

# Swaps & CDS

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# Nature of Swaps

A swap is an agreement to exchange cash flows at specified future times according to certain specified rules

# An Example of a “Plain Vanilla” Interest Rate Swap

- An agreement by Microsoft to receive 6-month LIBOR & pay a fixed rate of 5% per annum every 6 months for 3 years on a notional principal of \$100 million
- Next slide illustrates cash flows that could occur (Day count conventions are not considered)

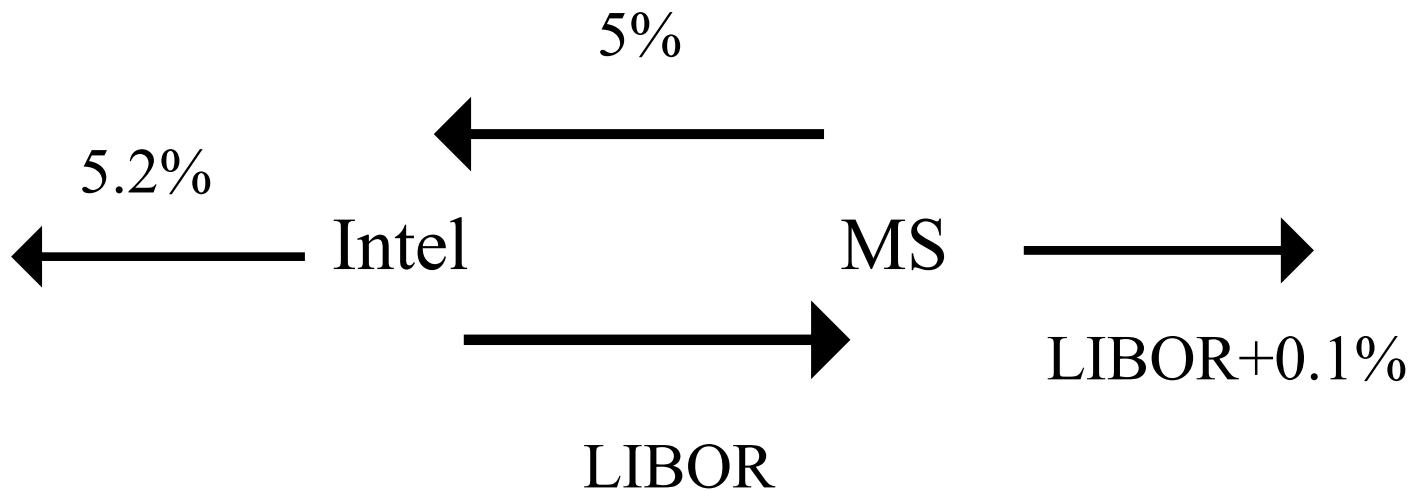
# One Possible Outcome for Cash Flows to Microsoft

Date	LIBOR	Floating Cash Flow	Fixed Cash Flow	Net Cash Flow
Mar 5, 2012	4.20%			
Sep 5, 2012	4.80%	+2.10	-2.50	-0.40
Mar 5, 2013	5.30%	+2.40	-2.50	-0.10
Sep 5, 2013	5.50%	+2.65	-2.50	+ 0.15
Mar 5, 2014	5.60%	+2.75	-2.50	+0.25
Sep 5, 2014	5.90%	+2.80	-2.50	+0.30
Mar 5, 2015		+2.95	-2.50	+0.45

