Chapter 17

Multinational Cost of Capital and Capital Structure

Lecture Outline

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  Comparing the Costs of Equity and Debt

Cost of Capital for MNCs
  Cost of Capital Comparison Using the CAPM
  Implications of the CAPM for an MNC’s Risk

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  Estimating the Cost of Debt and Equity
  Combining the Costs of Debt and Equity

Using the Cost of Capital for Assessing Foreign Projects
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Impact of an MNC’s Capital Structure Decisions on Its Value
Chapter Theme

This chapter explains why the capital structure and the cost of capital of MNCs may vary with those of domestic firms. It also explains why the cost of capital varies across countries. The disparity in the cost of capital across countries is important because it can influence the MNC’s decisions on where to establish subsidiaries and where to obtain funds.

Topics to Stimulate Class Discussion

1. Why don’t all MNCs attempt to obtain funds in countries where the cost of capital is very low?

2. The cost of capital is very high in Latin American countries. Yet, many MNCs continue to establish subsidiaries there. What underlying fact or that causes a high cost of capital can also enhance the revenues of subsidiaries over time?

3. Explain why a firm’s capital structure may be dependent on the countries in which it operates.

POINT/COUNTER-POINT:
Should the Reduced Tax Rate on Dividends Affect an MNC’s Capital Structure?

POINT: No. The change in the tax law reduces the taxes that investors pay on dividends. It does not change the taxes paid by the MNC. Thus, it should not affect the capital structure of the MNC.

COUNTER-POINT: A dividend income tax reduction may encourage a U.S.-based MNC to offer dividends to its shareholders, or to increase the dividend payment. This strategy reflects an increase in the cash outflows of the MNC. To offset these outflows, the MNC may have to adjust its capital structure. For example, the next time that it raises funds, it may prefer to use equity rather than debt so that it could free up some cash outflows (the outflows to cover dividend would be less than outflows associated with debt).

WHO IS CORRECT? Use the Internet to learn more about this issue. Which argument do you support? Offer your own opinion on this issue.

ANSWER: The MNC may consider shifting its capital structure, but would have to consider how the shift in its capital structure would affect its own tax rates. A shift to more equity would reduce the corporate tax advantage from using debt.

Answers to End of Chapter Questions

1. Capital Structure of MNCs. Present an argument in support of an MNC’s favoring a debt-intensive capital structure.

   Present an argument in support of an MNC’s favoring an equity-intensive capital structure.
ANSWER: MNCs that are well-diversified across countries would have somewhat stable cash flows and may therefore be able to handle a high level of debt. They may use substantial foreign debt financing to reduce their subsidiary exposure to exchange rate risk and country risk.

MNCs that are highly exposed to exchange rate movements or have subsidiaries located in politically unstable countries may experience very volatile cash flows. These MNCs could not handle high periodic debt payments and may be better off with an equity-intensive capital structure.

2. **Optimal Financing.** Wizard, Inc. has a subsidiary in a country where the government allows only a small amount of earnings to be remitted to the U.S. each year. Should Wizard finance the subsidiary with debt financing by the parent, equity financing by the parent, or financing by local banks in the foreign country?

ANSWER: Wizard should use financing by local banks in the foreign country, so that the subsidiary can make use of its funds by paying off local debt.

3. **Country Differences.** Describe general differences between the capital structures of firms based in the United States and those of firms based in Japan. Offer an explanation for these differences.

ANSWER: Japanese firms tend to have a higher degree of financial leverage. This may be because the government of Japan is more likely to rescue a troubled firm. Also, creditors may be more patient there, allowing a firm more time to recover.

4. **Local Versus Global Capital Structure.** Why might a firm use a “local” capital structure at a particular subsidiary that differs substantially from its “global” capital structure?

ANSWER: A particular country’s characteristics can cause the MNC’s subsidiary to use mostly debt or mostly equity, even if the MNC’s “global” target capital structure is more balanced. For example, if the country’s stock market is not well developed, the MNC may prefer not to issue stock there, as an inactive secondary market may make it difficult to place stock in that country. In this case, the subsidiary may be financed mostly with debt (such as loans from local banks).

5. **Cost of Capital.** Explain how characteristics of MNCs can affect the cost of capital.

