20: Short-Term Financing

All firms make short-term financing decisions periodically. Beyond the trade financing discussed in the previous chapter, MNCs obtain short-term financing to support other operations as well. Because MNCs have access to additional sources of funds, their short-term financing decisions are more complex than those of other companies. Financial managers must understand the possible advantages and disadvantages of short-term financing with foreign currencies so that they can make short-term financing decisions that maximize the value of the MNC.

The specific objectives of this chapter are to:

- explain why MNCs consider foreign financing,
- explain how MNCs determine whether to use foreign financing, and
- illustrate the possible benefits of financing with a portfolio of currencies.

Sources of Short-Term Financing

MNC parents and their subsidiaries typically use various methods of obtaining short-term funds to satisfy their liquidity needs.

Short-Term Notes

One method increasingly used in recent years is the issuing of short-term notes, or unsecured debt securities. In Europe, the securities are referred to as Euronotes. The interest rates on these notes are based on LIBOR (the interest rate Eurobanks charge on interbank loans). Short-term notes typically have maturities of 1, 3, or 6 months. Some MNCs continually roll them over as a form of intermediate-term financing. Commercial banks underwrite the notes for MNCs, and some commercial banks purchase them for their own investment portfolios.

Commercial Paper

In addition to short-term notes, MNCs also issue commercial paper. In Europe, this is sometimes referred to as **Euro-commercial paper.** Dealers issue commercial paper for MNCs without the backing of an underwriting syndicate, so a selling price is not guaranteed to the issuers. Maturities can be tailored to the issuer's preferences. Dealers may make a secondary market by offering to repurchase commercial paper before maturity.

Bank Loans

Direct loans from banks, which are typically utilized to maintain a relationship with banks, are another popular source of short-term funds for MNCs. If other sources of short-term funds become unavailable, MNCs rely more heavily on direct loans from banks. Most MNCs maintain credit arrangements with various banks around the world. Some MNCs have credit arrangements with more than 100 foreign and domestic banks.

Internal Financing by MNCs

Before an MNC's parent or subsidiary in need of funds searches for outside funding, it should check other subsidiaries' cash flow positions to determine whether any internal funds are available.

EXAMPLE The Canadian subsidiary of Shreveport, Inc., has experienced strong earnings and invested a portion of the earnings locally in money market securities. Meanwhile, Shreveport's Mexican subsidiary has generated lower earnings recently but needs funding to support expansion. The U.S. parent of Shreveport can instruct the Canadian subsidiary to loan some of its excess funds to the Mexican subsidiary. ■

This process is especially feasible during periods when the cost of obtaining funds in the parent's home country is relatively high.

Parents of MNCs can also attempt to obtain financing from their subsidiaries by increasing the markups on supplies they send to the subsidiaries. In this case, the funds the subsidiary gives to the parent will never be returned. This method of supporting the parent can sometimes be more feasible than obtaining loans from the subsidiary because it may circumvent restrictions or taxes imposed by national governments. In some cases, though, this method itself may be restricted or limited by host governments where subsidiaries are located.

GOVERNANCE

Governance over Subsidiary Short-Term Financing

An MNC should have an internal system that consistently monitors the amount of short-term financing by all of its subsidiaries. This may allow it to recognize which subsidiaries have cash available in the same currency that another subsidiary needs to borrow. Furthermore, its internal monitoring of short-term financing can govern the degree of short-term financing by each subsidiary. Without such controls, one subsidiary may borrow excessively, which may ultimately affect the amount that other subsidiaries can borrow if all subsidiary borrowing from banks is backed by a parent guarantee. Internal controls can be used not only to monitor the level of short-term financing per subsidiary but also to impose a maximum short-term debt level at each subsidiary. ■

Why MNCs Consider Foreign Financing

Regardless of whether an MNC parent or subsidiary decides to obtain financing from subsidiaries or from some other source, it must also decide which currency to borrow. Even if it needs its home currency, it may prefer to borrow a foreign currency. Reasons for this preference follow.

Foreign Financing to Offset Foreign Currency Inflows

A large firm may finance in a foreign currency to offset a net receivables position in that foreign currency.

EXAMPLE Penn, Inc., has net receivables denominated in euros and needs dollars now for liquidity purposes. It can borrow euros and convert them to U.S. dollars to obtain the needed funds. Then, the net receivables in euros will be used to pay off the loan. In this example, financing in a foreign currency reduces the firm's exposure to fluctuating exchange rates. This strategy is especially appealing if the interest rate of the foreign currency is low. ■

How Avon Used Foreign Financing during the Asian Crisis. During the Asian crisis in 1997 and 1998, many MNCs with Asian subsidiaries were adversely affected by the weakening of Asian currencies against the dollar. Avon Products, Inc., used various methods to reduce its economic exposure to the weak Asian currencies. Given that Avon had more cash inflows than cash outflows in Asian currencies, it used strategies that reduced the excess of cash inflows denominated in those currencies. First, it purchased more materials locally. Second, it borrowed funds locally to finance its operations so that it could use some of its cash inflows in Asian currencies to repay the debt. Third, it hired more local salespeople (rather than relying on marketing from the United States) to help sell its products locally. Fourth, it began to remit its earnings more frequently so that excess cash flows denominated in Asian currencies would not accumulate.

Foreign Financing to Reduce Costs

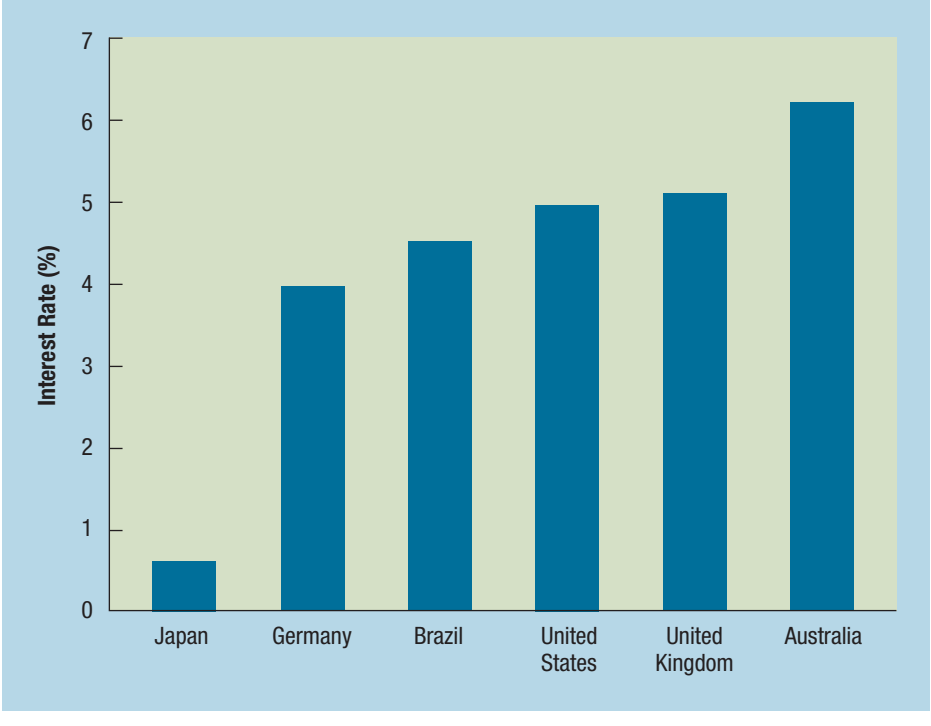
HTTP://

http://www.morganstanley.com/views/gef/index.html
Analyses, discussions, statistics, and forecasts related to non-U.S. economies.

Even when an MNC parent or subsidiary is not attempting to cover foreign net receivables, it may still consider borrowing foreign currencies if the interest rates on those currencies are relatively low. Since interest rates vary among currencies, the cost of borrowing can vary substantially among countries. MNCs that conduct business in countries with high interest rates incur a high cost of short-term financing if they finance in the local currency. Thus, they may consider financing with another currency that has a lower interest rate. By shaving 1 percentage point off its financing rate, an MNC can save $1 million in annual interest expense on debt of $100 million. Thus, MNCs are motivated to consider various currencies when financing their operations.

