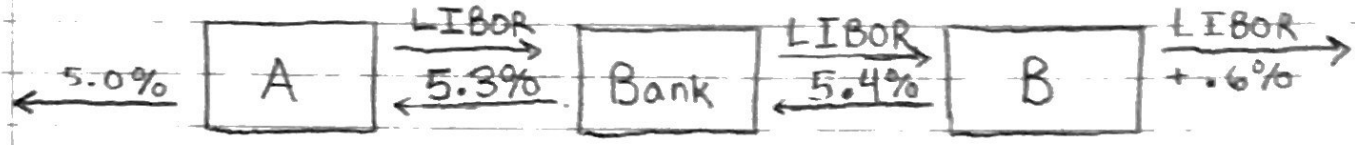
Jacob Wyngaard

MA 528 HW 4

7.1 Total Profit - Δfixed - Δfloating = .90%
Bank gets .1%
Each Company benefits .40%



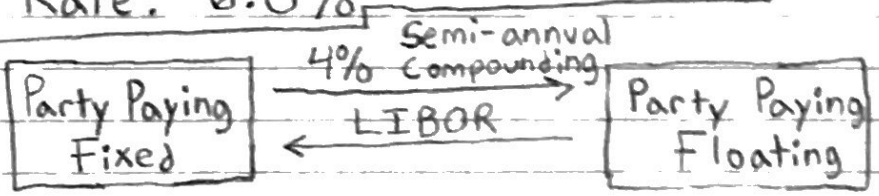
Company A
- Pays 5.0%
- Pays LIBOR to bank
- Receives 5.3% from bank

Net Rate: LIBOR - .3%

Company B
- Pays LIBOR + .6%
- Pays 5.4% to bank
- Receives LIBOR from bank

Net Rate: 6.0%

7.2



Six Month LIBOR forward rates are 3% (semi-annual compounding) for all maturities

Six Month LIBOR was 2.4% per annum two months ago. OIS rates for all maturities are 2.7% w/ continuous compounding.

What is the value of the swap to both parties?

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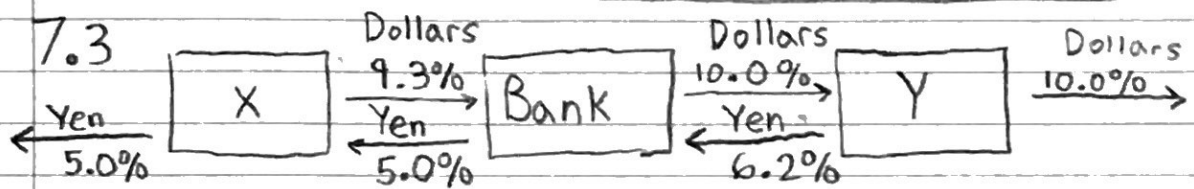
Months from Now	Party Paying Floating pays	Party Paying Fixed pays
4	\$1.2 million	\$2.0 million
10	\$1.5 million	\$2.0 million

Party Paying Floating values the swap at $.8e^{-.027\cdot\frac{13}{3}} + .5e^{-.027\cdot\frac{5}{6}} = \$1.2817$ million.

Therefore, the Party Paying Fixed values the swap at $-\$1.2817$ million.

7.3



Company X
- Borrows Yen at 5.0%
- Lends Yen to Bank at 5.0%
- Borrows Dollars from Bank at 9.3%

Company Y
- Borrows Dollars at 10.0%
- Lends Dollars to Bank at 10.0%
- Borrows Yen from Bank at 6.2%

Total Gain = 1.1%

Company X borrows Dollars at

Company Y borrows Yen at

Each gains .3%

Bank gains .5% per annum

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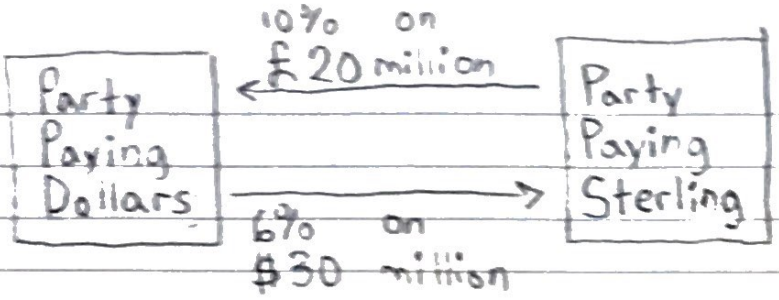
7.5



U.K. risk free rate: .07
U.S. risk free rate: .04
(both annual compounding)

