1. Standby letters of credit are classified as
A. on-balance-sheet assets.
B. off-balance-sheet assets.
**C.** off-balance-sheet liabilities.
D. on-balance-sheet liabilities.

2. Loan loss reserves are classified as
A. on-balance-sheet assets.
B. off-balance-sheet assets.
C. off-balance-sheet liabilities.
**D.** equity capital.

3. When a bank pre-commits to lending at a fixed rate, it is exposed to
A. credit risk.
**B.** interest rate risk.
C. takedown risk.
D. funding risk.

4. Back-end fees on loan commitments are charged as a certain percentage of
A. commitment size.
B. loan taken down.
C. utilized portion of commitment size.
**D.** unused portion of commitment size.

5. The quantity risk exposure of a loan commitment is
A. credit risk.
B. interest rate risk.
**C.** takedown risk.
D. funding risk.

6. An exporter demands a letter of credit in order to
A. guarantee safe delivery of goods to the importer.
**B.** guarantee receipt of payment from the importer upon receipt of the goods.
C. protect against adverse changes in foreign exchange rates.
D. protect against adverse changes in international interest rates.

7. Which of the following is a primitive form of asset securitization?
A. Loan sales.
B. Pass-through security.
C. Collateralized mortgage obligation.
D. Mortgage-backed bond.

8. Off-balance-sheet items are
A. items omitted from the short form balance sheet.
**B.** contingent assets and liabilities.
C. risk-free assets and liabilities.
D. exceptionally risky assets and liabilities.

9. Which of the following is true about the value of the delta of an option?
A. It lies between 0 and 0.5.
B. It is always negative.
**C.** It lies between 0 and 1.
D. It is greater than 1.

10. If an option's price increases 1.4 percent for every 2 percent change in the price of the underlying security, what is the value of the option's delta?
A. 0.60.
B. 1.40.
**C.** 0.70.
D. 2.00.

$\Delta = (\Delta O/\Delta S) = (0.014/0.02) = 0.7$.

11. A $200 million loan commitment has an up-front fee of 20 basis points and a back-end fee of 25 basis points on the unused portion.

The up-front fee is
A. $250,000.
B. $4,000,000.
**C.** $400,000.
D. $775,000.

Up-front fee = Loan size $\times$ fee in basis points = $\$200,000,000 \times 0.0020 = \$400,000$.

12. A $200 million loan commitment has an up-front fee of 20 basis points and a back-end fee of 25 basis points on the unused portion.

If 25 percent of the commitment is taken down, the total fees are
A. $250,000.
B. $4,000,000.
C. $400,000.
**D.** $775,000.

Total Fees = up-front fee + back-end fee
TF = ($\$200,000,000 \times 0.0020$) + [$200,000,000 \times (1 - 0.25) \times 0.0025$] = $400,000 + $375,000 = $775,000
Note: back-end fee is on the *unused* portion of the commitment.

**Calculate Questions**

13. A FI has issued a one-year loan commitment of $2 million for an up-front fee of 25 basis points. The back-end fee on the unused portion of the commitment is 10 basis points. The FI's base rate on loans is 7.5 percent and loans to this customer carry a risk premium of 2.5 percent. The FI requires a compensating balance on loans of 5 percent in the form of demand deposits. Reserve requirements on demand deposits are 8 percent. The customer is expected to draw down 80 percent of the commitment at the beginning of the year.

    a. What is the expected return on the loan without taking future values into consideration?

Using the formula: $1 + k = 1 + \frac{f_1 + f_2(1 - td) + (BR + \Phi)td}{td - [b(td)(1 - RR)]}$

$1 + k = 1 + [(0.0025) + (0.0010)(1 - 0.80) + (0.075 + 0.025)(0.80)]/\{0.80 - [0.05(0.80)(1 - 0.08)]\}$

$1 + k = 1.10836$, or $k = 10.836$ percent.

Alternatively, using dollar values:

| | | | |
|---|---|---|---|
| Up-front fees | = 0.0025 x $2,000,000 | = | $ 5,000 |
| Interest income | = 0.10 x $2,000,000(.80) | = | 160,000 |
| Back-end fee | = 0.0010 x $$2,000,000(1 - .80) | = | 400 |
| Total | | = | $165,400 |

Funds committed = $2,000,000(0.80) - $80,000 (compensating balances = $2,000,000 x 0.80 x 0.05) + $6,400 (reserve requirements on demand deposits = $80,000 x 0.08) = $1,526,400.