Exhibit 20.1 compares short-term interest rates among countries as of March 2007. In most periods, the interest rate in Japan is relatively low, while the interest rates in many developing countries are relatively high. Countries with a high rate of inflation tend to have high interest rates.

Exhibit 20.1 Comparison of Interest Rates among Countries (as of March 2007)



EXAMPLE Salem, Inc., is a U.S. firm that needs dollars to expand its U.S. operations. Assume the dollar financing rate is 9 percent, while the Japanese yen financing rate is 4 percent. Salem can borrow Japanese yen and immediately convert those yen to dollars for use. When the loan repayment is due, Salem will need to obtain Japanese yen to pay off the loan. If the value of the Japanese yen in terms of U.S. dollars has not changed since the time Salem obtained the loan, it will pay 4 percent on that loan. ■

HTTP://

http://finance.yahoo.com/
Forecasts of interest rates in the near future for each country.

Determining the Effective Financing Rate

HTTP://

http://www.bloomberg.com
Latest information from financial markets around the world.

In reality, the value of the currency borrowed will most likely change with respect to the borrower's local currency over time. The actual cost of financing by the debtor firm will depend on (1) the interest rate charged by the bank that provided the loan and (2) the movement in the borrowed currency's value over the life of the loan. Thus, the actual or "effective" financing rate may differ from the quoted interest rate. This point is illustrated in the following example.

EXAMPLE Dearborn, Inc. (based in Michigan), obtains a one-year loan of $1 million in New Zealand dollars (NZ$) at the quoted interest rate of 8 percent. When Dearborn receives the loan, it converts the New Zealand dollars to U.S. dollars to pay a supplier for materials. The exchange rate at that time is $.50 per New Zealand dollar, so the NZ$1 million is converted to $500,000 (computed as NZ$1,000,000 × $.50 per NZ$ = $500,000). One year later, Dearborn pays back the loan of NZ$1 million plus interest of NZ$80,000 (interest computed as 8% × NZ$1,000,000). Thus, the total amount in New Zealand dollars needed by Dearborn is NZ$1,000,000 + NZ$80,000 = NZ$1,080,000. Assume the New Zealand dollar appreciates from $.50 to $.60 by the time the loan is to be repaid. Dearborn will need to convert $648,000 (computed as NZ$1,080,000 × $.60 per NZ$) to have the necessary number of New Zealand dollars for loan repayment.

To compute the effective financing rate, first determine the amount in U.S. dollars beyond the amount borrowed that was paid back. Then divide by the number of U.S. dollars borrowed (after converting the New Zealand dollars to U.S. dollars). Given that Dearborn borrowed the equivalent of $500,000 and paid back $648,000 for the loan, the effective financing rate in this case is $148,000/$500,000 = 29.6%. If the exchange rate had remained constant throughout the life of the loan, the total loan repayment would have been $540,000, representing an effective rate of $40,000/$500,000 = 8%. Since the New Zealand dollar appreciated substantially in this example, the effective financing rate was very high. If Dearborn, Inc., had anticipated the New Zealand dollar's substantial appreciation, it would not have borrowed the New Zealand dollars. ■

The effective financing rate (called r_f) is derived as follows:

$$r_f = (1 + i_f)\left[1 + \left(\frac{S_{t+1} - S}{S}\right)\right] - 1$$

where i_f represents the interest rate of the foreign currency and S and S_{t+1} represent the spot rate of the foreign currency at the beginning and end of the financing period, respectively. Since the terms in parentheses reflect the percentage change in the foreign currency's spot rate (denoted as e_f), the preceding equation can be rewritten as

$$r_f = (1 + i_f)(1 + e_f) - 1$$

In this example, e_f reflects the percentage change in the New Zealand dollar (against the U.S. dollar) from the day the New Zealand dollars were borrowed until the day they were paid back by Dearborn. The New Zealand dollar appreciated from $.50 to $.60, or by 20 percent, over the life of the loan. With this information and

the quoted interest rate of 8 percent, Dearborn's effective financing rate on the New Zealand dollars can be computed as

$$\begin{aligned} r_f &= (1 + i_f)(1 + e_f) - 1 \\ &= (1 + .08)(1 + .20) - 1 \\ &= .296, \text{ or } 29.6\% \end{aligned}$$

which is the same rate determined from the alternative computational approach.

To test your understanding of financing in a foreign currency, consider a second example involving Dearborn.

EXAMPLE Assuming that the quoted interest rate for the New Zealand dollar is 8 percent and that the New Zealand dollar depreciates from $.50 (on the day the funds were borrowed) to $.45 (on the day of loan repayment), what is the effective financing rate of a one-year loan from Dearborn's viewpoint? The answer can be determined by first computing the percentage change in the New Zealand dollar's value: ($.45 − $.50)/$.50 = −10%. Next, the quoted interest rate (i_f) of 8 percent and the percentage change in the New Zealand dollar (e_f) of −10 percent can be inserted into the formula for the effective financing rate (r_f):

$$\begin{aligned} r_f &= (1 + .08)[1 + (-.10)] - 1 \\ &= [(1.08)(.9)] - 1 \\ &= -.028, \text{ or } -2.8\% \end{aligned}$$

■

A *negative* effective financing rate indicates that Dearborn actually paid fewer dollars to repay the loan than it borrowed. Such a result can occur if the New Zealand dollar depreciates substantially over the life of the loan. This does not mean that a loan will basically be "free" whenever the currency borrowed depreciates over the life of the loan. Nevertheless, depreciation of any amount will cause the effective financing rate to be lower than the quoted interest rate, as can be substantiated by reviewing the formula for the effective financing rate.

HTTP://

http://www.bloomberg.com
Short-term interest rates for major currencies such as the Canadian dollar, Japanese yen, and British pound for various maturities.

The examples provided so far suggest that when choosing which currency to borrow, a firm should consider the expected rate of appreciation or depreciation as well as the quoted interest rates of foreign currencies.

Criteria Considered for Foreign Financing

An MNC must consider various criteria in its international financing decision, including the following:

- Interest rate parity
- The forward rate as a forecast
- Exchange rate forecasts

These criteria can influence the MNC's decision regarding which currency or currencies to borrow. Each is discussed in turn.

Interest Rate Parity

Recall that covered interest arbitrage was described as a short-term foreign investment with a simultaneous forward sale of the foreign currency denominating the foreign investment. From a financing perspective, covered interest arbitrage can be conducted as follows. First, borrow a foreign currency and convert that currency to the home currency for use. Also, simultaneously purchase the foreign currency forward to lock in the exchange rate of the currency needed to pay off the loan. If the foreign currency's interest rate is low, this may appear to be a feasible strategy. However, such

a currency normally will exhibit a forward premium that offsets the differential between its interest rate and the home interest rate.

This can be shown by recognizing that the financing firm will no longer be affected by the percentage change in exchange rates but instead by the percentage difference between the spot rate at which the foreign currency was converted to the local currency and the forward rate at which the foreign currency was repurchased. The difference reflects the forward premium (unannualized). The unannualized forward premium (p) can substitute for e_f in the equation introduced earlier to determine the effective financing rate when covering in the forward market under conditions of interest rate parity:

$$r_f = (1 + i_f)(1 + p) - 1$$

If interest rate parity exists, the forward premium is

$$p = \frac{1 + i_h}{1 + i_f} - 1$$

where i_h represents the home currency's interest rate. When this equation is used to reflect financing rates, we can substitute the formula for p to determine the effective financing rate of a foreign currency under conditions of interest rate parity:

$$\begin{aligned} r_f &= (1 + i_f)(1 + p) - 1 \\ &= (1 + i_f)\left(1 + \frac{1 + i_h}{1 + i_f} - 1\right) - 1 \\ &= i_h \end{aligned}$$

Thus, if interest rate parity exists, the attempt of covered interest arbitrage to finance with a low-interest-rate currency will result in an effective financing rate similar to the domestic interest rate.

