The Economics of Money, Banking, and Financial Markets

FN 211 Financial Markets

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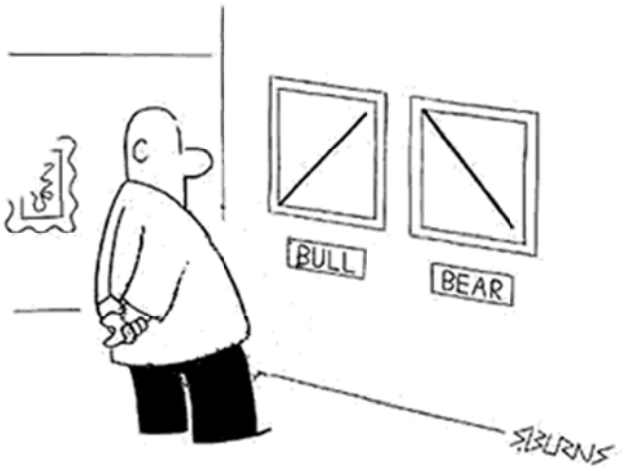
Derivatives Market: Swap Contract



Swaps

Agreements to exchange two liabilities (or assets) and, after a prearranged length of time, to re-exchange the liabilities (or assets.)

Interest Rate Swaps

Agreements to exchange interest payments for a specific period of time on a given principal amount. The most common interest rate swap is a fixed-for-floating coupon swap. The notional principal is typically not exchanged.

Currency Swaps

Contractual agreements to exchange a principal amount of two different currencies and, after a prearranged length of time, to give back the original principal. Interest payments in each currency are also typically swapped during the life of the agreement.

The World Bank's First Currency Swap

The World Bank frequently borrows in the national capital markets around the world and in the Eurobond market. It prefers to borrow currencies with low nominal interest rates, such as the deutsche marke and the Swiss franc. In 1981, the World Bank was near the official borrowing limits in these currencies but desired to borrow more. By coincidence, IBM had a large amount of deutsche mark and Swiss franc debt that it had incurred a few years earlier. The proceeds of these borrowings had been

converted to dollars for corporate use. Salomon Brothers convinced the World Bank to issue Eurodollar debt with maturieis matching the IBM debt in order to enter into a currency swap with IBM. IBM agreed to pay the debt service (interest and principal) on the World Bank's Eurodollar bonds, and in turn the World Bank agrred to pay the debt service on IBM's deutsche mark and Swiss franc debt. While the details of the swap were not make public, both counterparties benefited through a lower all-in-cost (interest expense, transaction costs, and service charges) than they otherwise would have had. Additionally, the World Bank benefited by developing an indirect way to obtain desired currencies without going directly to the German and Swiss capital markets.

Development of the swaps market

- **1981**
  - Salomon Brothers engineers the first currency swap between the World Bank and IBM
- **Early 1980s**
  - Customized, low-volume, high-margin deals
- **Late 1980s and 1990s**
  - Commercial and investment banks begin to serve as swaps dealers
  - Swaps turn into a standardized, high-volume, low-margin business
  - Volume and liquidity grow

Swap Bank

A generic term to describe a financial institution which facilitates currency and interest rate swaps between counterparties.

Swap Broker

Function of a swap bank in which it matches counterparties but does not assume any risk of the swap; however, it does receive a commission for this service.

Swap Dealer

Function of a swap bank in which it makes a market in one or the other side of a currency or interest rate swap.

Swap Book

A swap bank's portfolio of swaps, usually arranged by currency and by maturity.

LIBOR: London Interbank Offer Rate

The offer rate that a Euromarket bank demands in order to place a deposit at (or, equivalently, make a loan to) another Euromarket bank in London.

Interest rate swaps

- Same currency, different interest rate payment
- The notional principal is not usually swapped

Coupon Swaps – Plain Vanilla Interest Rate Swaps

A fixed-for-floating interest rate swaps

Example

Company A and company B have the following quoted USD borrowing rates for 3 years from banks:

	Lender: Bank T	Lender: Bank U
Borrower: Company A	6.00 percent	LIBOR + 60 bps
Borrower: Company B	8.00 percent	LIBOR + 100 bps

Company A	Receive from	Pay to	Net
Year 1			
Year 2			
Year 3			

Company B	Receive from	Pay to	Net
Year 1			
Year 2			
Year 3			

Example

Skittish Co. has a USD50 million of 3-year debt with 9 percent compounded semi-annually. Skittish prefers floating-rate debt because its operating cash flows are sensitive to interest rates. Citigroup agrees to a fixed-for-floating swap with Skittish.

Trendy Co. has USD50 million of 3-year debt with a cost of 6-month LIBOR + 125 bps. Trendy prefers fixed-rate debt. Citigroup agrees to pay Trendy a floating rate in exchange for a fixed-rate payment from Trendy.

Pricing schedule for Fixed-for-Floating Coupon Swap

Maturity	Bank pays fixed rate	Bank receives fixed rate
2 years	7.25 percent	7.40 percent
3 years	7.60 percent	7.80 percent

This schedule assumes non-amortising debt and semiannual rates
All quotes against 6-month dollar LIBOR (USD) flat

Forecasted LIBOR (USD) are:

Time 0	**Time 0.5**	**Time 1.0**	**Time 1.5**	**Time 2.0**
5.75 percent	6.00 percent	6.50 percent	6.75 percent	7.00 percent
Time 2.5	**Time 3.0**			
7.10 percent	7.45 percent			

	Receive from	Pay to	Net

	Receive from	Pay to	Net

Example

Counterparty #1: The US branch of British Petroleum (BP)
Counterparty #2: The UK subsidiary of Ford Motor Company (Ford)

	Borrower	
Country	**BP**	**Ford**
United Kingdom (HSBC: GBP)	5.00 percent	7.00 percent
United States (Citibank: USD)	8.00 percent	6.00 percent

Given inflation rates in UK and USA are 2.00 percent and 4.00 percent, respectively. Spot exchange rate is USD 1.50/GBP. Swap notional principal is GBP 3 million.

Example

America, Inc. (AI) has USD50 milion of 2-year debt at a floating rate of 6-month LIBOR (USD) + 125 bps. AI wants fixed-rate Australian dollar debt to fund its operations in Australia. Citigroup agrees to pay AI's floating-rate dollar debt in exchange for a fixed-rate Australian dollar payment from AI.

Expert Systems (ES), a software developer based in Australia, ahs AUD75 million of 2-year fixed-rate debt with a 7.68% percent. ES wants floating-rate dollar debt to fund its operations in the United States. Citigroup agrees to pay ES's fixed-rate Australian dollar debt in exchange for floating-rate dollar payments.

Suppose the spot exchange rate is AUD 1.50/USD.
Notional principal is AUD 150 million.

Fixed-for-Floating Currency Swaps
Pricing schedule for a AUD/USD currency coupon swap

Maturity	Bid (AUD)	Ask (AUD)
2 years	6.07% sa	6.17% sa
3 years	6.33% sa	6.43% sa
4 years	6.47% sa	6.57% sa
5 years	6.63% sa	6.73% sa

All quotes against 6-month dollar LIBOR (USD) flat

Forecasted LIBOR are:

	Time 0	**Time 0.5**	**Time 1.0**	**Time 1.5**	**Time 2.0**
USD	3.25 percent	3.50 percent	3.75 percent	3.45 percent	3.60 percent
AUD	5.75 percent	6.10 percent	6.35 percent	6.55 percent	7.10 percent

	Receive from	Pay to	Net

	Receive from	Pay to	Net