## Solutions for End-of-Chapter Questions and Problems: Chapter Fourteen

1. What risks are incurred in making loans to borrowers based in foreign countries? Explain.

When making loans to borrowers in foreign countries, two risks need to be considered. First, the credit risk of the project needs to be examined to determine the ability of the borrower to repay the money. This analysis is based strictly on the economic viability of the project and is similar in all countries. Second, unlike domestic loans, creditors are exposed to sovereign risk. Sovereign risk is defined as the uncertainty associated with the likelihood that the host government may not make foreign exchange available to the borrowing firm to fulfill its payment obligations. Thus, even though the borrowing firm has the resources to repay, it may not be able to do so because of actions beyond its control. Thus, creditors need to account for sovereign risk in their decision process when choosing to invest abroad.

2. What is the difference between debt rescheduling and debt repudiation?

Debt repudiation refers to a situation of outright default where the borrower refuses to make any further payments of interest and principal. In contrast, debt rescheduling refers to temporary postponement of payments during which time new terms and conditions are agreed upon between the borrower and lenders. In most cases, these new terms are structured to make it easier for the borrower to repay.

3. Identify and explain at least four reasons that rescheduling debt in the form of loans is easier than rescheduling debt in the form of bonds.

The reasons that it is easier to reschedule debt in the form of bank loans than bonds include:

a) Loans usually are made by a small group (syndicate) of FIs as opposed to bonds that are held by individuals and institutions that are geographically dispersed. Even though bondholders usually appoint trustees to look after their interests, it has proven to be much more difficult to approve renegotiation agreements with bondholders in contrast to FI syndicates.

b) The group of FIs that dominate lending in international markets is limited and hence able to form a cohesive group. This enables them to act in a unified manner against potential defaults by countries.

c) Many international loans contain cross-default clauses, which make the cost of default very expensive to borrowers. Defaulting on a loan would trigger default clauses on all loans with such clauses, preventing borrowers from selectively defaulting on a few loans.

d) In the case of post-war loans, governments were reluctant to allow banks to fail. This meant that they would also be actively involved in the rescheduling process by either directly providing subsidies to prevent repudiations or providing incentives to international agencies like the IMF and World Bank to provide other forms of grants and aid.

4. What three country risk assessment models are available to investors? How is each model compiled?

The Euromoney Country Risk (ECR) index rates sovereign risk of over 180 countries based on the opinions of a global network of economists and policy analysts. The index is based on a large number of economic and political factors including a country’s economic characteristics, political characteristics, structural characteristics, access to capital and credit ratings, and debt indicators. ECR scores are scaled from 0 to 100 (0 = maximum risk, 100 = no risk) and are put into one of five Tiers that are updated quarterly.

The Economist Intelligence Unit (EIU) combines economic and political risk to achieve a risk rating of a country. The measure is based on a 100 point scale with ratings of smaller risk being lower values.

The Institutional Investor Index is based on surveys of the loan officers of major multinational FIs who subjectively give estimates of the credit quality of given countries. The scores range from 0 for certain default to 100 for no probability of default.

5. What types of variables normally are used in a CRA Z‑score model? Define the following ratios and explain how each is interpreted in assessing the probability of rescheduling.

The models typically use micro- and macroeconomic variables that are considered important in explaining the probability of a country’s credit rescheduling.

a. Debt service ratio. The debt service ratio (DSR) divides interest plus amortization on debt by exports. Because interest and debt payments normally are paid in hard currencies generated by exports, a larger ratio is interpreted as a positive signal of a pending debt rescheduling possibility.

b. Import ratio. The import ratio (IR) divides total imports by total foreign exchange reserves. A growing amount of imports relative to FX reserves indicates a greater probability of credit restructuring. Thus, this ratio is positively related to debt rescheduling.

c. Investment ratio. The investment ratio (INVR) measures the investment in real or productive assets relative to gross national product. A larger investment ratio is considered a signal that the country will be less likely to require rescheduling in the future because of increased productivity; thus the relationship is negative. However, because the bargaining position of the country will be enhanced, some observers feel that the relationship is positive. That is, a stronger ratio gives the country more power to request, even demand, rescheduling to achieve even better terms on its debt.