Exhibit 20.2 summarizes the implications of a variety of scenarios relating to interest rate parity. Even if interest rate parity exists, financing with a foreign currency may still be feasible, but it would have to be conducted on an uncovered basis (without use of a forward hedge). In other words, foreign financing may result in a lower financing cost than domestic financing, but it cannot be guaranteed (unless the firm has receivables in that same currency).

The Forward Rate as a Forecast

Assume the forward rate (F) of the foreign currency borrowed is used by firms as a predictor of the spot rate that will exist at the end of the financing period. The expected effective financing rate from borrowing a foreign currency can be forecasted by substituting F for S_{t+1} in the following equation:

$$\begin{aligned} r_f &= (1 + i_f)\left(1 + \frac{S_{t+1} - S}{S}\right) - 1 \\ &= (1 + i_f)\left(1 + \frac{F - S}{S}\right) - 1 \end{aligned}$$

As already shown, the right side of this equation is equal to the home currency financing rate if interest rate parity exists. If the forward rate is an accurate estimator of the future spot rate S_{t+1}, the foreign financing rate will be similar to the home financing rate.

When interest rate parity exists here, the forward rate can be used as a break-even point to assess the financing decision. When a firm is financing with the foreign currency (and not covering the foreign currency position), the effective financing rate

Exhibit 20.2 Implications of Interest Rate Parity for Financing

Scenario	Implications
1. Interest rate parity holds.	Foreign financing and a simultaneous hedge of that position in the forward market will result in financing costs similar to those incurred in domestic financing.
2. Interest rate parity holds, and the forward rate is an accurate forecast of the future spot rate.	Uncovered foreign financing will result in financing costs similar to those incurred in domestic financing.
3. Interest rate parity holds, and the forward rate is expected to overestimate the future spot rate.	Uncovered foreign financing is expected to result in lower financing costs than those incurred in domestic financing.
4. Interest rate parity holds, and the forward rate is expected to underestimate the future spot rate.	Uncovered foreign financing is expected to result in higher financing costs than those incurred in domestic financing.
5. Interest rate parity does not hold; the forward premium (discount) exceeds (is less than) the interest rate differential.	Foreign financing with a simultaneous hedge of that position in the forward market results in higher financing costs than those incurred in domestic financing.
6. Interest rate parity does not hold; the forward premium (discount) is less than (exceeds) the interest rate differential.	Foreign financing with a simultaneous hedge of that position in the forward market results in lower financing costs than those incurred in domestic financing.

will be less than the domestic rate if the future spot rate of the foreign currency (spot rate at the time of loan repayment) is less than the forward rate (at the time the loan is granted). Conversely, the effective financing rate in a foreign loan will be greater than the domestic rate if the future spot rate of the foreign currency turns out to be greater than the forward rate.

If the forward rate is an unbiased predictor of the future spot rate, then the effective financing rate of a foreign currency will on average be equal to the domestic financing rate. In this case, firms that consistently borrow foreign currencies will not achieve lower financing costs. Although the effective financing rate may turn out to be lower than the domestic rate in some periods, it will be higher in other periods, causing an offsetting effect. Firms that believe the forward rate is an unbiased predictor of the future spot rate will prefer borrowing their home currency, where the financing rate is known with certainty and is not expected to be any higher on average than foreign financing.

Exchange Rate Forecasts

While the forecasting capabilities of firms are somewhat limited, some firms may make decisions based on cycles in currency movements. Firms may use the recent movements as a forecast of future movements to determine whether they should borrow a foreign currency. This strategy would have been successful on average if utilized in the past. It will be successful in the future if currency movements continue to move in one direction for long periods of time.

Once the firm develops a forecast for the exchange rate's percentage change over the financing period (e_f), it can use this forecast along with the foreign interest rate to forecast the effective financing rate of a foreign currency. The forecasted effective financing rate can then be compared to the domestic financing rate.

EXAMPLE Sarasota, Inc., needs funds for one year and is aware that the one-year interest rate in U.S. dollars is 12 percent while the interest rate from borrowing Swiss francs is 8 percent. Sarasota forecasts that the Swiss franc will appreciate from its current rate of $.45

to $.459, or by 2 percent over the next year. The expected value for e_f [written as $E(e_f)$] will therefore be 2 percent. Thus, the expected effective financing rate [$E(r_f)$] will be

$$\begin{aligned} E(r_f) &= (1 + i_f)[1 + E(e_f)] - 1 \\ &= (1 + .08)(1 + .02) - 1 \\ &= .1016, \text{ or } 10.16\% \end{aligned}$$

In this example, financing in Swiss francs is expected to be less expensive than financing in U.S. dollars. However, the value for e_f is forecasted and therefore is not known with certainty. Thus, there is no guarantee that foreign financing will truly be less costly. ■

Deriving a Value for e_f That Equates Domestic and Foreign Rates. Continuing from the previous example, Sarasota, Inc., may attempt to determine what value of e_f would make the effective rate from foreign financing the same as domestic financing. To determine this value, begin with the effective financing rate formula and solve for e_f as shown:

$$\begin{aligned} r_f &= (1 + i_f)(1 + e_f) - 1 \\ 1 + r_f &= (1 + i_f)(1 + e_f) \\ \frac{1 + r_f}{1 + i_f} &= 1 + e_f \\ \frac{1 + r_f}{1 + i_f} - 1 &= e_f \end{aligned}$$

Since the U.S. financing rate is 12 percent in our previous example, that rate is plugged in for r_f. We can also plug in 8 percent for i_f, so the break-even value of e_f is

$$\begin{aligned} e_f &= \frac{1 + r_f}{1 + i_f} - 1 \\ &= \frac{1 + .12}{1 + .08} - 1 \\ &= .037037, \text{ or } 3.703\% \end{aligned}$$

This suggests that the Swiss franc would have to appreciate by about 3.7 percent over the loan period to make the Swiss franc loan as costly as a loan in U.S. dollars. Any smaller degree of appreciation would make the Swiss franc loan less costly. Sarasota, Inc., can use this information when determining whether to borrow U.S. dollars or Swiss francs. If it expects the Swiss franc to appreciate by more than 3.7 percent over the loan life, it should prefer borrowing in U.S. dollars. If it expects the Swiss franc to appreciate by less than 3.7 percent or to depreciate, its decision is more complex. If the potential savings from financing with the foreign currency outweigh the risk involved, then the firm should choose that route. The final decision here will be influenced by Sarasota's degree of risk aversion.

Use of Probability Distributions. To gain more insight about the financing decision, a firm may wish to develop a probability distribution for the percentage change in value for a particular foreign currency over the financing horizon. Since forecasts are not always accurate, it is sometimes useful to develop a probability distribution instead of relying on a single point estimate. Using the probability distribution of possible percentage changes in the currency's value, along with the currency's interest rate, the firm can determine the probability distribution of the possible effective financing rates for the currency. Then, it can compare this distribution to the known financing rate of the home currency in order to make its financing decision.

EXAMPLE Carolina Co. is deciding whether to borrow Swiss francs for one year. It finds that the quoted interest rate for the Swiss franc is 8 percent and the quoted rate for the U.S. dollar is 15 percent. It then develops a probability distribution for the Swiss franc's possible percentage change in value over the life of the loan.

The probability distribution is displayed in Exhibit 20.3. The first row in Exhibit 20.3 shows that there is a 5 percent probability of a 6 percent depreciation in the Swiss franc over the loan life. If the Swiss franc does depreciate by 6 percent, the effective financing rate would be 1.52 percent. Thus, there is a 5 percent probability that Carolina will incur a 1.52 percent effective financing rate on its loan. The second row shows that there is a 10 percent probability of a 4 percent depreciation in the Swiss franc over the loan life. If the Swiss franc does depreciate by 4 percent, the effective financing rate would be 3.68 percent. Thus, there is a 10 percent probability that Carolina will incur a 3.68 percent effective financing rate on its loan.

