

## Chapter 8 Currency Swaps & Swaps Markets

- 8.1 **Parallel Loans:** Necessity is the Mother of Invention
- 8.2 Pros and Cons of Parallel Loans
- 8.3 **Swaps** to the Rescue
- 8.4 Swaps as Portfolios of Forward Contracts
- 8.5 **Currency Swaps**
- 8.6 **Interest Rate Swaps**
- 8.7 Other Types of Swaps
- 8.8 Hedging the Swap Bank's Financial Risk Exposure
- 8.9 The Benefits of Swaps to the MNC
- 8.10 Summary

Kirt C. Butler, *Multinational Finance*, South-Western College Publishing, 3e

## Motivation for a currency swap

- A small UK firm wants to convert **floating-rate £ debt** into **fixed-rate \$ debt** to offset its revenues from US sales
- The UK firm's alternatives include
  - A **direct issue** in US dollars
  - A **parallel loan** that trades floating-rate £ debt for the fixed-rate \$ debt of a U.S. company

Kirt C. Butler, *Multinational Finance*, South-Western College Publishing, 3e

## Parallel loans provided access to new capital markets

- **Parallel loan:** Borrow in your local currency and then trade for the debt of a foreign counterparty
- Provided access to new capital markets
  - Legally circumvented taxes on cross-border currency transactions
  - Provided foreign-source financing for foreign subsidiaries
  - May lower the firm's cost of capital

Kirt C. Butler, *Multinational Finance*, South-Western College Publishing, 3e

## Problems with parallel loans

- The foreign counterparty may have default risk
- Parallel loans must be capitalized on the balance sheet
- Search costs can be high

Kirt C. Butler, *Multinational Finance*, South-Western College Publishing, 3e

## The swap contract

- **Solution:** Package the parallel loans into a single legal agreement called the **swap contract**
  - Reduced the default risk of parallel loans via the **rights of set-off**
  - Swaps need not be capitalized on the balance sheet
  - High swap volume led to low costs

Kirt C. Butler, *Multinational Finance*, South-Western College Publishing, 3e

## Currency swaps... "I'll pay yours if you pay mine"

- **Currency Swap**
  - An agreement to exchange a principal amount of two currencies and, after a pre-arranged length of time, re-exchange the original principal
  - Interest payments are also usually swapped during the life of the contract

Kirt C. Butler, *Multinational Finance*, South-Western College Publishing, 3e

## Interest rate swaps

### > Interest rate swap

- Same as a currency swap, but in a single currency
- A difference check is paid during the life of the swap
- The notional principal is not usually swapped

## 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

## Example of a currency coupon swap

### > General Motors (U.S.)

- GM has 2-year, fixed-rate dollar debt priced at 6.62% compounded semiannually (sa)
- GM wants floating-rate pound sterling debt

### > British Petroleum (U.K.)

- BP has 2-year, floating-rate pound debt with semiannual payments priced at LIBOR+40 bps
- BP wants fixed-rate dollar debt

## Currency coupon swaps

General Motors' interest obligations



British Petroleum's interest obligations



## Pricing schedule for a \$/£ currency coupon swap

<u>Maturity</u>	<u>Bid (\$)</u>	<u>Ask (\$)</u>
2 years	6.07%	6.07%
3 years	6.41%	6.51%
4 years	6.54%	6.64%
5 years	6.59%	6.69%

All quotes are semiannual actual/365 against 6-month LIBOR (£) flat

## GM's swap cash flows

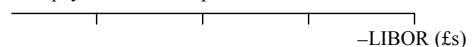
GM's underlying obligation



Swap bank pays GM fixed-rate dollars



GM pays £s to the swap bank at LIBOR flat



### GM's net cost of funds

- > GM pays **6.62%** and receives **6.07%** in fixed rate dollar debt for a spread of **55 bp** (sa)
- > GM pays **LIBOR** to the swap bank in pounds sterling
- > GM's net cost of funds is the pound sterling **LIBOR plus 55 bp** (sa) in **bond equivalent yield**

### Day count conventions

- > Adjusting for day count conventions
  - Bond equivalent yields (BEY) are Actual/365
  - Money market yields (MMY) are Actual/360