ANSWER: The following characteristics of MNCs can influence the cost of capital:

- **Size.** MNCs have more opportunities to grow, and larger, better known firms may receive preferential treatment by creditors.

- **Access to international capital markets.** MNCs have access to more sources of funds than domestic firms. To the extent that financial markets are segmented, MNCs may be able to obtain financing from various sources at a lower cost.

- **International diversification.** If MNCs can achieve more stable cash flows through their international diversification, their probability of bankruptcy is reduced. Creditors and shareholders may therefore accept a lower rate of return when providing funds to the MNCs, which reflects a lower cost of capital for MNCs.
• Exchange rate risk. MNCs that are highly exposed to exchange rate movements may be more likely to experience financial problems (if they do not hedge the risk). Thus, they may incur a higher cost of capital.

• Country risk. MNCs with subsidiaries in politically unstable countries may experience volatile cash flows over time and be more susceptible to financial problems. Thus, they may incur a higher cost of capital.

6. **Capital Structure and Agency Issues.** Explain why managers of a wholly-owned subsidiary may be more likely to satisfy the shareholders of the MNC.

**ANSWER:** Managers of a wholly-owned subsidiary can more easily focus on the objective of satisfying the MNC's shareholders. If the subsidiary is partly-owned, this implies that these are minority shareholders who have an interest in the subsidiary. In this case, the managers may attempt to satisfy both the majority and minority shareholders. However, they cannot satisfy both groups simultaneously. Some decisions made to satisfy minority shareholders will adversely affect majority shareholders.

7. **Target Capital Structure.** LaSalle Corp. is a U.S.-based MNC with subsidiaries in various less developed countries where stock markets are not well established. How can LaSalle still achieve its “global” target capital structure of 50 percent debt and 50 percent equity, if it plans to use only debt financing for the subsidiaries in these countries?

**ANSWER:** LaSalle Corporation can use mostly equity financing for its U.S. operations. When consolidated with the debt financing of its subsidiaries, its “global” target capital structure is balanced. The heavy emphasis on equity financing in the U.S. offsets the heavy emphasis on debt financing in the foreign countries.

8. **Financing Decision.** Drexel Co. is a U.S.-based company that is establishing a project in a politically unstable country. It is considering two possible sources of financing. Either the parent could provide most of the financing, or the subsidiary could be supported by local loans from banks in that country. Which financing alternative is more appropriate to protect the subsidiary?

**ANSWER:** Drexel should let local banks support the subsidiary since it would be in the interest of the banks to see that the subsidiary performs well. If the host government imposed restrictions that reduced the subsidiary’s profits, the banks could be adversely affected as well.

Financing from the MNC parent would not provide such protection since the local banks would have less interest in protecting the subsidiary from host government restrictions.

9. **Financing Decision.** Veer Co. is a U.S.-based MNC that has most of its operations in Japan. Since the Japanese companies with which it competes use more financial leverage, it has decided to adjust its financial leverage to be in line with theirs. With this heavy emphasis on debt, Veer should reap more tax advantages. It believes that the market’s perception of its risk will remain unchanged, since its financial leverage will still be no higher than that of its Japanese competitors. Comment on this strategy.
ANSWER: Japanese corporations can use a higher degree of financial leverage because of their relationships with creditors and the government. The Japanese government may be willing to bail out a Japanese company whose shares are held by Japanese investors and institutions. Yet, it is less likely to bail out a subsidiary of a U.S. corporation. The Japanese subsidiary does not receive the same protection that other Japanese firms receive. Therefore, if this subsidiary attempts to use as much financial leverage, its risk will be higher than that of the Japanese competitors.

10. Financing Tradeoffs. Pullman, Inc., a U.S. firm, has been highly profitable, but prefers not to pay out higher dividends because its shareholders want the funds to be reinvested. It plans for large growth in several less developed countries. Pullman would like to finance the growth with local debt in the host countries of concern to reduce its exposure to country risk. Explain the dilemma faced by Pullman, and offer possible solutions.