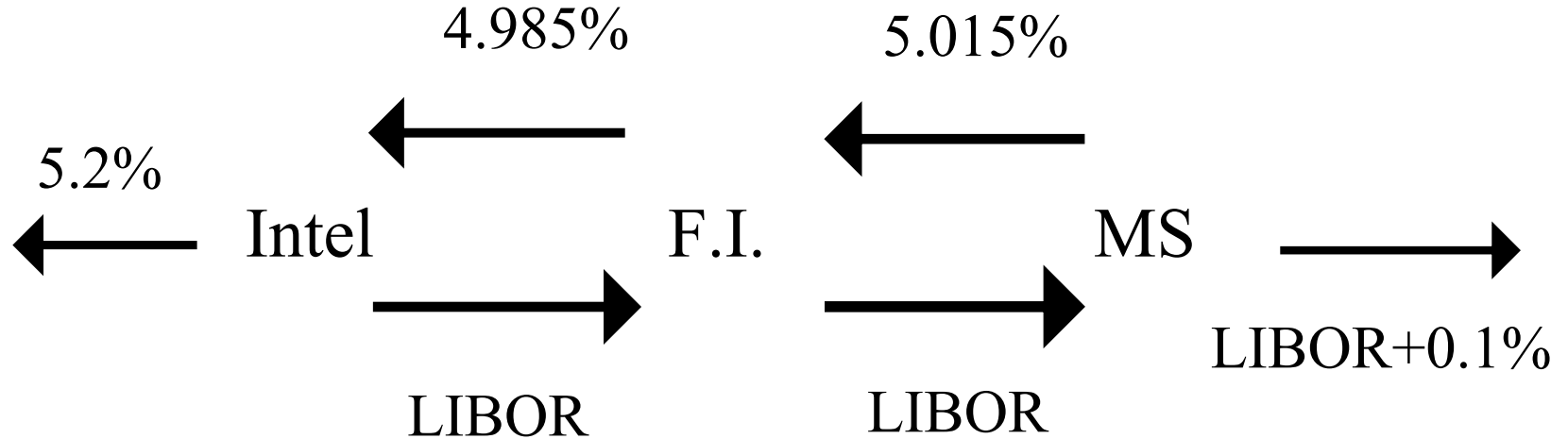
# Typical Uses of an Interest Rate Swap

- Converting a liability from
  - fixed rate to floating rate
  - floating rate to fixed rate
- Converting an investment from
  - fixed rate to floating rate
  - floating rate to fixed rate