d. Variance of export revenue. Export revenues are subject to both quantity and price risk due to demand and supply factors in the international markets. Increased variance is interpreted as a positive signal that rescheduling will occur because of the decreased certainty that debt payments will be made on schedule.

e. Domestic money supply growth. Rapid domestic money supply growth indicates an increase in inflationary pressures that typically means a decrease in the value of the currency in international markets. Thus, real output often is negatively impacted, and the probability of rescheduling increases.

6. An FI manager has calculated the following values and weights to assess the credit risk and likelihood of having to reschedule a loan. From the Z-score calculated using these weights and values, is the manager likely to approve the loan? Validation tests of the Z-score model indicated that scores below 0.500 were likely to be nonreschedulers, while scores above 0.700 indicated a likelihood of rescheduling. Scores between 0.500 and 0.700 do not predict well.

**Country**

**Variable Value Weight**

DSR 1.25 0.05

IR 1.60 0.10

INVR 0.60 0.35

VAREX 0.15 0.35

MG 0.02 0.15

Z = 0.05DSR + 0.10IR + 0.35INVR + 0.35VAREX + 0.15MG

= 0.05(1.25) + 0.10(1.60) + 0.35(0.60) + 0.35(0.15) + 0.15(0.02)

= 0.488

This score classifies the borrower as a probable nonrescheduler.

7. Countries A and B have exports of $2 billion and $6 billion, respectively. The total interest and amortization on foreign loans for both countries are $1 billion and $2 billion, respectively.

a. What is the debt service ratio (DSR) for each country?

DSR =

DSRA = $1b/$2b = 0.50 DSRB = $2b/$6b = 0.33

b. Based only on this ratio, to which country should lenders charge a higher risk

premium?

Based on the above information, lenders should charge a higher risk premium on loans to Country A because it has more interest and amortization payments due as a percentage of total exports.

c. What are the shortcomings of using only these ratios to determine your answer in part (b)?

This is a very static model and such a preliminary conclusion could be misleading. It is also necessary to consider other factors which may be more favorable for Country A. Looking forward, it is also possible that Country A may be at its developing stage where imports and loans are needed to increase future exports. Historically, most of the industrialized countries were net importers of capital during their developing stages. Without a comprehensive analysis of the fundamentals, it is not possible to judge the quality of the borrower.

8. How do price and quantity risks affect the variability of a country’s export revenue?

Quantity risk refers to the variability in the amount of a commodity produced. This is most likely to be found in agricultural products subject to favorable and unfavorable weather conditions. Price risk refers to the variability in the commodity price due to changes in market conditions, e.g., competitors’ supply changes or consumer demand changes.

9. Explain the following relation:

*p* = *f* (*IR, INVR*)

+, + or -

p = Probability of rescheduling

IR = Total imports/Total foreign exchange reserves

INVR = Real investment/GNP

This relation states that the probability of a country’s rescheduling of its foreign debt is a positive function of IR, but it may be positively or negatively related to *INVR*:

*IR* = Total imports/Total FX reserves. If imports as a percentage of FX reserves increase, it leaves less foreign exchange for payments of debt. As a result, there is a higher likelihood that the country may have to reschedule its debt.

*INVR* = Real investment/GNP. If a country has higher savings and higher investments, it should lead to higher growth, reducing the likelihood of rescheduling. This supports the negative sign of the relationship. On the other hand, it is possible that the higher growth puts the country in a stronger bargaining position with its lenders and, consequently, it may be less intimidated by the threat of default. This may make the likelihood of rescheduling higher, suggesting a positive relationship between *p* and *INVR*.

10. What shortcomings are introduced by using traditional CRA models and techniques? In each case, what adjustments are made in the estimation techniques to compensate for the problems?

The following six items often are listed as problems in using these statistical models.