For each possible percentage change in the Swiss franc's value, there is a corresponding effective financing rate. We can associate each possible effective financing rate (third column) with its probability of occurring (second column). By multiplying each possible effective financing rate by its associated probability, we can compute an expected value for the effective financing rate of the Swiss franc. Based on the information in Exhibit 20.3, the expected value of the effective financing rate, referred to as $E(r_f)$, is computed as

$$\begin{aligned} E(r_f) &= 5\%(1.52\%) + 10\%(3.68\%) + 15\%(6.92\%) + 20\%(9.08\%) \\ &\quad + 20\%(12.32\%) + 15\%(14.48\%) \\ &\quad + 10\%(16.64\%) + 5\%(18.80\%) \\ &= .076\% + .368\% + 1.038\% + 1.816\% \\ &\quad + 2.464\% + 2.172\% + 1.664\% + .94\% \\ &= 10.538\% \end{aligned}$$

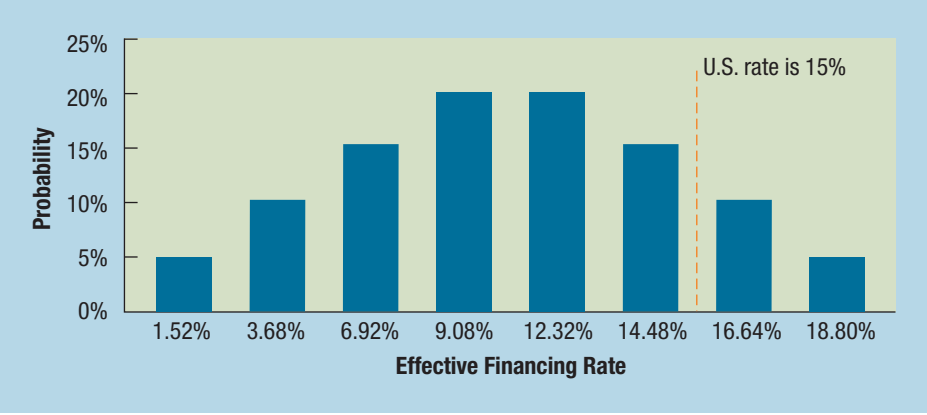
Thus, the decision for Carolina is whether to borrow U.S. dollars (at 15 percent interest) or Swiss francs (with an expected value of 10.538 percent for the effective financing rate). Using Exhibit 20.3, the risk reflects the 5 percent chance (probability) that the effective financing rate on Swiss francs will be 18.8 percent and the 10 percent chance that the effective financing rate on Swiss francs will be 16.64 percent. Either of these possibilities represents a greater expense to Carolina than it would incur if it borrowed U.S. dollars.

To further assess the decision regarding which currency to borrow, the information in the second and third columns of Exhibit 20.3 is used to develop the probability distribution in Exhibit 20.4. This exhibit illustrates the probability of each possible effective financing rate that

Exhibit 20.3 Analysis of Financing with a Foreign Currency

Possible Rate of Change in the Swiss Franc over the Life of the Loan (e_f)	Probability of Occurrence	Effective Financing Rate If This Rate of Change in the Swiss Franc Does Occur (r_f)
−6%	5%	(1.08)[1 + (−6%)] − 1 = 1.52%
−4	10	(1.08)[1 + (−4%)] − 1 = 3.68
−1	15	(1.08)[1 + (−1%)] − 1 = 6.92
+1	20	(1.08)[1 + (1%)] − 1 = 9.08
+4	20	(1.08)[1 + (4%)] − 1 = 12.32
+6	15	(1.08)[1 + (6%)] − 1 = 14.48
+8	10	(1.08)[1 + (8%)] − 1 = 16.64
+10	5	(1.08)[1 + (10%)] − 1 = 18.80
	100%	

Exhibit 20.4 Probability Distribution of Effective Financing Rates



may occur if Carolina borrows Swiss francs. Notice that the U.S. interest rate (15 percent) is included in Exhibit 20.4 for comparison purposes. There is no distribution of possible outcomes for the U.S. rate since the rate of 15 percent is known with certainty (no exchange rate risk exists). There is a 15 percent probability that the U.S. rate will be lower than the effective rate on Swiss francs and an 85 percent chance that the U.S. rate will be higher than the effective rate on Swiss francs. This information can assist the firm in its financing decision. Given the potential savings relative to the small degree of risk, Carolina decides to borrow Swiss francs. ■

Actual Results from Foreign Financing

HTTP://

http://www.commerzbank.com
Information about how Commerzbank provides financing services to firms, and also provides its prevailing view about conditions in the foreign exchange market.

The fact that some firms utilize foreign financing suggests that they believe reduced financing costs can be achieved. To assess this issue, the effective financing rates of the Swiss franc and the U.S. dollar are compared in Exhibit 20.5 from the perspective of a U.S. firm. The data are segmented into annual periods.

In the 1999–2000 period, the Swiss franc weakened against the dollar, and a U.S. firm that borrowed Swiss francs would have incurred a negative effective financing rate. In most of the years since then, the Swiss franc appreciated against the dollar. The effective financing rate of Swiss francs from a U.S. perspective was high in most recent years. These rates were much higher than the U.S. interest rate and illustrate the risk to an MNC that finances operations with a foreign currency.

Exhibit 20.5 demonstrates the potential savings in financing costs that can be achieved if the foreign currency depreciates against the firm's home currency. It also demonstrates how the foreign financing can backfire if the firm's expectations are incorrect and the foreign currency appreciates over the financing period.

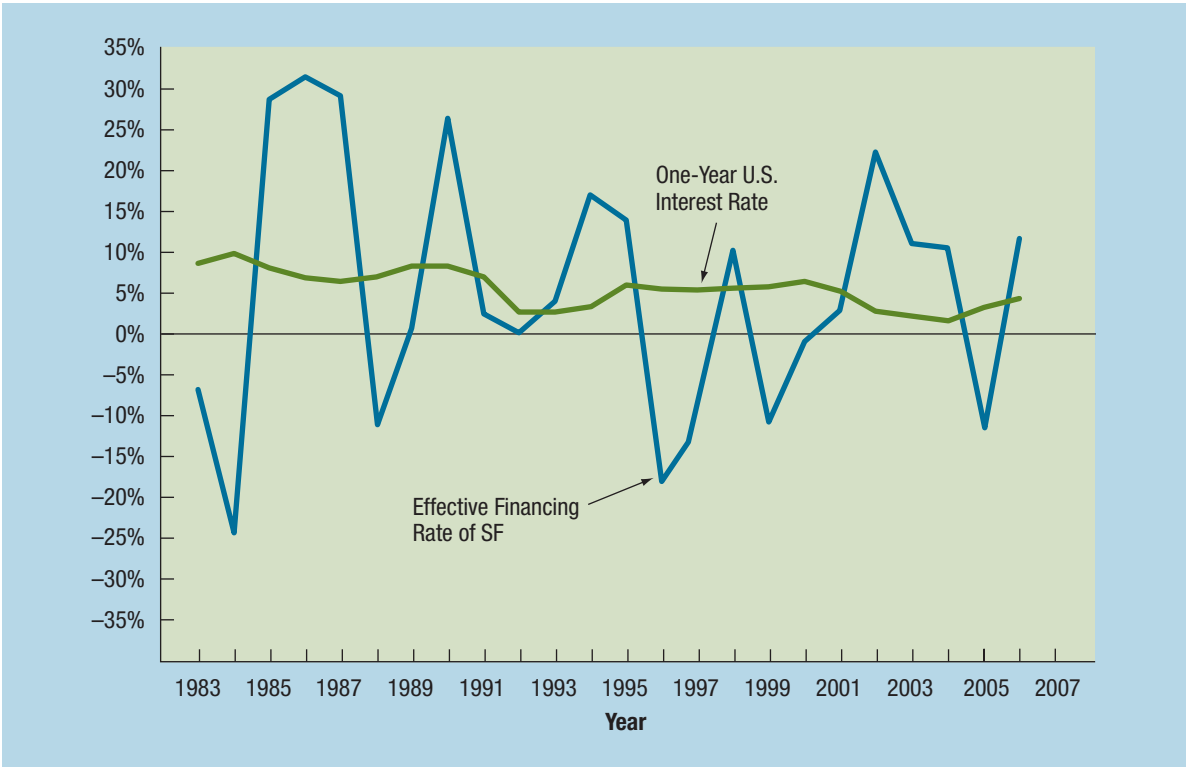
Financing with a Portfolio of Currencies

Although foreign financing can result in significantly lower financing costs, the variance in foreign financing costs over time is higher. MNCs may be able to achieve lower financing costs without excessive risk by financing with a portfolio of foreign currencies, as demonstrated here.