# Intel and Microsoft (MS) Transform a Liability

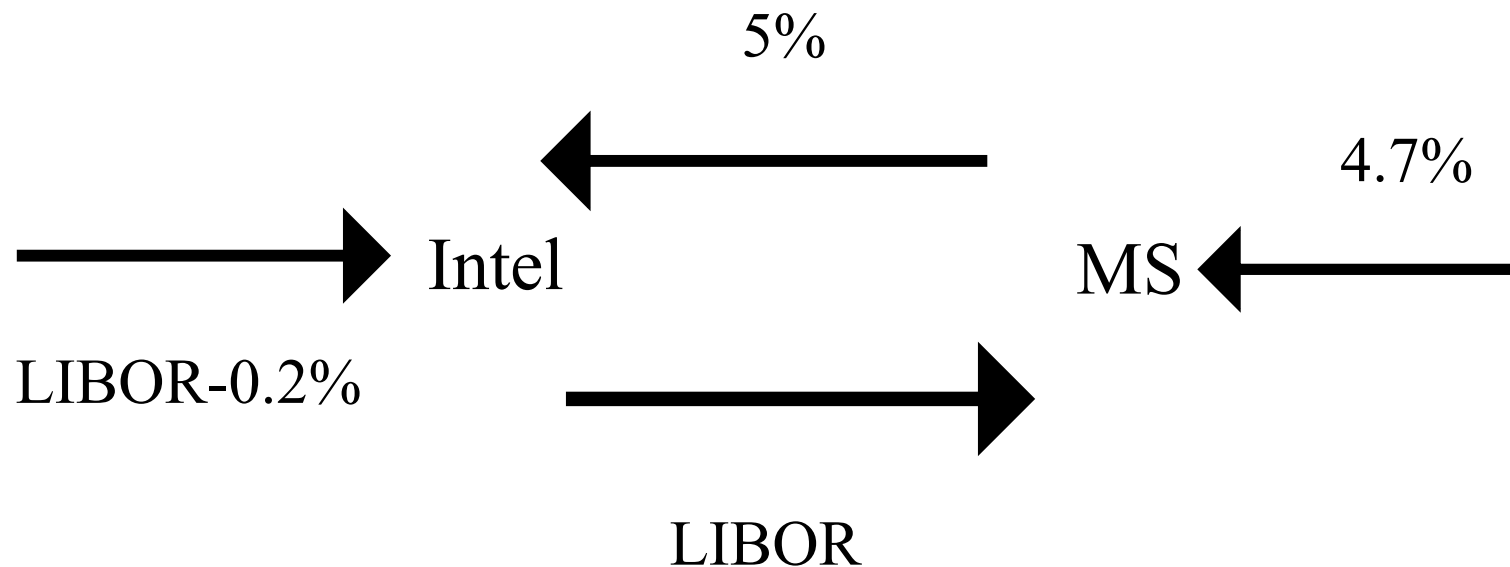


# Financial Institution is Involved



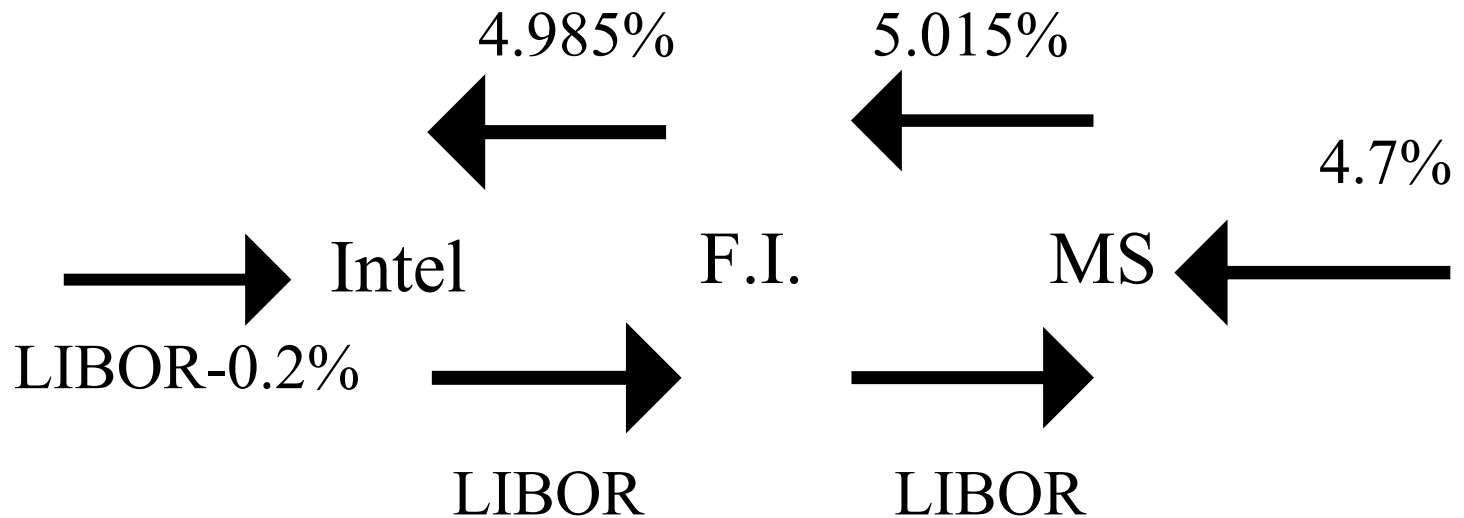
Financial Institution has two offsetting swaps

# Intel and Microsoft (MS) Transform an Asset





# Financial Institution is Involved



# Day Count

- A day count convention is specified for fixed and floating payment
- For example, LIBOR is likely to be actual/360 in the US because LIBOR is a money market rate