ANSWER: Pullman Inc. has retained earnings that it must reinvest. Yet, if it uses the retained earnings to finance the growth, it will be more exposed to country risk. Pullman may consider using retained earnings but allowing for other local institutions in the host countries to invest in their projects as well. In this way, retained earnings are used while tying some local institutions into the project for negotiating power in case the host government imposes severe restrictions on the subsidiaries.

11. Costs of Capital Across Countries. Explain why the cost of capital for a U.S.-based MNC with a large subsidiary in Brazil is higher than for a U.S.-based MNC in the same industry with a large subsidiary in Japan. Assume that the subsidiary operations for each MNC are financed with local debt in the host country.

ANSWER: The risk-free interest rate is much higher in Brazil than in Japan. In addition, the risk premium on the business in Brazil may be higher than the risk premium on the business in Japan.

12. WACC. An MNC has total assets of $100 million and debt of $20 million. The firm’s before-tax cost of debt is 12 percent, and its cost of financing with equity is 15 percent. The MNC has a corporate tax rate of 40 percent. What is this firm’s weighted average cost of capital?

ANSWER:

\[
k_c = \left( \frac{D}{D+E} \right) k_d (1-t) + \left( \frac{E}{D+E} \right) k_e
\]

\[
= \left( \frac{20}{100} \right) 12\% (1-.4) + \left( \frac{80}{100} \right) 15\%
\]

\[
= .144 \times .6 + .15 \times .5
\]

\[
= .0864 + .075 = .1614
\]

\[
=.1614 = 16.14\%
\]

13. Cost of Equity. Wiley, Inc., an MNC, has a beta of 1.3. The U.S. stock market is expected to generate an annual return of 11 percent. Currently, Treasury bills yield 2 percent. Based on this information, what is Wiley’s estimated cost of equity?
ANSWER:

\[ k_e = R_f + B(R_m - R_f) \]
\[ = 2\% + 1.3(11\% - 2\%) \]
\[ = .137 \]
\[ = 13.7\% \]

14. **WACC.** Blues, Inc. is an MNC located in the U.S. Blues would like to estimate its weighted average cost of capital. On average, bonds issued by Blues yield 9 percent. Currently, T-bill rates are 3 percent. Furthermore, Blues’ stock has a beta of 1.5, and the return on the Wilshire 5000 stock index is expected to be 10 percent. Blues’ target capital structure is 30 percent debt and 70 percent equity. If Blues is in the 35 percent tax bracket, what is its weighted average cost of capital?

ANSWER:

First, estimate the cost of equity using the CAPM:

\[ k_e = R_f + B(R_m - R_f) \]
\[ = 3\% + 1.5(10\% - 3\%) \]
\[ = .135 \]
\[ = 13.5\% \]

Next, estimate the weighted average cost of capital:

\[
k_c = \left( \frac{D}{D + E} \right) k_d (1-t) + \left( \frac{E}{D + E} \right) k_e
\]
\[ = .3(9\%)(1-.35) + .7(13.5\%) \]
\[ = .01755 + .945 \]
\[ = .1121 = 11.21\% \]

15. **Effects of September 11.** Rose, Inc., of Dallas, Texas needed to infuse capital into its foreign subsidiaries to support their expansion. As of August 2001, it planned to issue stock in the U.S. However, after the September 11, 2001 terrorist attack on the U.S., it decided that long-term debt was a cheaper source of capital. Explain how the terrorist attack could have altered the two forms of capital.

ANSWER: The attack had an adverse effect on stock market conditions, and Rose’s stock price declined by 10 percent shortly after the attack. Yet, U.S. interest rates declined in response to the attack. The cost of long-term debt stayed about the same for Rose Inc., but the cost of equity increased as a result of low valuations.

16. **Nike’s Cost of Capital.** If Nike decides to expand further in South America, why might its capital structure be affected? Why will its overall cost of capital be affected?

ANSWER: If Nike expands further in South America, it must decide how to finance those operations. It may consider using a large proportion of debt financing so that there will be less
funds that ultimately have to be converted into dollars as funds are remitted to the parent. This could reduce exposure to exchange rate risk, more than if the financing was in dollars. Since the borrowed funds in South America would likely have a higher interest rate than the U.S. interest rate, Nike’s cost of capital is affected. In addition, if Nike used more local debt financing instead of parent equity financing to create more offsetting cash flows in foreign currencies (as explained above), its capital structure may be more debt-intensive. This type of capital structure may also be beneficial because it can protect against country risk, as the local banks would have an interest in ensuring the protection of the subsidiary’s financial condition from excessive government restrictions or taxes, because they are owed interest and principal payments by the subsidiary.