EXAMPLE Nevada, Inc., needs to borrow $100,000 for one year and obtains the following interest rate quotes:

- Interest rate for a one-year loan in U.S. dollars = 15%.

Exhibit 20.5 Comparison of Financing with Swiss Francs versus Dollars



- Interest rate for a one-year loan in Swiss francs = 8%.
- Interest rate for a one-year loan in Japanese yen = 9%.

Since the quotes for a loan in Swiss francs or Japanese yen are relatively low, Nevada may desire to borrow in a foreign currency. If Nevada decides to use foreign financing, it has three choices based on the information given: (1) borrow only Swiss francs, (2) borrow only Japanese yen, or (3) borrow a portfolio of Swiss francs and Japanese yen. Assume that Nevada, Inc., has established possible percentage changes in the spot rate for both the Swiss franc and the Japanese yen from the time the loan would begin until loan repayment, as shown in the second column of Exhibit 20.6. The third column shows the probability that each possible percentage change might occur.

Based on the assumed interest rate of 8 percent for the Swiss franc, the effective financing rate is computed for each possible percentage change in the Swiss franc's spot rate over the loan life. There is a 30 percent chance that the Swiss franc will appreciate by 1 percent over the loan life. In that case, the effective financing rate will be 9.08 percent. Thus, there is a 30 percent chance that the effective financing rate will be 9.08 percent. Furthermore, there is a 50 percent chance that the effective financing rate will be 11.24 percent and a 20 percent chance that it will be 17.72 percent. Given that the U.S. loan rate is 15 percent, there is only a 20 percent chance that financing in Swiss francs will be more expensive than domestic financing.

The lower section of Exhibit 20.6 provides information on the Japanese yen. For example, the yen has a 35 percent chance of depreciating by 1 percent over the loan life, and so on. Based on the assumed 9 percent interest rate and the exchange rate fluctuation forecasts, there is a 35 percent chance that the effective financing rate will be 7.91 percent, a 40 percent chance that it will be 12.27 percent, and a 25 percent chance that it will be 16.63 percent.

Exhibit 20.6 Derivation of Possible Effective Financing Rates

Currency	Possible Percentage Change in the Spot Rate over the Loan Life	Probability of That Percentage Change in the Spot Rate Occurring	Computation of Effective Financing Rate Based on That Percentage Change in the Spot Rate
Swiss franc	1%	30%	(1.08)[1 + (.01)] − 1 = .0908, or 9.08%
Swiss franc	3	50	(1.08)[1 + (.03)] − 1 = .1124, or 11.24%
Swiss franc	9	20	(1.08)[1 + (.09)] − 1 = .1772, or 17.72%
		100%	
Japanese yen	−1%	35%	(1.09)[1 + (−.01)] − 1 = .0791, or 7.91%
Japanese yen	3	40	(1.09)[1 + (.03)] − 1 = .1227, or 12.27%
Japanese yen	7	25	(1.09)[1 + (.07)] − 1 = .1663, or 16.63%
		100%	

Given the 15 percent rate on U.S. dollar financing, there is a 25 percent chance that financing in Japanese yen will be more costly than domestic financing. Before examining the third possible foreign financing strategy (the portfolio approach), determine the expected value of the effective financing rate for each foreign currency by itself. This is accomplished by totaling the products of each possible effective financing rate and its associated probability as follows:

Currency	Computation of Expected Value of Effective Financing Rate
Swiss franc	30%(9.08%) + 50%(11.24%) + 20%(17.72%) = 11.888%
Japanese yen	35%(7.91%) + 40%(12.27%) + 25%(16.63%) = 11.834%

The expected financing costs of the two currencies are almost the same. The individual degree of risk (that the costs of financing will turn out to be higher than domestic financing) is about the same for each currency. If Nevada, Inc., chooses to finance with only one of these foreign currencies, it is difficult to pinpoint (based on our analysis) which currency is more appropriate. Now, consider the third and final foreign financing strategy: the portfolio approach.

Based on the information in Exhibit 20.6, there are three possibilities for the Swiss franc's effective financing rate. The same holds true for the Japanese yen. If Nevada, Inc., borrows half of its needed funds in each of the foreign currencies, then there will be nine possibilities for this portfolio's effective financing rate, as shown in Exhibit 20.7. Columns 1 and 2 list all possible joint effective financing rates. Column 3 computes the joint probability of that occurrence assuming that exchange rate movements of the Swiss franc and Japanese yen are independent. Column 4 shows the computation of the portfolio's effective financing rate based on the possible rates shown for the individual currencies.

An examination of the top row will help to clarify the table. This row indicates that one possible outcome of borrowing both Swiss francs and Japanese yen is that they will exhibit effective financing rates of 9.08 and 7.91 percent, respectively. The probability of the Swiss franc's effective financing rate occurring is 30 percent, while the probability of the Japanese yen rate occurring is 35 percent. Recall that these percentages were given in Exhibit 20.6. The joint probability that both of these rates will occur simultaneously is (30%)(35%) = 10.5%. Assuming that half (50%) of the funds needed are to be borrowed from each currency, the portfolio's effective financing rate will be .5(9.08%) + .5(7.91%) = 8.495% (if those individual effective financing rates occur for each currency).

Exhibit 20.7 Analysis of Financing with Two Foreign Currencies

(1)	(2)	(3)	(4)
Possible Joint Effective Financing Rates		Computation of Joint Probability	Computation of Effective Financing Rate of Portfolio (50% of Total Funds Borrowed in Each Currency)
Swiss Franc	Japanese Yen		
9.08%	7.91%	(30%)(35%) = 10.5%	.5(9.08%) + .5(7.91%) = 8.495%
9.08	12.27	(30%)(40%) = 12.0	.5(9.08%) + .5(12.27%) = 10.675
9.08	16.63	(30%)(25%) = 7.5	.5(9.08%) + .5(16.63%) = 12.855
11.24	7.91	(50%)(35%) = 17.5	.5(11.24%) + .5(7.91%) = 9.575
11.24	12.27	(50%)(40%) = 20.0	.5(11.24%) + .5(12.27%) = 11.755
11.24	16.63	(50%)(25%) = 12.5	.5(11.24%) + .5(16.63%) = 13.935
17.72	7.91	(20%)(35%) = 7.0	.5(17.72%) + .5(7.91%) = 12.815
17.72	12.27	(20%)(40%) = 8.0	.5(17.72%) + .5(12.27%) = 14.995
17.72	16.63	(20%)(25%) = 5.0	.5(17.72%) + .5(16.63%) = 17.175
		100.0%	

A similar procedure was used to develop the remaining eight rows in Exhibit 20.7. From this table, there is a 10.5 percent chance that the portfolio's effective financing rate will be 8.495 percent, a 12 percent chance that it will be 10.675 percent, and so on.