First, measuring the variables accurately and in a timely manner often is difficult because of data accessibility. These errors are further impacted by normal forecast errors that occur with the use of statistical models.

Second, the choice of rescheduling or not rescheduling often is not a dichotomous situation. In effect, many other payment alternatives may be available through negotiation. Further, the reasons for nonpayment should be evaluated when classifying risk.

Third, political risk factors are extremely difficult to quantify. One attempt to quantify political risk is the Index of Economic Freedom that includes measures of various activities that are considered to be related to the lack of government constraint or restriction. The index has a value of 0 to 100, with 1 indicating the most economic freedom. An alternative measure is the Corruption Perceptions Index which provides a similar measure, although the scale ranges from 0 to 10 and is reversed.

Fourth, the portfolio effects of lending to more than one country are not considered. Thus, the true amount of systematic risk added to the portfolio may be less than estimated by evaluating the rescheduling probability of countries independently. If an economic variable has a small systematic risk component relative to the unsystematic portion, the variable may be considered of little importance since its impact can be diversified away.

Fifth, statistical models are ill-prepared or designed to evaluate the incentives of both the borrowers and the lenders to negotiate a rescheduling of the debt. Borrowers benefit by lowering the present value of future payments at the expense of reducing the openness of the market to future borrowing as well as withstanding potentially adverse effects on trade. Lenders benefit by avoiding a possible default, collecting additional fees, and perhaps realizing tax benefits. Lenders, however, may also be subject to greater scrutiny by regulatory authorities and may have permanent changes in the maturity structure of their asset portfolios.

Finally, many of the key variables suffer from the problem of stability. That is, predictive performance in the past may not be a good indicator of predictive performance in the future. This implies that CRA models continuously must be updated.

11. What is systematic risk in terms of sovereign risk? Which of the variables often used in statistical models tend to have high systematic risk? Which variables tend to have low systematic risk?

Systematic risk refers to the risk effects that cannot be diversified away by lending to more than one country. In effect, some international economic situations will affect the economies of less developed countries in a similar manner. Economic research indicates that the DSR and the VAREX both have high systematic risk elements. Money supply growth and the import ratio seem to have low systematic risk elements.

12. The average σ2ER (or VAREX = variance of export revenue) of a group of countries has been estimated at 20 percent. The individual VAREXes of two countries in the group, the Netherlands and Singapore, have been estimated at 15 percent and 28 percent, respectively. The regression of individual country VAREX on average VAREX provides the following beta (coefficient) estimates:

βH = Beta of the Netherlands = 0.80

βS = Beta of Singapore = 0.20.

a. Based only on the VAREX estimates, which country should be charged a higher risk premium? Explain.

Based on the VAREX measure alone, risk premiums should be lower for loans made to the Netherlands because its VAREX is lower than Singapore’s. VAREX measures the volatility of the export revenues and is one measure of the ability of countries to repay foreign debt.

b. If FIs include systematic risk in their estimation of risk premiums, how would your conclusions to part (a) be affected? Explain.

Since the systematic beta of Singapore is lower than that of the Netherlands, it will reduce the overall systematic risk of an FI’s portfolio of foreign loans. In this case, it benefits the FI to add Singapore to its list of countries because its unsystematic risk can be diversified away. Thus, if the industrialized countries, including the Netherlands, are experiencing a recession and a decline in export revenues, Singapore’s exports are likely to be unaffected as evidenced by the low beta. This implies that the debt repayments between these two countries are not highly correlated, helping to reduce the FI’s total risk.

13. What are the benefits and costs of rescheduling to the following?

a. A borrower.

Benefits and costs to the borrower: (a) Rescheduling could reduce the borrower’s immediate payments and increase imports for the present. It could also reduce the borrower’s overall payments, depending on the rescheduling agreements. (b) Rescheduling could result in either no loans being approved in the future or the imposition of more stringent requirements. It could also result in higher premiums on other trade instruments, such as letters of credit.

b. A lender.

