge is to synthesize a fixed rate funding or a variable rate funding. Let's discuss the two objectives:

### *1. Swapping Into Fixed Rate Debt*

When the objective is to synthesize fixed rate funding — irrespective of whether the original funding is undertaken on a fixed or variable rate basis — the application of cash flow hedge accounting is appropriate. Under such a strategy, a perfectly structured swap generates a component of cash flows and accruals in the non-functional currency that exactly offset the loan's cash flows and accruals, whether fixed or floating.

These amounts, as well as the cash flows and accruals in the functional currency, are recorded in earnings. All other gains or losses on the currency swap go to other comprehensive income (OCI). Reclassification of OCI will correspond to the allocation of the initial cash payment based on the interest method.

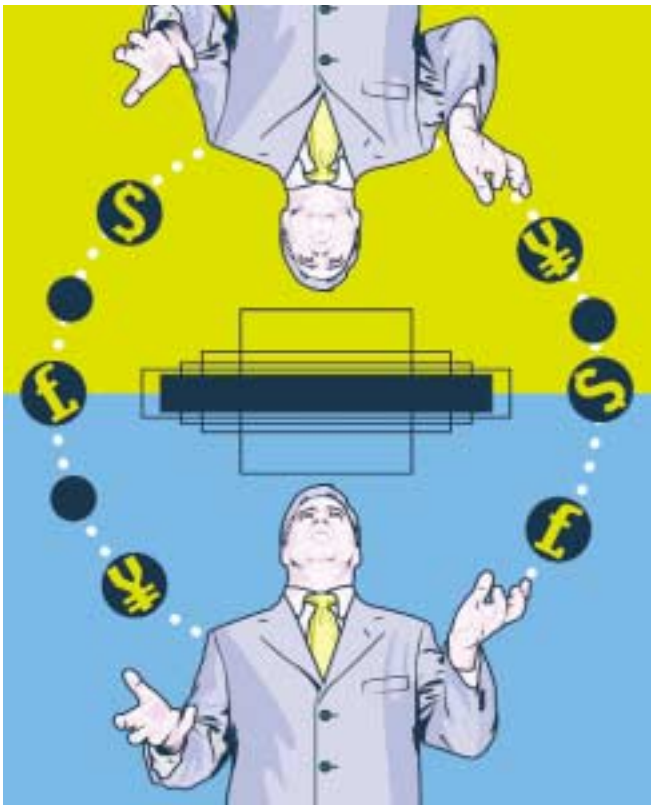
The reported cost of funds differs from the synthetic strategy's economic intent only to the extent that the allocation of the initial cash payments differs from a linear allocation of the amount over the horizon of the loan/swap.

Put another way, with properly designed cash flow hedges, unless the up-front cash transfer is unusually large, the reported interest expense should be close to that which is reported with synthetic instrument accounting.

In many cases, hedgers choose to trade a swap *other than* the perfect swap. For example, when the difference is judged to be inconsequential, the hedger might opt to trade an at-market swap instead of one requiring an up-front cash adjustment. With this election, some portion of the associated hedge gains or losses will be "ineffective."

Typically, the at-market swap generates a non-functional currency cash flow that falls short of the cash flow of the hedged loan. As a result, the realized cost of funds differs somewhat from that which would occur with a perfectly tailored currency swap.

These differences will be more (less) exaggerated when the non-functional currency borrowing occurs at larger (smaller) spreads over the benchmark interest rates and when the horizon of the funding is longer (shorter).



### *2. Swapping Into Variable Rate Debt.*

With the objective of synthesizing a variable rate funding, the accounting treatment depends on the initial borrowing structure. That is, two different treatments are required, depending on whether the original borrowing mechanism is floating or fixed.

First, consider the case where the original, non-functional currency borrowing is arranged on a variable rate basis. The carrying value of this debt must be adjusted on the balance sheet to reflect the prevailing spot exchange rate at the end of the period, and changes in this carrying amount are recorded in earnings.

Because changes in the swap's market value are due basically to currency exchange rate moves, a natural offset occurs without relying on any special hedge accounting treatment. On all cash flow settlement dates, the present value of each of two respective components of the swap would equal the notional par amounts of the respective currency obligations. Thus, variability of the swap's market value is due solely to changes in the currency exchange rate.

Even so, in the general case when an up-front cash payment (receipt) is required to adjust for any discrepancy between the variable interest rate on both the loan and the non-functional

currency component of an at-market currency swap, the same phenomena is at work here as was discussed earlier. That is, the accounting outcome will differ from the synthetic instrument result only to the extent that the interest method of allocating the up-front cash payment (receipt) over the life of the loan/swap differs from a linear allocation.

In contrast to a "variable-to-variable" situation, where no special hedge accounting is needed, converting from fixed-to-variable *does* require special accounting. Without it, in swapping from fixed-to-variable funding, the income effects of the loan and the swap aren't treated symmetrically. Changes in the non-functional currency interest rates affect the market values of both the fixed rate loan and the fixed-to-floating currency swap. Standard accounting, however, reflects the full price change for the swap (inclusive of interest rate and currency exchange rate changes) while only the currency effects are captured for the loan.

Overcome this problem by electing fair value hedge treatment, which requires three steps:

1. *Gains or losses of the currency swap are recorded in earnings.*
2. *The balance sheet's carrying amount of the hedged item is adjusted by the change in its market value — inclusive of interest rate and currency effects.*
3. *Along with the debt's interest payments, the change in the debt's carrying value is recorded in earnings.*

Despite the fact that the fair value treatment captures interest rate effects and the currency effects for both the debt and the swap, some seeming ineffectiveness results nonetheless. The problem arises because the discount rate(s) used in the loan valuation calculation aren't typically the same as the discount rate(s) used in swap valuation. Normally, the fixed rate on the debt is higher than that associated with the non-functional currency cash flows of the currency swap. Thus, even when the prospective non-functional currency cash flows are perfectly offsetting, the two respective present value effects will *not* be the same.

Differences will arise when the non-dollar interest rate on the debt and the non-dollar interest rate on the swap are not the same; and when such a difference exists, the size of the unintended income effects will vary directly with (a) the magnitude of any interest rate perturbation, and b) the lengths of the horizon of the debt/swap. Depending on the specifics of the loan/swap combination, these effects may be substantial.

While FASB offers an example of this strategy, their presentation fails to highlight the potential for serious discrepancies. See Example 1 in "Examples Illustrating Application of FASB Statement No. 138," at http://www.fasb.org/derivatives/examplespg.shtml. Even in this example, however, where the interest rate changes are quite confined, the disparities between the annual funding costs realized and the *a priori* targets are comparable to the overall magnitudes of the interest rate perturbations. Thus, on an interest rate basis, the hedge generates reported costs that differ sharply from the intended outcomes.

## Conclusion

Without question, FAS 133 affects the way firms use derivatives in a host of risk management activities. One application that will certainly be affected is the use of currency swaps in conjunction with funding in a currency other than the functional currency.

In the pre-FAS 133 world, "synthetic instrument accounting" ruled. Under that regime, the accounting didn't distinguish between a firm that issued fixed rate debt directly and one that used derivatives to achieve the same goal.

In certain cases, the synthetic instrument result may still be achieved — or at least approximated. This outcome may not be realized, however, when currency swaps are used to synthesize non-functional fixed rate debt into functional variable rate debt. Here, depending on the specifics of the deal in question, the fair value hedge treatment may cause a significant difference between the realized cost of funds and the economic intent of the hedger. *Hedger beware!*

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