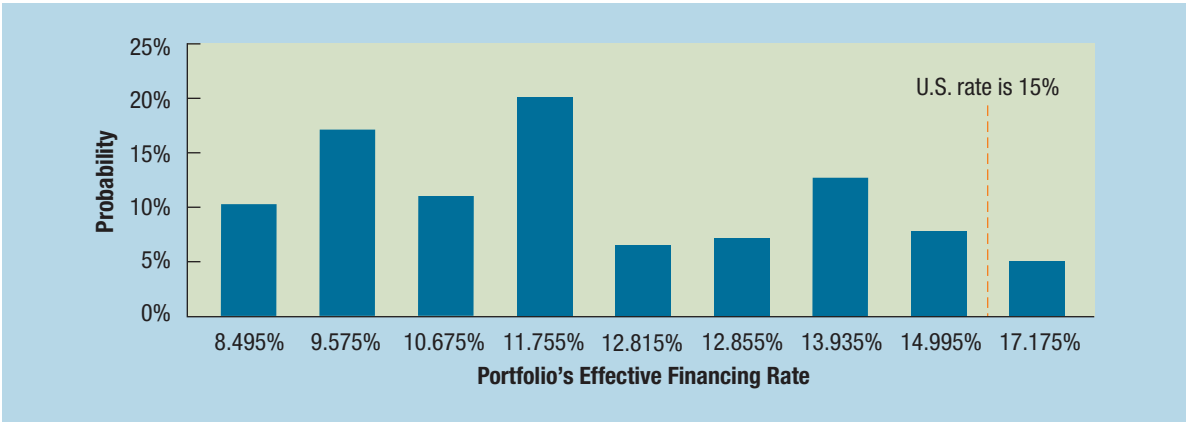
Exhibit 20.8 displays the probability distribution for the portfolio's effective financing rate that was derived in Exhibit 20.7. This exhibit shows that financing with a portfolio (50 percent financed in Swiss francs with the remaining 50 percent financed in Japanese yen) has only a 5 percent chance of being more costly than domestic financing. These results are more favorable than those of either individual foreign currency Therefore, Nevada, Inc., decides to borrow the portfolio of currencies. ■

Portfolio Diversification Effects

When both foreign currencies are borrowed, the only way the portfolio will exhibit a higher effective financing rate than the domestic rate is if *both* currencies experience their maximum possible level of appreciation (which is 9 percent for the Swiss franc and 7 percent for the Japanese yen). If only one does, the severity of its appreciation will be somewhat offset by the other currency's not appreciating to such a large extent. The probability of maximum appreciation is 20 percent for the Swiss franc and 25 percent for the Japanese yen. The joint probability of both of these events occurring simultaneously is (20%)(25%) = 5%. This is an advantage of financing in a portfolio of foreign currencies. Nevada, Inc., has a 95 percent chance of attaining lower costs with the foreign portfolio than with domestic financing.

The expected value of the effective financing rate for the portfolio can be determined by multiplying the percentage financed in each currency by the expected value of that currency's individual effective financing rate. Recall that the expected value was 11.888 percent for the Swiss franc and 11.834 percent for the Japanese yen. Thus, for a portfolio representing 50 percent of funds borrowed in each currency, the expected value of the effective financing rate is .5(11.888%) + .5(11.834%) = 11.861%. Based on an overall comparison, the expected value of the portfolio's effective financing rate is very similar to that from financing solely in either foreign currency.

Exhibit 20.8 Probability Distribution of the Portfolio's Effective Financing Rate



However, the risk (of incurring a higher effective financing rate than the domestic rate) is substantially less when financing with the portfolio.

In the example, the computation of joint probabilities requires the assumption that the two currencies move independently. If movements of the two currencies are actually highly positively correlated, then financing with a portfolio of currencies will not be as beneficial as demonstrated because there is a strong likelihood of both currencies experiencing a high level of appreciation simultaneously. If the two currencies are not highly correlated, they are less likely to simultaneously appreciate to such a degree. Thus, the chances that the portfolio's effective financing rate will exceed the U.S. rate are reduced when the currencies included in the portfolio are not highly positively correlated.

The example included only two currencies in the portfolio. Financing with a more diversified portfolio of additional currencies that exhibit low interest rates might increase the probability that foreign financing will be less costly than domestic financing; several currencies are unlikely to move in tandem and therefore unlikely to simultaneously appreciate enough to offset the advantage of their low interest rates. Again, the degree to which these currencies are correlated with each other is important. If all currencies are highly positively correlated with each other, financing with such a portfolio would not be very different from financing with a single foreign currency.

Repeated Financing with a Currency Portfolio

A firm that repeatedly finances with a currency portfolio would normally prefer to compose a financing package that exhibits a somewhat predictable effective financing rate on a periodic basis. The more volatile a portfolio's effective financing rate over time, the more uncertainty (risk) there is about the effective financing rate that will exist in any period. The degree of volatility depends on the standard deviations and paired correlations of effective financing rates of the individual currencies within the portfolio.

We can use the portfolio variance as a measure of the degree of volatility. The variance of a two-currency portfolio's effective financing rate $[VAR(r_p)]$ over time is computed as

$$VAR(r_p) = w_A^2\sigma_A^2 + w_B^2\sigma_B^2 + 2w_A w_B \sigma_A \sigma_B CORR_{AB}$$

where w_A^2 and w_B^2 represent the percentage of total funds financed from currencies A and B, respectively; σ_A^2 and σ_B^2 represent the individual variances of each currency's effective financing rate over time; and $CORR_{AB}$ reflects the correlation coefficient

of the two currencies' effective financing rates. Since the percentage change in the exchange rate plays an important role in influencing the effective financing rate, it should not be surprising that $CORR_{AB}$ is strongly affected by the correlation between the exchange rate fluctuations of the two currencies. A low correlation between movements of the two currencies may force $CORR_{AB}$ to be low.

EXAMPLE Valparaiso, Inc., considers borrowing a portfolio of Japanese yen and Swiss francs to finance its U.S. operations. Half of the needed funding would come from each currency. To determine how the variance in this portfolio's effective financing rate is related to characteristics of the component currencies, assume the following information based on historical information for several 3-month periods:

- Mean effective financing rate of Swiss franc for 3 months = 3%.
- Mean effective financing rate of Japanese yen for 3 months = 2%.
- Standard deviation of Swiss franc's effective financing rate = .04.
- Standard deviation of Japanese yen's effective financing rate = .09.
- Correlation coefficient of effective financing rates of these two currencies = .10.

Given this information, the mean effective rate on a portfolio (r_p) of funds financed 50 percent by Swiss francs and 50 percent by Japanese yen is determined by totaling the weighted individual effective financing rates:

$$\begin{aligned} r_p &= w_A r_A + w_B r_B \\ &= .5(.03) + .5(.02) \\ &= .015 + .01 \\ &= .025, \text{ or } 2.5\% \end{aligned}$$

The variance of this portfolio's effective financing rate over time is

$$\begin{aligned} VAR(r_p) &= .5^2(.04)^2 + .5^2(.09)^2 + 2(.5)(.5)(.04)(.09)(.10) \\ &= .25(.0016) + .25(.0081) + .00018 \\ &= .0004 + .002025 + .00018 \\ &= .002605 \end{aligned}$$

■

Valparaiso can use this same process to compare various financing packages to see which package would be most appropriate. It may be more interested in estimating the mean return and variability for repeated financing in a particular portfolio in the future. There is no guarantee that past data will be indicative of the future. Yet, if the individual variability and paired correlations are somewhat stable over time, the historical variability of the portfolio's effective financing rate should provide a reasonable forecast.

To recognize the benefits from financing with two currencies that are not highly correlated, reconsider how the variance of the portfolio's effective financing rate would have been affected if the correlation between the two currencies was .90 (very high correlation) instead of .10. The variance would be .004045, which is more than 50 percent higher than the variance when the correlation was assumed to be .10.

The assessment of a currency portfolio's effective financing rate and variance is not restricted to just two currencies. The mean effective financing rate for a currency portfolio of any size will be determined by totaling the respective individual effective financing rates weighted by the percentage of funds financed with each currency. Solving the variance of a portfolio's effective financing rate becomes more complex as more currencies are added to the portfolio, but computer software packages are commonly applied to more easily determine the solution.

SUMMARY

■ MNCs may use foreign financing to offset anticipated cash inflows in foreign currencies so that exposure to exchange rate risk will be minimized. Alternatively, some MNCs may use foreign financing in an attempt to reduce their financing costs. Foreign financing costs may be lower if the foreign interest rate is relatively low or if the foreign currency borrowed depreciates over the financing period.

■ MNCs can determine whether to use foreign financing by estimating the effective financing rate for any foreign currency over the period in which financing will be needed. The expected effective financing rate is dependent on the quoted interest rate of the foreign currency and the forecasted percentage change in the currency's value over the financing period.