Benefits and costs to the lenders: (a) Rescheduling improves the likelihood that the lender will receive full payment of its interest and principal as opposed to an outright default. (b) The restructured loan, on a present value basis, may be higher than the existing present value of the loan. (c) There may be tax advantages to writing off some portions of the loan, so the present value of the complete package may be higher than the current present value of the loan. (d) FIs may be stuck holding loans that are of longer maturity with higher risk. e) Rescheduled loans may be a burden on the lender’s remaining assets, and markets may penalize the lender for holding on to loans that are hard to dispose of.

14. Who are the primary sellers of LDC and EM debt? Who are the buyers? Why are FIs often both sellers and buyers of LDC and EM debt in the secondary markets?

The primary sellers of LDC and EM debt include large FIs who are willing to accept write-downs of loans and small FIs who no longer wish to be involved with the LDC and EM market. Buyers tend to be wealthy investors, hedge funds, FIs, and corporations who wish to use debt-for-equity swaps to further investment goals. FIs that are both buyers and sellers often do so to readjust their balance sheets to meet corporate goals.

15. Identify and describe the three market segments of the secondary market for LDC

And EM debt.

Sovereign bonds constitute government issued debt. Sovereign issuance has historically been primarily issued in foreign currencies external debt, either U.S. dollars or euros. LDC and EM sovereign debt tends to have lower credit ratings than other sovereign debt because of the increased economic and political risks. Where most developed countries are either AAA or AA-rated, most LDC and EM issuance is rated below investment grade, though a few countries that have seen significant improvements have been upgraded to BBB or A ratings, and a handful of lower income countries have reached ratings levels equivalent to more profligate developed countries. Accordingly, sovereign bonds require higher interest spreads. Under the [doctrine](http://www.businessdictionary.com/definition/doctrine.html) of [sovereign immunity](http://www.businessdictionary.com/definition/sovereign-immunity.html), the repayment of sovereign [debt](http://www.investorwords.com/1313/debt.html) cannot be forced by the [creditors](http://www.businessdictionary.com/definition/creditor.html) and it is thus [subject to](http://www.businessdictionary.com/definition/subject-to.html) [compulsory](http://www.investorwords.com/1017/compulsory.html) rescheduling, [interest rate](http://www.businessdictionary.com/definition/interest-rate.html) [reduction](http://www.businessdictionary.com/definition/reduction.html), or even [repudiation](http://www.businessdictionary.com/definition/repudiation.html). The only [protection](http://www.businessdictionary.com/definition/protection.html) available to the creditors is [threat](http://www.businessdictionary.com/definition/threat.html) of the [loss](http://www.businessdictionary.com/definition/capital-gain-loss-holding-period.html) of credibility and lowering of the [international](http://www.investorwords.com/2567/international.html) [standing](http://www.investorwords.com/7216/standing.html) (the [sovereign debt rating](http://www.businessdictionary.com/definition/sovereign-debt-rating.html) of the [country](http://www.businessdictionary.com/definition/country.html) which may make it much more difficult to [borrow](http://www.investorwords.com/552/borrow.html) in the future.

Performing loans are the original or restructured sovereign loans on which the originating country continues to remain current in the payment of interest and principal.

Nonperforming loans are traded in the secondary markets at deep discounts because of nonpayment situations.

The following questions and problems are based on material presented in Appendix 14A.

16. What are the risks to an investing company participating in a debt-for-equity swap?

Debt-for-equity swap investors often face long periods before they can repatriate dividends, often have large withholding tax restrictions, have the long-term problem of potential expropriation or nationalization of assets, and face significant foreign exchange currency risk.

17. Chase Bank holds a $200 million loan to Argentina. The loans are being traded at bid-offer prices of 91-93 per 100 in the London secondary market.

a. If Chase has an opportunity to sell this loan to an investment bank at a 7 percent discount, what are the savings after taxes compared with the revenue from selling the loan in the secondary market? Assume the tax rate is 40 percent.

The price that Chase could obtain from the investment bank is $200m(1 – 0.07) = $186m. The tax loss benefit is $14m x 0.40 = $5.6m, for a net price of $186m + $5.6m = $191.60m.

