

Interest-Rate Swap: Intro (1)

Borrowing alternatives:

	<u>Brooklyn Inc.</u>	<u>Cayce Ltd.</u>
Fixed	10.00%	11.50%
Floating	LIBOR + 1.00%	LIBOR + 1.50%

Korth

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Interest-Rate Swap: Intro (2)

Quality spread:

	<u>Brooklyn</u>	<u>Cayce Ltd.</u>	<u>Quality Spread</u>
Fixed	10.00%	11.50%	1.50%
Floating	LIBOR+1.00%	LIBOR+1.50%	0.50%

Korth

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Interest-Rate Swap: Intro (3)

- **Where the quality-spread is *greater* is that borrower's *comparative advantage*.**
- **Brooklyn: Fixed rate [1.50% quality spread vs. 0.50%]**

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Interest-Rate Swap: Intro (4)

- Where the quality-spread is *lesser* is the other borrower's comparative advantage.
 - Cayce: Floating rate [0.50% vs. 1.50%]

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Interest-Rate Swap: Intro (5)

- If either borrower prefers to borrow in its comparative borrowing advantage, no IRS is possible.

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Interest-Rate Swap: Intro (6)

- It is the job of the *swap bank* to find 2 borrowers neither of whom wants to borrow in their comparative advantage.
 - That is, each prefers to fund in its comparative *dis*-advantage.

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Interest-Rate Swap: Intro (7)

- For an IRS to work therefore:
 - Brooklyn will borrow ___ at ___ %.
 - Cayce will borrow ___ at ___ %.

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Interest-Rate Swap: Intro (8)

- However, in actuality:
 - Brooklyn, *after the swap*, wants to end up paying ___ and
 - Cayce wants to end up paying ___.

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Interest-Rate Swap: Intro (9)

- They will borrow what they don't want & swap for what they actually do want.
- The reason: Because they will end up borrowing at a lower interest rate than they could obtain any other way.

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Interest-Rate Swap: Intro (10)

- How much will be saved?
 - How much *less* will Brooklyn be paying *fixed* than Cayce would have paid?
 - How much *more* will Cayce be paying *floating* than Brooklyn would have paid?

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Interest-Rate Swap: Intro (11)

- How much will the swap save?
 - Brooklyn's savings
 - (Minus) Cayce's loss
 - = *Quality-spread differential*

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Interest-Rate Swap: Intro (12)

- Summation:
 - Brooklyn's quality spread: +1.50%
 - Cayce's quality spread: (0.50%)
 - QSD: $1.50\% - 0.50\% = 1.00\%$
 - *QSD is the total benefit to be shared.*

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Interest-Rate Swap: Intro (13)

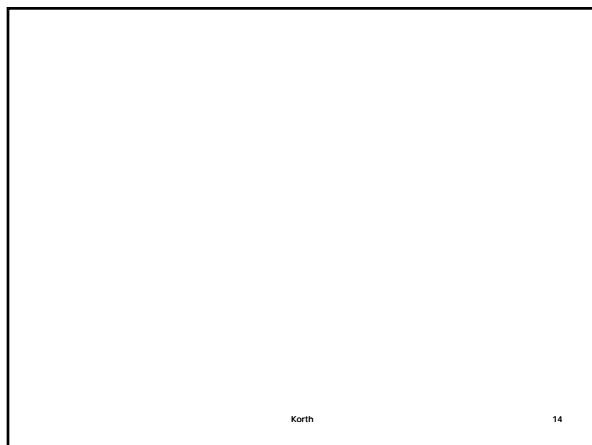
- If we assume that the QSD is shared equally (i.e., they each receive half), what will each end up paying after the swap in their preferred form of financing?

- Brooklyn _____?

- Cayce _____?

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Interest-Rate Swap

- Exchange of interest-rate obligations of *different formats*

- At least one format must be floating.

- Usually fixed vs. floating

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Interest-Rate Swap (2)

- Only became possible when floating interest rates came into existence
 - The 1st IRS was created in 1981.

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Interest-Rate Swap (3)

- Only the interest payments are swapped—not the loans.
 - *Each borrower remains responsible to pay its own loan—both principal and interest.*

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Comparative Advantage

- Where a business is comparatively better off *relative to* the other
- Each company has a different comparative advantage, either a:
 - Greater absolute advantage (or)
 - Lesser absolute *dis*-advantage

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Comparative Advantage (2)

- Each company borrows in what is its comparative *advantage* and agrees to swap it.
 - If it actually wants that format, there can be no IRS.
 - Each must want its comparative *dis-advantage*.