■ When MNCs borrow a portfolio of currencies that have low interest rates, they can increase the probability of achieving relatively low financing costs if the currencies' values are not highly correlated.

POINT COUNTER-POINT

Do MNCs Increase Their Risk When Borrowing Foreign Currencies?

Point Yes. MNCs should borrow the currency that matches their cash inflows. If they borrow a foreign currency to finance business in a different currency, they are essentially speculating on the future exchange rate movements. The results of the strategy are uncertain, which represents risk to the MNC and its shareholders.

Counter-Point No. If MNCs expect that they can reduce the effective financing rate by borrowing a foreign currency, they should consider borrowing that currency. This enables them to achieve lower costs and improves their ability to compete. If they take the most conservative approach by borrowing whatever currency matches their inflows, they may incur higher costs and have a greater chance of failure.

Who Is Correct? Use the Internet to learn more about this issue. Which argument do you support? Offer your own opinion on this issue.

SELF TEST

Answers are provided in Appendix A at the back of the text.

1. Assume that the interest rate in New Zealand is 9 percent. A U.S. firm plans to borrow New Zealand dollars, convert them to U.S. dollars, and repay the loan in one year. What will be the effective financing rate if the New Zealand dollar depreciates by 6 percent? If the New Zealand dollar appreciates by 3 percent?
2. Using the information in question 1 and assuming a 50 percent chance of either scenario occurring, determine the expected value of the effective financing rate.
3. Assume that the Japanese one-year interest rate is 5 percent, while the U.S. one-year interest rate is 8 percent. What percentage change in the Japanese yen would cause a U.S. firm borrowing yen to incur the same effective financing rate as it would if it borrowed dollars?
4. The spot rate of the Australian dollar is $.62. The one-year forward rate of the Australian dollar is $.60. The Australian one-year interest rate is 9 percent. Assume that the forward rate is used to forecast the future spot rate. Determine the expected effective financing rate for a U.S. firm that borrows Australian dollars to finance its U.S. business.
5. Omaha, Inc., plans to finance its U.S. operations by repeatedly borrowing two currencies with low interest rates whose exchange rate movements are highly correlated. Will the variance of the two-currency portfolio's effective financing rate be much lower than the variance of either individual currency's effective financing rate? Explain.

QUESTIONS AND APPLICATIONS

1. **Financing from Subsidiaries.** Explain why an MNC parent would consider financing from its subsidiaries.

2. **Foreign Financing.**

   a. Explain how a firm's degree of risk aversion enters into its decision of whether to finance in a foreign currency or a local currency.

   b. Discuss the use of specifying a break-even point when financing in a foreign currency.

3. **Probability Distribution.**

   a. Discuss the development of a probability distribution of effective financing rates when financing in a foreign currency. How is this distribution developed?

   b. Once the probability distribution of effective financing rates from financing in a foreign currency is developed, how can this distribution be used in deciding whether to finance in the foreign currency or the home currency?

4. **Financing and Exchange Rate Risk.** How can a U.S. firm finance in euros and not necessarily be exposed to exchange rate risk?

5. **Short-Term Financing Analysis.** Assume that Tulsa, Inc., needs $3 million for a one-year period. Within one year, it will generate enough U.S. dollars to pay off the loan. It is considering three options: (1) borrowing U.S. dollars at an interest rate of 6 percent, (2) borrowing Japanese yen at an interest rate of 3 percent, or (3) borrowing Canadian dollars at an interest rate of 4 percent. Tulsa expects that the Japanese yen will appreciate by 1 percent over the next year and that the Canadian dollar will appreciate by 3 percent. What is the expected "effective" financing rate for each of the three options? Which option appears to be most feasible? Why might Tulsa, Inc., not necessarily choose the option reflecting the lowest effective financing rate?

6. **Effective Financing Rate.** How is it possible for a firm to incur a negative effective financing rate?

7. **IRP Application to Short-Term Financing.**

   a. If interest rate parity does not hold, what strategy should Connecticut Co. consider when it needs short-term financing?

   b. Assume that Connecticut Co. needs dollars. It borrows euros at a lower interest rate than that for dollars. If interest rate parity exists and if the forward rate of the euro is a reliable predictor of the future spot rate, what does this suggest about the feasibility of such a strategy?

   c. If Connecticut Co. expects the current spot rate to be a more reliable predictor of the future spot rate, what does this suggest about the feasibility of such a strategy?

8. **Break-Even Financing.** Akron Co. needs dollars. Assume that the local one-year loan rate is 15 percent, while a one-year loan rate on euros is 7 percent. By how much must the euro appreciate to cause the loan in euros to be more costly than a U.S. dollar loan?

9. **IRP Application to Short-Term Financing.** Assume that interest rate parity exists. If a firm believes that the forward rate is an unbiased predictor of the future spot rate, will it expect to achieve lower financing costs by consistently borrowing a foreign currency with a low interest rate?

10. **Effective Financing Rate.** Boca, Inc., needs $4 million for one year. It currently has no business in Japan but plans to borrow Japanese yen from a Japanese bank because the Japanese interest rate is three percentage points lower than the U.S. rate. Assume that interest rate parity exists; also assume that Boca believes that the one-year forward rate of the Japanese yen will exceed the future spot rate one year from now. Will the expected effective financing rate be higher, lower, or the same as financing with dollars? Explain.

11. **IRP Application to Short-Term Financing.** Assume that the U.S. interest rate is 7 percent and the euro's interest rate is 4 percent. Assume that the euro's forward rate has a premium of 4 percent. Determine whether the following statement is true: "Interest rate parity does not hold; therefore, U.S. firms could lock in a lower financing cost by borrowing euros and purchasing euros forward for one year." Explain your answer.

12. **Break-Even Financing.** Orlando, Inc., is a U.S.-based MNC with a subsidiary in Mexico. Its Mexican subsidiary needs a one-year loan of 10 million pesos for operating expenses. Since the Mexican interest rate is 70 percent, Orlando is considering borrowing dollars, which it would convert to pesos to cover the operating expenses. By how much would the dollar have to appreciate against the peso to cause such a strategy to backfire? (The one-year U.S. interest rate is 9 percent.)

13. **Financing since the Asian Crisis.** Bradenton, Inc., has a foreign subsidiary in Asia that commonly

obtained short-term financing from local banks prior to the Asian crisis. Explain why the firm may not be able to easily obtain funds from the local banks since the crisis.

14. **Effects of September 11.** Homewood Co. commonly finances some of its U.S. expansion by borrowing foreign currencies (such as Japanese yen) that have low interest rates. Describe how the potential return and risk of this strategy may have changed after the September 11, 2001, terrorist attack on the United States.

Advanced Questions

15. **Probability Distribution of Financing Costs.** Missoula, Inc., decides to borrow Japanese yen for one year. The interest rate on the borrowed yen is 8 percent. Missoula has developed the following probability distribution for the yen's degree of fluctuation against the dollar:

Possible Degree of Fluctuation of Yen against the Dollar	Percentage Probability
−4%	20%
−1	30
0	10
3	40

Given this information, what is the expected value of the effective financing rate of the Japanese yen from Missoula's perspective?

16. **Analysis of Short-Term Financing.** Jacksonville Corp. is a U.S.-based firm that needs $600,000. It has no business in Japan but is considering one-year financing with Japanese yen because the annual interest rate would be 5 percent versus 9 percent in the United States. Assume that interest rate parity exists.

a. Can Jacksonville benefit from borrowing Japanese yen and simultaneously purchasing yen one year forward to avoid exchange rate risk? Explain.

b. Assume that Jacksonville does not cover its exposure and uses the forward rate to forecast the future spot rate. Determine the expected effective financing rate. Should Jacksonville finance with Japanese yen? Explain.

c. Assume that Jacksonville does not cover its exposure and expects that the Japanese yen will appreciate by either 5, 3, or 2 percent, and with equal probability of each occurrence. Use this information to determine the probability distribution of the effective financing rate. Should Jacksonville finance with Japanese yen? Explain.