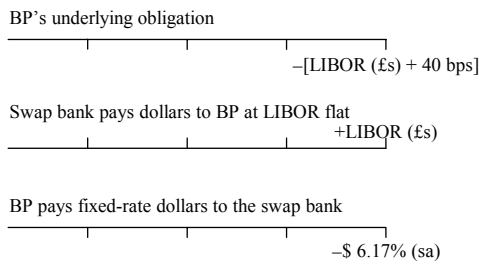
$$\text{MMY} = \text{BEY} (360/365)$$

- > GM's net cost is LIBOR plus 55 bps in bond equivalent yield

$$\text{MMY} = (55\text{bp})(360/365) = 54.25\text{bp}$$

GM's net cost is LIBOR plus 54.25 bps in money market yield

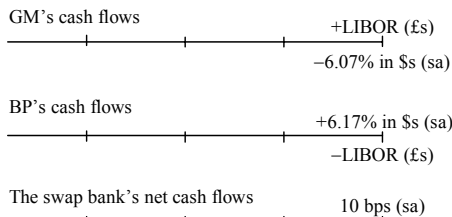
### BP's swap cash flows



### BP's net cost of funds

- > BP pays **LIBOR + 40 bps** and receives **LIBOR** on its pound sterling floating rate notes for a spread of **40 basis points**
- > BP pays **6.17%** to the swap bank in U.S. dollars
- > BP's net cost of funds is **6.17%** (sa) plus **40 bps** in money market yield, or **≈ 6.5756%** in **bond equivalent yield**

### The swap bank's cash flows



### Commodity swaps

- > **Commodity swaps** are traded against a variety of commodity prices including

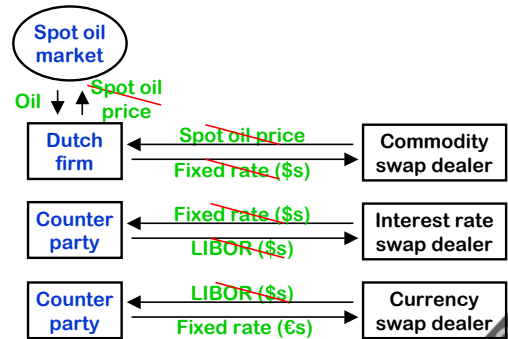
- Oil
- Gold
- Pork belly prices

- > Most commodity swaps are fixed-for-floating swaps based upon spot prices

### An oil-for-euro swap

- A Dutch chemicals manufacturer uses 500,000 barrels of oil every 3 months
- The manufacturer has contracted to sell its output at a fixed euro (€) price for 5 years and wants to fix its input costs in euros as well

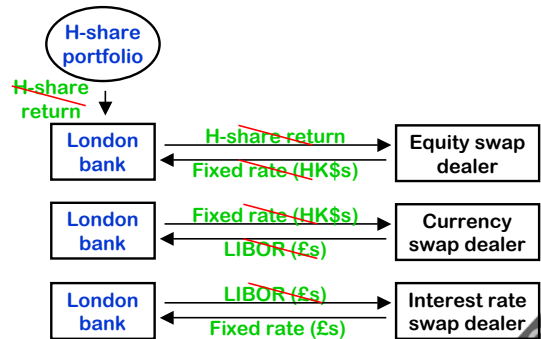
### An oil price swap



### A debt-for-equity swap

- A London bank holds a volatile portfolio of **H-shares** that is highly correlated with the *Hang Seng China Enterprises* index
- The bank decides it would rather hold fixed-rate pound sterling debt
- Combine the following three swaps to achieve the desired result:
  - A fixed-for-floating £ **interest rate swap**
  - A pound-for-HK\$ **currency swap**
  - An **equity swap** for fixed-rate HK\$ debt

### Swapping H-shares for £ debt



### Swaptions

- A swaption is a swap with one or more options attached
  - Interest rate ceilings or floors
  - Exchange rate caps
  - Multiple options (e.g. cylinder options)
- The option component of a swaption is on the underlying fixed-rate bond and is priced accordingly