**Advanced Questions**

17. **Interaction Between Financing and Investment.** Charleston Corp. is considering establishing a subsidiary in either Germany or the United Kingdom. The subsidiary will be mostly financed with loans from the local banks in the host country chosen. Charleston has determined that the revenue generated from the British subsidiary will be slightly more favorable than the revenue generated by the German subsidiary, even after considering tax and exchange rate effects. The initial outlay will be the same, and both countries appear to be politically stable. Charleston decides to establish the subsidiary in the United Kingdom because of the revenue advantage. Do you agree with its decision? Explain.

**ANSWER:** Charleston neglected the cost of financing the subsidiary. It may be more costly to finance a subsidiary in the United Kingdom than a subsidiary in Germany when using the local debt of the host country as the primary source of funds. When considering the cost of financing, a subsidiary in the United Kingdom could be less favorable than a subsidiary in Germany, based on the information provided in this question.

18. **Financing Decision.** In recent years, several U.S. firms have penetrated Mexico’s market. One of the biggest challenges is the cost of capital to finance businesses in Mexico. Mexican interest rates tend to be much higher than U.S. interest rates. In some periods, the Mexican government does not attempt to lower the interest rates because higher rates may attract foreign investment in Mexican securities.

a. How might U.S.-based MNCs expand in Mexico without incurring the high Mexican interest expenses when financing the expansion? Are any disadvantages associated with this strategy?

**ANSWER:** The parents of the MNCs could provide funding for the subsidiaries by investing their own capital. This involves converting dollars to pesos for use in Mexico. In this case, the parent has more at stake. As the Mexican subsidiary remits funds back to the U.S. parent, it will remit larger amounts if it does not finance with pesos because the financing came from the U.S. (no cash outflows are needed to cover interest payments in pesos). Thus, the MNC is exposed to a higher level of exchange rate risk.

b. Are there any additional alternatives for the Mexican subsidiary to finance its business itself after it has been well established? How might this strategy affect the subsidiary’s capital structure?
ANSWER: Once the subsidiary has generated earnings, it can retain the earnings and reinvest them to finance future operations. This strategy emphasizes equity financing and would result in an equity-intensive capital structure for the subsidiary.

19. Financing Decision. Forest Company produces goods in the U.S., Germany, and Australia, and sells the goods in the areas where they are produced. Foreign earnings are periodically remitted to the U.S. parent. As the euro’s interest rates have declined to a very low level, Forest Company has decided to finance its German operations with borrowed funds in place of the parent’s equity investment. Forest will transfer the U.S. parent’s equity investment in the German subsidiary over to its Australian subsidiary. These funds will be used to pay off a floating-rate loan, as Australian interest rates have been high and are rising. Explain the expected effects of these actions on the consolidated capital structure and cost of capital of Forest Company.

Given the strategy to be used by Forest, explain how its exposure to exchange rate risk may have changed.

ANSWER: While the capital structure is now more equity-intensive in Australia and more debt-intensive in Germany, its consolidated capital structure is not necessarily affected. The MNC’s cost of capital may have been reduced because of the transfer of debt to a country where interest rates were low.

The exposure of Forest resulting from German operations may have decreased, because the euro inflows are now more offset by the euro outflows on the German debt. Thus, a smaller amount of earnings is remitted to the U.S. parent. The exposure of Forest resulting from Australian operations may have increased because the Australian dollars to be remitted to the U.S. will increase once the Australian dollar loan is paid off.

20. Financing in a High Interest Rate Country. Fairfield Corp., a U.S. firm, recently established a subsidiary in a less developed country that consistently experiences an annual inflation rate of 80 percent or more. The country does not have an established stock market, but loans by local banks are available with a 90 percent interest rate. Fairfield has decided to use a strategy in which the subsidiary is financed entirely with funds from the parent. It believes that in this way it can avoid the excessive interest rate in the host country. What is a key disadvantage of using this strategy that may cause Fairfield to be no better off than if it paid the 90 percent interest rate?