# Confirmations

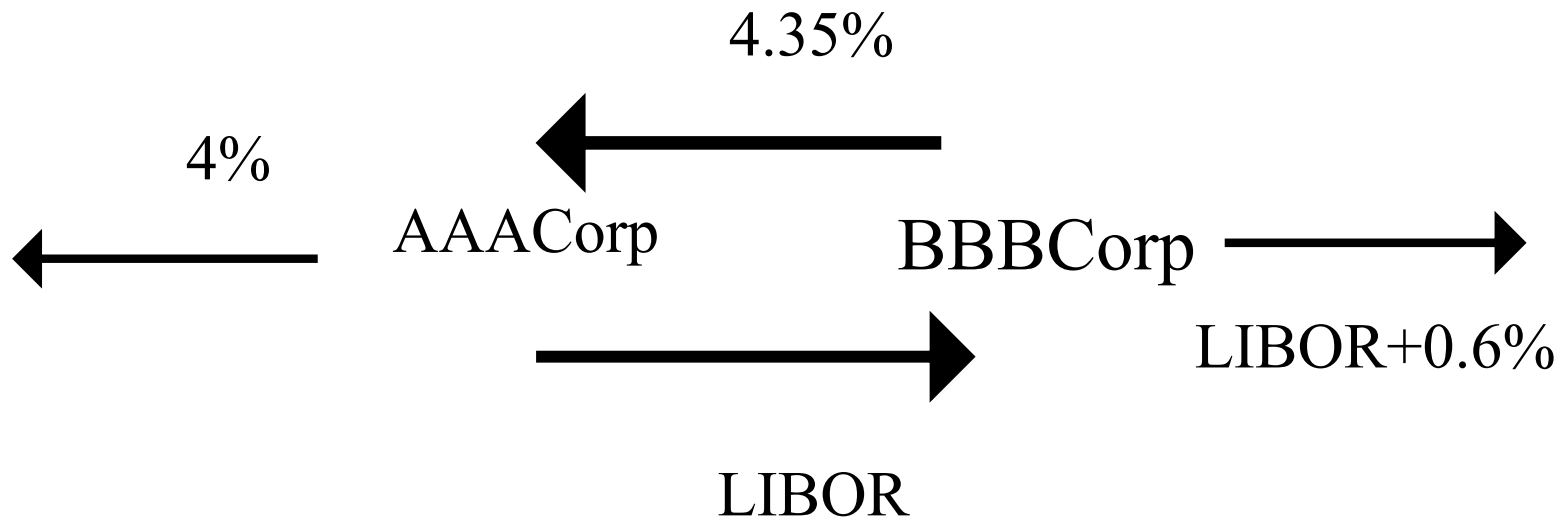
- Confirmations specify the terms of a transaction
- The International Swaps and Derivatives has developed Master Agreements that can be used to cover all agreements between two counterparties
- Governments now require central clearing to be used for most standardized derivatives

# The Comparative Advantage Argument

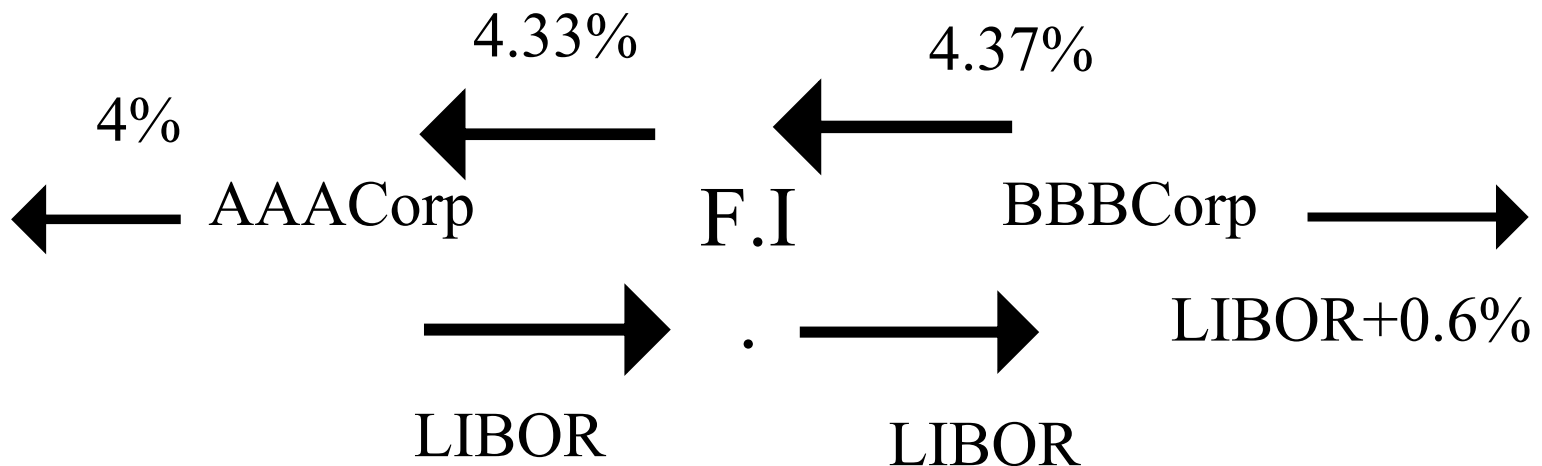
- AAACorp wants to borrow floating
- BBBCorp wants to borrow fixed