Expected rate of return = $165,400/$1,526,400 = 10.836%

    b. What is the expected return using future values? That is, the net fee and interest income are evaluated at the end of the year when the loan is due?

Using the formula:

$1+k = 1 + [(0.0025(1 + 0.06) + 0.0010(1 - 0.80) + (0.075 + 0.025)(0.80)]/\{0.80 - [0.05(0.80)(1 - 0.08)]\}$ => $1+k = 1.108556$, or $k = 10.8556$ percent.

Using dollar values, the only difference is that the up-front fee is estimated at year-end, i.e., $5,000 x 1.06 = $5,300. Thus, expected return = $165,700/$1,526,400 = 10.8556%.

    c. How is the expected return in part (b) affected if the reserve requirements on demand deposits are zero?

Using the formula:

$1 + k = 1 + [(0.0025(1 + 0.06) + 0.0010(1 - 0.80) + (0.075 + 0.025)(0.80)]/ \{0.80 - [0.05(0.80)(1 – 0)]\} \Rightarrow 1 + k = 1.1090$, or $k = 10.90$ percent.

Using dollar values, the amount of funds committed is reduced by the amount set for reserves, i.e., $6,400. Thus, expected return = $165,700/$1,520,000 = 10.90%.

d. How is the expected return in part (b) affected if compensating balances are paid a nominal interest rate of 1.5 percent?

Using the formula:

$1+k = 1+[(0.0025(1 + 0.06) + 0.0010(1 - 0.80) + (0.075 + 0.025)(0.80) - 0.05(0.015)(0.80)]/[0.80 - 0.05(0.80)(1 - 0.08)] \Rightarrow 1 + k = 1.107770$, or $k = 10.7770$ percent.

Using dollar values, we need to subtract additional payments of interest on reserve requirements from the total fees and interest earned, i.e., 0.015 x $80,000 = $1,200.

Expected return = $164,500/1,526,400 = 10.7770%

e. What is the expected return using future values, but with the compensating balance placed in certificates of deposit that have an interest rate of 2.0 percent and no reserve requirements, rather than in demand deposits?

Using the formula:

$1 + k = 1 + [(0.0025(1 + 0.06) + 0.0010(1 - 0.80) + (0.075 + 0.025)(0.80) – 0.05)(0.020)(0.80)]/ \{0.80 - [0.05(0.80)(1 – 0)]\} \Rightarrow 1 + k = 1.107961$, or $k = 10.7961$ percent.

Using dollar values, in this case the compensating balance is placed in certificates of deposits paying 2.0 percent and with no compensating balance requirement Thus, revenue in part (b) above is reduced by $80,000 x 0.020 = $1,600, and the expected return is $164,100/$1,520,000 = 10.7961 percent.

14. Consider a GNMA mortgage pool with principal of $20 million. The maturity is 30 years with a monthly mortgage payment of 10 percent per year. Assume no prepayments.

a. What is the monthly mortgage payment (100 percent amortizing) on the pool of mortgages?

The monthly mortgage payment, PMT, is (the monthly interest rate is 0.10/ 12 = 0.00833):

$$\$20m = PVA_{n=360,\ k=0.8333} \times (PMT) \Rightarrow PMT = \$175,514.31$$

b. If the GNMA insurance fee is 6 basis points and the servicing fee is 44 basis points, what is the yield on the GNMA pass-through?

The GNMA's annual interest rate is 0.10 - 0.0044 - 0.0006 = 9.5 percent. The monthly interest rate is 0.095/12 = 0.0079167 or 0.79167 percent.

c. What is the monthly payment on the GNMA in part (b)?

The monthly GNMA payment, PMT, is: \$20m = $PVA_{n=360,\ k=0.79167\%}$ x PMT => PMT = \$168,170.84

d. Calculate the first monthly servicing fee paid to the originating FIs.

The first monthly servicing fee, SF, is (the monthly fee rate is 0.44%/12 = 0.0367%):

*SF* = (0.000367)\$20m = \$7,333.

e. Calculate the first monthly insurance fee paid to GNMA.

The first monthly insurance payment, IP, is (monthly insurance rate is 0.06%/12 = 0.005%):

IP = (0.00005)\$20m = \$1,000