ANSWER: The local currency of the host company will likely depreciate consistently and substantially against the dollar because of the pressure caused by high inflation. Consequently, the cash flows remitted over time will be converted at an unfavorable exchange rate. If the subsidiary was financed with local funds, the interest would be paid on loans prior to remitting funds to the U.S. so that a smaller amount of funds would be affected by the unfavorable exchange rate.

21. Cost of Foreign Debt Versus Equity. Carazona Inc. is a U.S. firm that has a large subsidiary in Indonesia. It wants to finance the subsidiary’s operations in Indonesia. However, the cost of debt is presently about 30 percent there for firms like Carazona or government agencies that have a very strong credit rating. A consultant suggests to Carazona that it should use equity financing there to avoid the high interest expense. He suggests that since Carazona’s cost of equity in the U.S. is about 14 percent, so the Indonesian investors should be satisfied with a return of about 14 percent as well. Clearly explain why the consultant’s advice is not logical. That is, explain why Carazona’s cost of equity in Indonesia would not be less than Carazona’s cost of debt in Indonesia.
ANSWER: The cost of equity is based on a risk-free interest rate plus a risk premium. The risk-free interest rate is about 30 percent so Indonesian investors are not going to invest in Carazona Inc. for less than the risk-free rate.

22. Integrating Cost of Capital and Capital Budgeting. Zylon Co. is a U.S. firm that provides technology software for the government of Singapore. It will be paid S$7,000,000 at the end of each of the next five years. The entire amount of the payment represents earnings since Zylon created the technology software years ago. Zylon is subject to a 30 percent corporate income tax rate in the United States. Its other cash inflows (such as revenue) are expected to be offset by its other cash outflows (due to operating expenses) each year, so its profits on the Singapore contract represent its expected annual net cash flows. Its financing costs are not considered within its estimate of cash flows. The Singapore dollar (S$) is presently worth $.60, and Zylon uses that spot exchange rate as a forecast of future exchange rates.

The risk-free interest rate in the United States is 6 percent while the risk-free interest rate in Singapore is 14 percent. Zylon’s capital structure is 60 percent debt and 40 percent equity. Zylon is charged an interest rate of 12 percent on its debt. Zylon’s cost of equity is based on the CAPM. It expects that the U.S. annual market return will be 12 percent per year. Its beta is 1.5.

Quiso Co., a U.S. firm, wants to acquire Zylon and offers Zylon a price of $10,000,000.

Zylon’s owner must decide whether to sell the business at this price and hires you to make a recommendation. Estimate the NPV to Zylon as a result of selling the business, and make a recommendation about whether Zylon’s owner should sell the business at the price offered.

ANSWER:
Zylon’s cost of debt = 12% × (1 – .3) = 8.4%
Zylon’s cost of equity = 6% + (12% – 6%) × 1.5 = 15%

Zylon’s cost of capital = (60% × 8.4%) + (40% × 15%)
= .0504 + .06
= .1104 or about 11%

Zylon’s annual expected before-tax $ CF are S$7,000,000 × $.60 or $4,200,000.

Zylon is taxed on these earnings, so its after-tax cash flows = $4,200,000 × (1 – .3) = $2,940,000

If Zylon divests, it gives up a five-year annuity of $2,940,000.

Its cost of capital = 11%, and the present value interest factor of annuity (PVIFA) for 5 years at this rate is 3.6959.

PV of forgone cash flows = $2,940,000 × 3.6959 = $10,865,946. This is more than Zylon would receive from selling the business, so it should not sell the business.

23. Financing with Foreign Equity. Orlando Co. has its U.S. business funded with dollars with a capital structure of 60% debt and 40% equity. It has its Thailand business funded with Thai baht with a capital structure of 50% debt and 50% equity. The corporate tax rate on U.S. earnings and on Thailand earnings is 30%. The annualized 10-year risk-free interest rate is 6% in the U.S. and
21% in Thailand. The annual real rate of interest is about 2% in the U.S. and in Thailand. Interest rate parity exists. Orlando pays 3 percentage points above the risk-free rates when it borrows, so its before-tax cost of debt is 9% in the U.S. and 24% in Thailand. Orlando expects that the U.S. annual stock market return will be 10% per year, and the Thailand annual stock market return will be 28% per year. Its business in the U.S. has a beta of .8 relative to the U.S. market, while its business in Thailand has a beta of 1.1 relative to the Thai market. The equity used to support Orlando’s Thai business was created from retained earnings by the Thailand subsidiary in previous years. However, Orlando Co. is considering a stock offering in Thailand that is denominated in Thai baht and targeted at Thai investors. Estimate Orlando’s cost of equity in Thailand that would result from issuing stock in Thailand.