In the secondary market, Chase would have had to sell the loans at 91cents on the dollar or $182 million. The tax loss benefit is $18m x 0.40 = $7.2m for a net price of $189.20. Therefore, the savings from selling the loans to the investment bank as opposed to the secondary market is $191.60m - $189.20m = $2.4 million.

b. The investment bank in turn sells the debt at a 6 percent discount to a real estate company planning to build apartment complexes in Argentina. What is the profit after taxes to the investment bank?

The investment bank purchased the loan for $186 million, and it sells the loan for $188 million ($200m(1 – 0.06) = $188m). Thus, profit before taxes is $188m - $186m = $2 million and profit after taxes is $2m(1 - 0.40) = $1.20 million.

c. The real estate company converts this loan into pesos under a debt-for-equity swap organized by the Argentinian government. The official rate for dollar to peso conversion is P1.05/$1. The free market rate is P1.10/$1. How much did the real estate company save by investing in Argentina through the debt-for-equity swap program as opposed to directly investing $200 million using the free market rates?

If the real estate company had invested directly, it would have received $200m x 1.10 = 220 million pesos. By purchasing through the debt-for-equity swap, the company pays $188 million and receives $200m x 1.05 = 210 million pesos, for an equivalent rate of 210m/188m = P1.117/$. Thus, it still saves by purchasing through the debt-for-equity swap (P1.117/$ > P1.10/$).

d. How much would Chase benefit from doing a local currency debt-for-equity swap itself? Why does the bank not do this swap?

Assuming the bank could convert the loan at $200 million in to pesos at P1.05/$, receiving $200m x 1.05 = 210 million pesos. The actual benefit was $191.6 million. Thus, the bank would gain $8.4 million.

Chase is not allowed to participate in real equity purchases in other countries by Federal Reserve Regulation K, nor is it allowed to engage in commerce in other countries. Further, a long-term pesos-denominated position on the balance sheet may create more credit, liquidity, and foreign exchange risk than the benefits are worth.

18. Zlick Company plans to invest $20 million in Chile to expand its subsidiary’s manufacturing output. Zlick has two options. It can convert the $20 million at the current exchange rate of 410 pesos to a dollar (i.e., P410/$1), or it can engage in a debt-for-equity swap with its bank, City Bank, by purchasing Chilean debt and then swapping that debt into Chilean equity investments.

a. If City Bank quotes bid-offer prices of 94-96 for Chilean loans, what is the bank expecting to receive from Zlick Corporation (ignore taxes)? Why would City Bank want to dispose of this loan?

City Bank expects to receive 96 cents to the dollar since it is selling this loan, i.e. 0.96 x 20m = $19.20 million. It may wish to sell this loan to reduce its portfolio of troubled or bad quality assets. As U.S. banks experienced problems with several of their foreign loans, their choices were limited to either writing off the loans or disposing of them. The development of an active secondary market has made it easier for FIs to sell them at a discount and rearrange their composition of loans.

b. If Zlick decides to purchase the debt from City Bank and convert it to equity, it will have to exchange it at the official rate of P400/$1. Is this option better than investing directly in Chile at the free market rate of P410/$1?

If exchanged at market rates: $20m x P410 = P8,200 million, for an effective rate of P410/$. If exchanged through a debt-for-equity swap: $20m x P400 = P8,000 million, for an effective price of P8,000m/$19.20m = P416.67/$. Therefore, Zlick should choose the debt-for-equity swap option.

c. What official exchange rate will cause Zlick to be indifferent between the two

options?

For the options to be equal, the effective price must be:

($20m x X)/$19.20m = P410 => X = (P410 x $19.20m)/$20m = P393.60/$

The Chilean government could reduce the official rate to as low as P393.60/$ and the two options will still be equal. This is because the discount obtained from the secondary market is substantial.

19. What is concessionality in the process of rescheduling a loan?

Concessionality refers to the net cost to the FI in restructuring a loan. The amount of concessionality is determined by subtracting the present value of the restructured loan from the present value of the original loan.