17. **Financing with a Portfolio.** Pepperdine, Inc., considers obtaining 40 percent of its one-year financing in Canadian dollars and 60 percent in Japanese yen. The forecasts of appreciation in the Canadian dollar and Japanese yen for the next year are as follows:

Currency	Possible Percentage Change in the Spot Rate over the Loan Life	Probability of That Percentage Change in the Spot Rate Occurring
Canadian dollar	4%	70%
Canadian dollar	7	30
Japanese yen	6	50
Japanese yen	9	50

The interest rate on the Canadian dollar is 9 percent, and the interest rate on the Japanese yen is 7 percent. Develop the possible effective financing rates of the overall portfolio and the probability of each possibility based on the use of joint probabilities.

18. **Financing with a Portfolio.**

a. Does borrowing a portfolio of currencies offer any possible advantages over the borrowing of a single foreign currency?

b. If a firm borrows a portfolio of currencies, what characteristics of the currencies will affect the potential variability of the portfolio's effective financing rate? What characteristics would be desirable from a borrowing firm's perspective?

19. **Financing with a Portfolio.** Raleigh Corp. needs to borrow funds for one year to finance an expenditure in the United States. The following interest rates are available:

	Borrowing Rate
United States	10%
Canada	6
Japan	5

The percentage changes in the spot rates of the Canadian dollar and Japanese yen over the next year are as follows:

Canadian Dollar		Japanese Yen	
Probability	Percentage Change in Spot Rate	Probability	Percentage Change in Spot Rate
10%	5%	20%	6%
90	2	80	1

If Raleigh Corp. borrows a portfolio, 50 percent of funds from Canadian dollars and 50 percent of funds from yen, determine the probability distribution of the effective financing rate of the portfolio.

What is the probability that Raleigh will incur a higher effective financing rate from borrowing this portfolio than from borrowing U.S. dollars?

Discussion in the Boardroom

This exercise can be found in Appendix E at the back of this textbook.

Running Your Own MNC

This exercise can be found on the Xtra! website at http://maduraxtra.swlearning.com.

BLADES, INC. CASE

Use of Foreign Short-Term Financing

Blades, Inc., just received a special order for 120,000 pairs of "Speedos," its primary roller blade product. Ben Holt, Blades' chief financial officer (CFO), needs short-term financing to finance this large order from the time Blades orders its supplies until the time it will receive payment. Blades will charge a price of 5,000 baht per pair of Speedos. The materials needed to manufacture these 120,000 pairs will be purchased from Thai suppliers. Blades expects the cost of the components for one pair of Speedos to be approximately 3,500 baht in its first year of operating the Thai subsidiary.

Because Blades is relatively unknown in Thailand, its suppliers have indicated that they would like to receive payment as early as possible. The customer that placed this order insists on open account transactions, which means that Blades will receive payment for the roller blades approximately 3 months subsequent to the sale. Furthermore, the production cycle necessary to produce Speedos, from purchase of the materials to the eventual sale of the product, is approximately 3 months. Because of these considerations, Blades expects to collect its revenues approximately 6 months after it has paid for the materials, such as rubber and plastic components, needed to manufacture Speedos.

Ben Holt has identified at least two alternatives for satisfying Blades' financing needs. First, Blades could borrow Japanese yen for 6 months, convert the yen to Thai baht, and use the baht to pay the Thai suppliers. When the accounts receivable in Thailand are collected, Blades would convert the baht received to yen and repay the Japanese yen loan. Second, Blades could borrow Thai baht for 6 months in order to pay its Thai suppliers. When Blades collects its accounts receivable, it would use these receipts to repay the baht loan. Thus, Blades will use revenue generated in Thailand to repay the loan, whether it borrows the money in yen or in baht.

Holt's initial research indicates that the 180-day interest rates available to Blades in Japan and in Thailand are 4 and 6 percent, respectively. Consequently, Holt favors borrowing the Japanese yen, as he believes this loan will be cheaper than the baht-denominated loan. He is aware that he should somehow incorporate the future movements of the yen-baht exchange rate in his analysis, but he is unsure how to accomplish this. However, he has identified the following probability distribution of the change in the value of the Japanese yen with respect to the Thai baht and of the change in the value of the Thai baht with respect to the dollar over the 6-month period of the loan:

Possible Rate of Change in the Japanese Yen Relative to the Thai Baht over the Life of the Loan	Possible Rate of Change in the Thai Baht Relative to the Dollar over the Life of the Loan	Probability of Occurrence
2%	−3%	30%
1	−2	30
0	−1	20
1	0	15
2	1	5

Holt has also informed you that the current spot rate of the yen (in baht) is THB.347826, while the current spot rate of the baht (in dollars) is $.0023.

As a financial analyst for Blades, you have been asked to answer the following questions for Ben Holt:

1. What is the amount, in baht, that Blades needs to borrow to cover the payments due to the Thai

suppliers? What is the amount, in yen, that Blades needs to borrow to cover the payments due to the Thai suppliers?

2. Given that Blades will use the receipts from the receivables in Thailand to repay the loan and that Blades plans to remit all baht-denominated cash flows to the U.S. parent whether it borrows in baht or yen, does the future value of the yen with respect to the baht affect the cost of the loan if Blades borrows in yen?
3. Using a spreadsheet, compute the expected amount (in U.S. dollars) that will be remitted to the United States in 6 months if Blades finances its working capital requirements by borrowing baht versus borrowing yen. Based on your analysis, should Blades obtain a yen- or baht-denominated loan?

SMALL BUSINESS DILEMMA

Short-Term Financing by the Sports Exports Company

At the current time, the Sports Exports Company focuses on producing footballs and exporting them to a distributor in the United Kingdom. The exports are denominated in British pounds. Jim Logan, the owner, plans to develop other sporting goods products besides the footballs that he produces. His entire expansion will be focused on the United Kingdom, where he is trying to make a name for his firm. He remains concerned about his firm's exposure to exchange rate risk but does not plan to let that get in the way of his expansion plans because he believes that his firm can continue to penetrate the British sporting goods market. He has just negotiated a joint venture with a British firm that will produce other sporting goods products that are more popular in the United States (such as basketballs) but will be sold in the United Kingdom. Jim will pay the British manufacturer in British pounds. These products will be delivered directly to the British distributor rather than to Jim, and the distributor will pay Jim with British pounds.

Jim's expansion plans will result in the need for additional funding. Jim would prefer to borrow on a short-term basis now. Jim has an excellent credit rating and collateral and therefore should be able to obtain short-term financing. The British interest rate is one-fourth of a percentage point above the U.S. interest rate.

1. Should Jim borrow dollars or pounds to finance his joint venture business? Why?
2. Jim could also borrow euros at an interest rate that is lower than the U.S. or British rate. The values of the euro and pound tend to move in the same direction against the dollar but not always by the same degree. Would borrowing euros to support the British joint venture result in more exposure to exchange rate risk than borrowing pounds? Would it result in more exposure to exchange rate risk than borrowing dollars?

INTERNET/EXCEL EXERCISES

The Bloomberg website provides interest rate data for many different foreign currencies over various maturities. Its address is **http://www.bloomberg.com**.

1. Go to the Markets section and then Rates and Bonds and notice the listing of countries for which yields of different foreign currencies are shown. Review the 3-month yields of currencies. Assume that you could borrow at a rate 1 percentage point above the quoted yield for each currency. Which currency would offer you the lowest quoted yield?
2. As a cash manager of a U.S.-based MNC that needs dollars to support U.S. operations, where would you borrow funds for the next 3 months? Explain.
3. Assume that at the beginning of each of the last 7 years, you had the choice of a one-year loan in U.S. dollars or Japanese yen. Your business is in the United States, but you considered borrowing yen because the yen annual interest rate was 2 percent versus a dollar annual interest rate of 7 percent. Go to **http://www.oanda.com/convert/fxhistory**. Obtain the annual percentage change in the yen's exchange rate for each of the last 7 years. Determine the effective financing rate of the yen in each of the last 7 years. Based on your results, was the annual effective financing rate lower for the yen or dollar on average over the 7 years? In how many of the years would you have been better off financing in yen rather than in dollars? Explain.