	Fixed	Floating
AAACorp	4.0%	6 month LIBOR – 0.1%
BBBCorp	5.2%	6 month LIBOR + 0.6%

# The Swap



# The Swap when a Financial Institution is Involved



# The Nature of Swap Rates

- Six-month LIBOR is a short-term AA borrowing rate
- The 5-year swap rate has a risk corresponding to the situation where 10 six-month loans are made to AA borrowers at LIBOR
- This is because the lender can enter into a swap where income from the LIBOR loans is exchanged for the 5-year swap rate

# An Example of a Currency Swap

An agreement to pay 5% on a sterling principal of £10,000,000 & receive 6% on a US\$ principal of \$18,000,000 every year for 5 years



# Exchange of Principal

- In an interest rate swap the principal is not exchanged
- In a currency swap the principal is usually exchanged at the beginning and the end of the swap's life

# The Cash Flows

Date	Dollar Cash Flows (millions)	Sterling cash flow (millions)
Feb 1, 2011	-18.0	+10.0
Feb 1, 2012	+1.08	-0.50
Feb 1, 2012	+1.08	-0.50
Feb 1, 2014	+1.08	-0.50
Feb 1, 2015	+1.08	-0.50
Feb 1, 2016	+19.08	-10.50

# Typical Uses of a Currency Swap

- Convert a liability in one currency to a liability in another currency
- Convert an investment in one currency to an investment in another currency

# Other Types of Swaps

Floating-for-floating interest rate swaps, amortizing swaps, step up swaps, forward swaps, constant maturity swaps, compounding swaps, LIBOR-in-arrears swaps, accrual swaps, diff swaps, cross currency interest rate swaps, equity swaps, extendable swaps, puttable swaps, swaptions, commodity swaps, volatility swaps.....

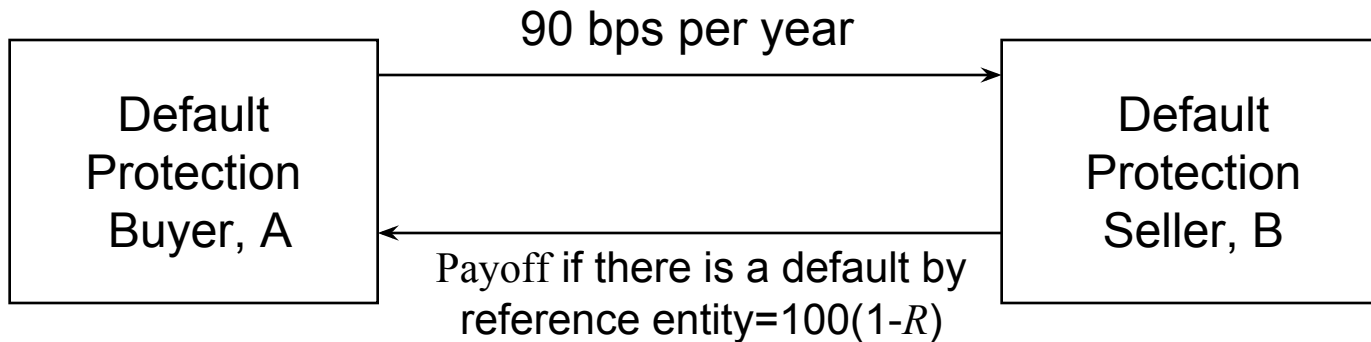
# Credit Risk

- A swap is worth zero to a company initially
- At a future time its value is liable to be either positive or negative
- The company has credit risk exposure only when its value is positive
- Some swaps are more likely to lead to credit risk exposure than others