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Interest-Rate Swap: *Benefit*

- Each borrows in an interest-rate format which it does not want (its comparative advantage),
- Based on the swap bank's guarantee that it will be able to swap into the format that it actually does want,
- And reduce its funding cost in the process.

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Swap Bank (1)

- An IRS is usually arranged by a *commercial bank*—called the *swap bank*.
- For its services, the swap bank receives part of the savings from the swap as its fee.

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Swap Bank (2)

- Brings the two borrowers together
- Structures the swap
- *Guarantees* each borrower against loss of their funds
 - *Escrow account*

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Interest-Rate Swap: *Review* (1)

- Remember: The savings from the swap results from
 - *Each borrowing* in the interest format of its own comparative *advantage--*
 - Although it needs to end up in the opposite format (via the swap).

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Interest-Rate Swap: *Review*

- A swap cannot be altered or terminated early without the agreement of both borrowers.

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IRS (Step 1) *Identify the Loans*

1-a. Find the comparative advantages

- Based on the *quality spread*

1-b. Does each borrower *prefer* to the interest-rate format that is its comparative *dis*-advantage?

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Finding the Comparative Advantages

	<u>Morgan</u>	<u>Stanley</u>	<u>Quality Spread</u>
Float	LIBOR + .20%	LIBOR + .90%	0.70%
Fixed	9.00%	10.70%	1.70%

- Morgan: Greater absolute advantage [1.70%]
- Stanley: Lower absolute disadvantage [0.70%]

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Comparative *Disadvantages*

- Does each prefer to actually fund in its comparative *dis*-advantage?
- Is each willing to borrow what it does not want—its comparative advantage?

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Quality-Spread Differential

2-a. Calculate the quality-spread differential (QSD)

- = the total amount of IRS savings
 - $1.70\% - 0.70\% = 1.00\%$

2-b. Decide how to share the QSD

- Example: equal share—*0.50% each*

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Step 2: Net Final Funding Costs

- Starting with *preferred* form of borrowing (i.e., the *dis-advantage*)
- Subtract each company's share of the QSD.

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Step 2: Net Final Funding Costs

2-c. Calculate *NFFC* of each borrower

	Morgan	Stanley
• Preference	LIBOR + .20%	10.70%
• - QSD share	<u>(0.50%)</u>	<u>(0.50%)</u>
• = NFFC	LIBOR - .30%	10.20%

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IRS (Step 3): *The Swap*

3-a. Whichever party borrowed *fixed* from the bank pays (i.e., *swaps*) LIBOR to the other.

- *Morgan pays LIBOR to Stanley*
 - *LIBOR only (not LIBOR plus)*

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IRS (Step 3): *The Swap*

3-b. Whichever party borrowed *floating* from the bank pays (i.e., *swaps*) fixed to the other.

- *Stanley pays fixed to Morgan*
- **Whatever fixed rate is needed—it must be calculated**

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The Interest-Rate Swap

	<u>Morgan</u>		<u>Stanley</u>
1. Loans	(9.00%)		(LIBOR + .90%)

3. The swap			
• 3-a	(LIBOR)	→→→	LIBOR
• 3-b	9.30%	←←←	(9.30%)
2. NFFC	(L + .20% - .50%)		(10.70% - .50%)
	= (LIBOR - .30%)		= (10.20%)

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IRS: Summary Questions

- Who has what comparative advantages?
- Who wants to borrow fixed / floating?
- What is the QSD & how will it be shared?
- What are the NFFCs?
- Who pays the fixed / floating swap?

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Blank box for notes.

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Currency Swap

- The exchange of debt & debt service in one currency for similar debt denominated in another currency
- Very different from an IRS—with a currency swap, *both principal and interest-payment obligations are swapped.*

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Currency Swap (2)

- The currency swap locks in an exchange rate for the life of the agreement.
- The currency into which a company swaps is usually one in which it expects a future cash flow (e.g., borrowing dollars and swapping into euros to finance its French operations).

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Currency Swap (3)

- As with an IRS, each company borrows in a currency in which it has a *comparative advantage*.
 - Home currency
 - Novelty of debt issue
 - Government regulations

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Currency Swap (4)

- As with an IRS, each company actually wants to be exposed in a currency in which it has a comparative dis-advantage.

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Currency Swap (5)

- Most currency swaps involve a commercial bank as one of the counterparties.
- Only available to companies with very good credit ratings
 - Or a guarantee

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Currency Swap (6)

- The default risk is generally minimized by the use of an *escrow account*.

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Currency Swap (7)

- Attractions of currency swaps
 - To borrow in a FC at a lower cost than would be possible w/o the swap
 - And / or to hedge long-term FX risk

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