Now: 1 £ = $1.55

Party Paying Dollars:
Pays $1.8 million in 3 months
Receives £2 million in 3 months
Pays $1.8 million in 15 months
Receives £2 million in 15 months

Party Paying Stirling
Pays £2 million in 3 months
Receives $1.8 million in 3 months
Pays £2 million in 15 months
Receives $1.8 million in 15 months

Party Paying Sterling values the swap at
at $1.8(1.04)^{-1/4} - 1.55 \cdot 2(1.07)^{-1/4} + 1.8(1.04)^{-5/4} - 1.55 \cdot 2(1.07)^{-5/4}$
$+ 30(1.04)^{-5/4} - 1.55 \cdot 20(1.07)^{5/4}$ or -$2.321 million

Party Paying Dollars values the swap at $2.321 million

Jacob
Wyngaard

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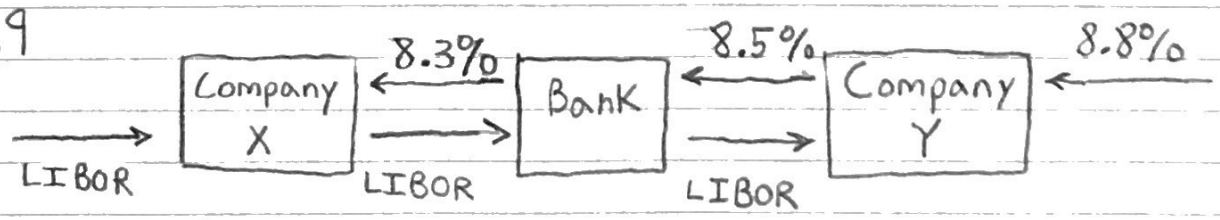
7.7 If the company's credit drops, then it will not be able to borrow at LIBOR + 1.5%, but instead LIBOR + x%, with $x > 1.5$. Thus, the borrowing rate will increase from 5.2 to $3.7 + x$, $x > 1.5$.

7.8 The bank is exposed to risk that the counterparty will be unable to pay LIBOR to the bank (because LIBOR is so high) and default. With an upward sloping yield curve, this risk is greater as LIBOR is expected to increase with time so that the bank loses money at first but expects to gain money towards the end of the contract. With a downward sloping yield curve, the bank gains money at the start of the contract, so a counterparty default later on is less damaging.

7.9



Company X
- Receives LIBOR
- Pays LIBOR to Bank
- Receives 8.3% from Bank

Company Y
- Receives 8.8%
- Pays 8.5% to Bank
- Receives LIBOR from Bank

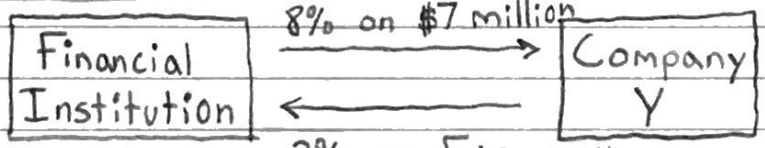
7.10

Time (t)	Net Income of Financial Institution	Time Discounted Net Income
3	$(.02-.015)\,10^7$	50000
3.5	$(.02-.01)\,10^7$	99104
4	$(.02-.01)\,10^7$	98216
4.5	$(.02-.01)\,10^7$	97336
5	$(.02-.01)\,10^7$	96464

Discount Factor: $e^{-.018\cdot(t-3)}$

Cost of Default: $441,120

7.11



Financial Institution

Year	Pays	Pays Dicounted	Receives	Receives Discounted
6	$.56 million	$.56 million	₣.3 million	₣.3 million
~~6.5~~	~~illegible~~	~~illegible~~	~~illegible~~	~~illegible~~
7	$.56 million	$.519 million	₣.3 million	₣.291 million
~~7.5~~	~~illegible~~	~~illegible~~	~~illegible~~	~~illegible~~
8	$.56 million	$.480 million	₣.3 million	₣.283 million
~~8.5~~	~~illegible~~	~~illegible~~	~~illegible~~	~~illegible~~
9	$.56 million	$.445 million	₣.3 million	₣.275 million
~~9.5~~	~~illegible~~	~~illegible~~	~~illegible~~	~~illegible~~
10	$7.56 million	$5.557 million	₣10.3 million	₣9.151 million

At the end of year 6:
- Swiss Franc risk free rate is .03 (annually compounded)
- Dollar risk free rate is .08 (annually compounded)
- ₣1 = $.8

The cost to the financial institution is $ .68 million