INTEREST RATE RISK: SWAPS

1. **Explain the similarity between a swap and a forward contract.**

A forward contract requires delivery or taking delivery of some commodity or financial security at a specified time in the future at a price specified at the time of origination. In a swap, each party promises to deliver and/or receive a pre-specified series of payments at specific intervals over a specified time horizon. In this way, a swap can be considered to be the same as a series of forward contracts.

2. **An insurance company owns $50 million of floating-rate bonds yielding LIBOR plus 1 percent. These loans are financed with $50 million of fixed-rate guaranteed investment contracts (GICs) costing 10 percent. A bank has $50 million of auto loans with a fixed rate of 14 percent. The loans are financed with $50 million of CDs at a variable rate of LIBOR plus 4 percent.**

   a. **What is the risk exposure of the insurance company?**

The insurance company (IC) is exposed to falling interest rates on the asset side of the balance sheet.

   b. **What is the risk exposure of the bank?**

The bank is exposed to rising interest rates on the liability side of the balance sheet.

   c. **What would be the cash flow goals of each company if they were to enter into a swap arrangement?**

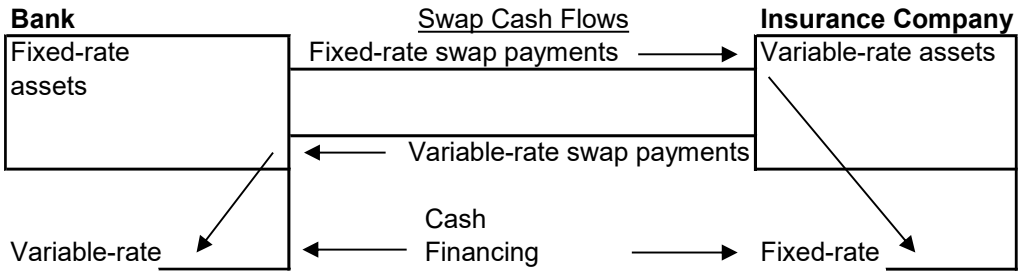
The IC wishes to convert the fixed-rate liabilities into variable-rate liabilities by swapping the fixed-rate payments for variable-rate payments. The bank wishes to convert variable-rate liabilities into fixed-rate liabilities by swapping the variable-rate payments for fixed-rate payments.

   d. **Which FI would be the buyer and which FI would be the seller in the swap?**

The bank will make fixed-rate payments and therefore is the buyer in the swap. The IC will make variable-rate payments and therefore is the seller in the swap.

e. **Diagram the direction of the relevant cash flows for the swap arrangement.**

Please see the diagram at the top of the next page. Note that the fixed-rate swap payments from the bank to the insurance company will offset the payments on the fixed-rate liabilities that the insurance company has incurred. The reverse situation occurs regarding the variable-rate swap payments from the insurance company to the bank. Depending on the rates negotiated and the maturities of the assets and liabilities, both FIs now have durations much closer to zero on this portion of their respective balance sheets.



f. **What are reasonable cash flow amounts, or relative interest rates, for each of the payment streams?**

Determining a set of reasonable interest rates involves an analysis of the benefits to each FI. That is, does each FI pay lower interest rates with the swap than contractually obligated without the swap? Clearly, the direction of the cash flows will help reduce interest rate risk.

One feasible swap is for the IC to pay the bank LIBOR + 2.5 percent, and for the bank to pay the IC 12 percent. The net financing cost for each firm is given below.

	Bank	Insurance Company
Cash market liability rate	LIBOR + 4%	10.0%
Minus swap rate	-(LIBOR + 2.5%)	-12.0%
Plus swap rate	+ 12%	+(LIBOR + 2.5%)
Net financing cost (rate)	13.5%	LIBOR + 0.5%

Whether the two firms would negotiate these rates depends on the relative negotiating power of each firm, and the alternative rates for each firm in the alternate markets. That is, the fixed-rate liability market for the bank and the variable-rate liability market for the insurance company.