# Credit Default Swaps

- Buyer of the instrument acquires protection from the seller against a default by a particular company or country (the reference entity)
- Example: Buyer pays a premium of 90 bps per year for \$100 million of 5-year protection against company X
- Premium is known as the *credit default spread*. It is paid for life of contract or until default
- If there is a default, the buyer has the right to sell bonds with a face value of \$100 million issued by company X for \$100 million (Several bonds are typically deliverable)

# CDS Structure



Recovery rate,  $R$ , is the ratio of the value of the bond issued by reference entity immediately after default to the face value of the bond

# Other Details

- Payments are usually made quarterly in arrears
- In the event of default there is a final accrual payment by the buyer
- Settlement can be specified as delivery of the bonds or (more usually) in cash
- An auction process usually determines the payoff

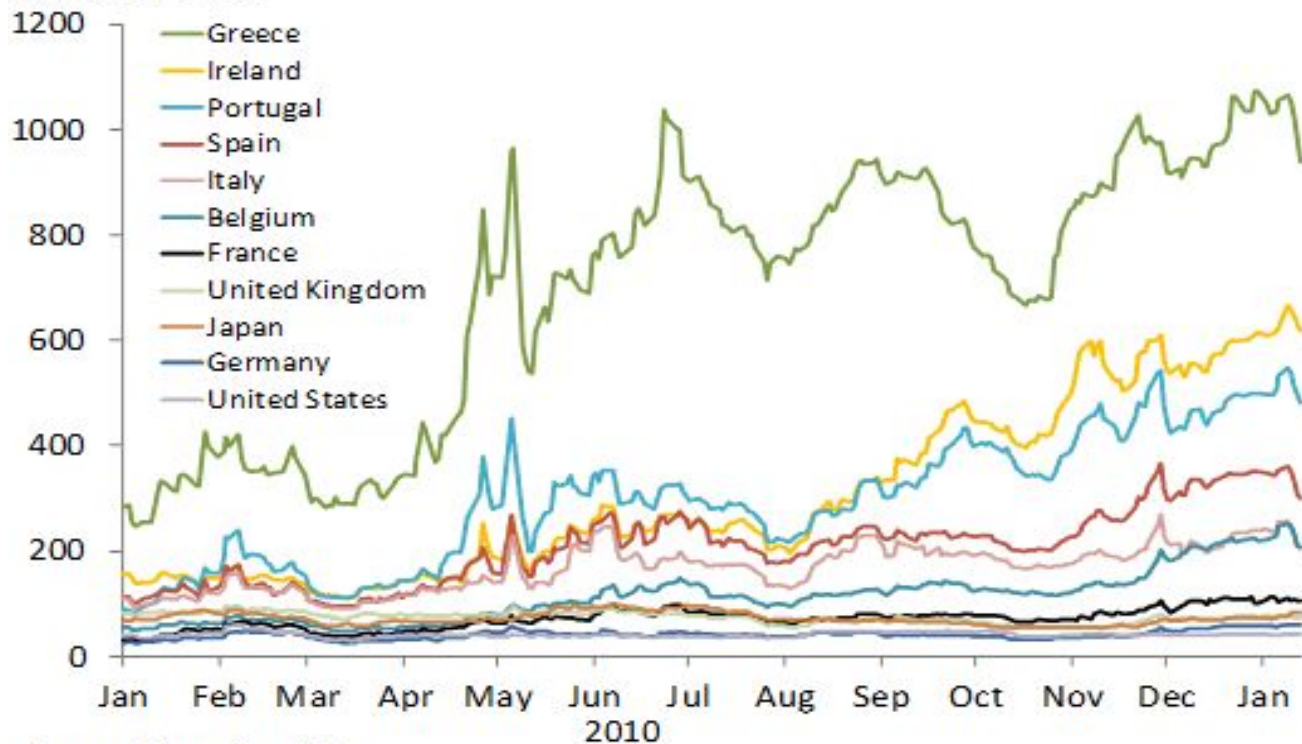


# Attractions of the CDS Market

- Allows credit risks to be traded in the same way as market risks
- Can be used to transfer credit risks to a third party
- Can be used to diversify credit risks

**Figure 1. Sovereign Credit Default Swap Spreads**

*(In basis points)*



Source: Bloomberg L.P.