20. Which variables typically are negotiation points in a multiyear restructuring agreement (MYRA)? How do changes in these variables provide benefits to the borrower and to the lender?

The five common elements typically found in the MYRA negotiation include:

(a) A fee charged by the FI to cover the cost of the restructuring.

(b) The interest rate on the loan is usually lowered to allow easier repayment of the loan by the borrowing country.

(c) A grace period may be created to allow the country to build a reserve of hard currency from which it can repay the loan.

(d) The maturity of the loan normally is lengthened. This process reduces the periodic payment stream for the borrower country.

(e) Various option and guarantee features may allow the lender to choose the currency for repayment and/or to provide protection in the case of default.

21. How would the restructuring, such as rescheduling, of sovereign bonds affect the interest rate risk of the bonds? Is it possible that such restructuring would cause the FI’s cost of capital to not change? Explain.

To the extent that the bonds have longer maturities and lower interest rates, the duration of these bonds will increase. Thus, the interest rate risk will increase. While it is possible that the FI’s cost of capital will not change, an FI with a significant portion of its assets in LDC or EM debt that has been restructured will likely find an adverse adjustment in its cost of capital.

22. A bank is in the process of renegotiating a sovereign loan. The principal outstanding is $50 million and is to be paid back in two installments of $25 million each, plus interest of 8 percent. The new terms will stretch the loan out to five years with only interest payments of 6 percent, no principal payments, for the first three years. The principal will be paid in the last two years in payments of $25 million along with the interest. The cost of funds for the bank is 6 percent for both the old loan and the renegotiated loan. An up-front fee of 1 percent is to be included for the renegotiated loan.

a. What is the present value of the existing loan for the bank?

The present value of the loan prior to rescheduling is:

Payment in Year 1: Principal + Interest = $25m + 0.08 x $50m = $29m

Payment in Year 2: Principal + Interest = $25m + 0.08 x $25m = $27m

PV = PVn=1, k=6 ($29m) + PVn=2, k=6 ($27m) = $51.3884 million

b. What is the present value of the rescheduled loan for the bank?

Interest payments in years 1, 2 and 3: 0.06 x $50 = $3m

Payment in Year 4: Principal + Interest = $25m + 0.06 x $50m = $28m

Payment in Year 5: Principal + Interest = $25m + 0.06 x $25m = $26.5m

PV = PVAn=3, k=6 ($3m) + PVn=4, k=6 ($28m) + PVn=5, k=6 ($26.5m) = $50 million

Up-front fee = 0.01 x $50m = $0.50 million

PV (total) = $50.50 million

c. Is the concessionality positive or negative for the bank?

Concessionality = PV*o*- PV*R* = PV of old loan - PV of rescheduled loan

= $51.3884m - $50.50m = $0.884 million

23. A bank is in the process of renegotiating a three-year nonamortizing loan. The principal outstanding is $20 million, and the interest rate is 8 percent. The new terms will extend the loan to 10 years at a new interest rate of 6 percent. The cost of funds for the bank is 7 percent for both the old loan and the renegotiated loan. An up-front fee of 50 basis points is to be included for the renegotiated loan.

a. What is the present value of the existing loan for the bank?

PV of old loan = PVAn=3,k=7%($1.6m) + PVn=3,k=7%($20m) = $20.5249 million

b. What is the present value of the rescheduled loan for the bank?

PV of new loan = PVAn=10,k=7%($1.2m) + PVn=10,k=7%($20m) + up-front fee of $0.10m

= $18.5953 million + $0.10 million = $18.6953 million

c. What is the concessionality for the bank?

Concessionality = $20.5249m - $18.6953m = $1.8296 million

d. What should be the up-front fee to make the concessionality zero?

Concessionality = $20.5249m - $18.5953m - x = 0 ⇒ x = $1.9296 million or 9.65 percent.

24. A $20 million loan outstanding to the Nigerian government is currently in arrears with City Bank. After extensive negotiations, City Bank agrees to reduce the interest rates from 10 percent to 6 percent and to lengthen the maturity of the loan to 10 years from the present 5 years remaining to maturity. The principal of the loan is to be paid at maturity. There will no grace period and the first interest payment is expected at the end of the year.

a. If the cost of funds is 5 percent for the bank, what is the present value of the loan prior to the rescheduling?

Interest payments in years 1 - 5: 0.10 x $20m = $2m

PV = PVAn=5,k=5($2m) + PVn=5,k=5($20m) = $24.3295 million

b. What is the present value of the rescheduled loan to the bank?

Interest payments in years 1 - 10: 0.06 x $20m = $1.2m

PV = PVAn=10,k=5($1.2m) + PVn=10,k=5($20m) = $21.5443 million

c. What is the concessionality of the rescheduled loan if the cost of funds remains at 5 percent and an up-front fee of 5 percent is charged?

Up-front fee = 0.05 x $20m = $1 million

PV (total) = $21.5443 million + $1 million = $22.5443 million

Concessionality = PV*o*- PV*R* = PV of old loan - PV of rescheduled loan

= $24.3259m - $22.5443m = $1.7852 million

d. What up-front fee should the bank charge to make the concessionality equal

zero?

The bank has to increase its up-front fees by $1.7852 for a total of $2.7852, or 13.93%.

25. A bank was expecting to receive $100,000 from a loan issued to the Spanish government. Since Spain has problems repaying the loan immediately, the bank extends the loan for another year at the same interest rate of 10 percent. However, in the rescheduling agreement, the bank reserves the right to exercise an option for receiving the payment in British pounds, equal to €87,813, converted at the current exchange rate of €0.7983/$.

a. If the cost of funds to the bank is also assumed to be 10 percent, what is the value of this option built into the agreement if only two possible exchange rates are expected at the end of the year, €0.8467/$ or €0.7499/$, with equal probability?

Without the option, the amount expected at the end of the year = $110,000. If the euro depreciates to €0.8467/$, the amount received by the bank is the maximum of $110,000, or €87,813/0.8467 = $103,712.06. If the euro appreciates to €0.7499/$, the amount received by the bank is the maximum of $110,000, or €87,813/0.7499 = $117,099.61. With the option, the expected amount received is 0.50($110,000) + 0.50($117,099.61) = $113,549.81. The present value of the option is $113,549.81 - $110,000 = $3,549.81/1.1 = $3,227.10

b. How would your answer differ, if the probability of the exchange rate being €0.8467/$ is 70 percent and that of €0.7499/$ is 30 percent?

With the option, the expected amount received is 0.70($110,000) + 0.30($117,099.61) = $112,129.98. The present value of the option = $112,129.88 - $110,000 = $2,129.88/1.1 = $1,936.25.

c. Does the currency option have more or less value as the volatility of the exchange rate increases?

The option will have more value as the volatility of the exchange rate increases.

26. What are the major benefits and costs of loan sales to an FI?

The benefits of loan sales to an FI:

(a) They remove bad loans from the balance sheet, freeing resources for other investments as well as improving the FI’s portfolio composition.

(b) They may signal to market investors that the FI is in a position to bear losses. This hypothesis has been confirmed by empirical studies showing stock prices reacting favorably to news of FIs adding additional reserves to cover loan reserves.

(c) Losses can be deducted, providing write-offs for the FI.

The costs of loan sales to an FI:

(a) There is an actual loss equal to the face value less the market value.

(b) Secondary loan prices are very volatile and can fluctuate dramatically, making the planning of the optimal time to sell-off difficult.

27. What are the major costs and benefits of converting loans to bonds for an FI?

The advantage of converting loans to bonds for an FI is the increased liquidity, which makes bonds an attractive instrument to hold. Because of the full or partial collateral backing, these bonds are also normally senior in status to any remaining loans or sovereign bonds of that country. A disadvantage is that bonds have much longer maturities and there is usually a loss entailed because the restructured value of the bond is usually lower than the present value of the loan.