**ANSWER:**

Estimate cost of equity in Thailand:

\[
\begin{align*}
R(f) & = 0.21 \\
\text{Beta} & = 1.1 \\
R(m) & = 0.28
\end{align*}
\]

\[
\text{Cost of Equity} = R(f) + \text{Beta}(R(m) – R(f))
\]

Cost of Equity = 28.70%

24. **Assessing Foreign Project Funded With Debt and Equity.** Nebraska Co. plans to pursue a project in Argentina that will generate revenue of 10 million Argentine pesos (AP) at the end of each of the next 4 years. It will have to pay operating expenses of AP3 million per year. The Argentine government will charge a 30% tax rate on profits. All after-tax profits each year will be remitted to the U.S. parent and no additional taxes are owed. The spot rate of the AP is presently $.20. The AP is expected to depreciate by 10% each year for the next 4 years. The salvage value of the assets will be worth AP40 million in 4 years after capital gains taxes are paid. The initial investment will require $12 million, half of which will be in the form of equity from the U.S. parent, and half of which will come from borrowed funds. Nebraska will borrow the funds in Argentine pesos. The annual interest rate on the funds borrowed is 14%. Annual interest (and zero principal) is paid on the debt at the end of each year, and the interest payments can be deducted before determining the tax owed to the Argentine government. The entire principal of the loan will be paid at the end of year 4. Nebraska requires a rate of return of at least 20% on its invested equity for this project to be worthwhile. Determine the NPV of this project. Should Nebraska pursue the project?

**ANSWER:**

Initial investment of $12 million is supported by one-half debt, or $6 million. Debt financing requires AP30 million. The annual interest payment is 14% of AP30 million = AP4,000,000.
<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue</th>
<th>Operating expenses</th>
<th>Interest payments</th>
<th>Pre-tax profit</th>
<th>After-tax (30%) profit</th>
<th>Repay loan</th>
<th>Salvage value</th>
<th>Cash flow in AP</th>
<th>Exchange rate</th>
<th>Cash flow in $ to parent</th>
<th>PV (20% discount rate)</th>
<th>Initial outlay in U.S. $</th>
<th>Cumulative NPV</th>
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<tr>
<td>0</td>
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<td>AP3,000,000</td>
<td>AP4,200,000</td>
<td>AP 2,800,000</td>
<td>AP,960,000</td>
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<td></td>
<td>AP 1,960,000</td>
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<td>AP4,200,000</td>
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<td>AP 1,960,000</td>
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<td></td>
<td>AP 1,960,000</td>
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<td>$11,960,000</td>
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<td>AP 40,000,000</td>
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<td>AP 1,960,000</td>
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<td>$317,520</td>
<td>$183,750</td>
<td>$840,937</td>
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<td>AP3,000,000</td>
<td>AP4,200,000</td>
<td>AP 2,800,000</td>
<td>AP 1,960,000</td>
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<td>AP 1,960,000</td>
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The NPV for the project is –$4,403,646. Nebraska should not pursue the project.

**25. Sensitivity of Foreign Project Risk to Capital Structure.** Texas Co. produces drugs and plans to acquire a subsidiary in Poland. This subsidiary is a lab that would perform biotech research. Texas Co. is attracted to the lab because of the cheap wages of scientists in Poland. The parent of Texas Co. would review the lab research findings of the subsidiary in Poland when deciding which drugs to produce, and would then produce the drugs in the U.S. The expenses incurred in Poland will represent about half of the total expenses incurred by Texas Co. All drugs produced by Texas Co. are sold in the U.S. and this situation would not change in the future. Texas Co. has considered 3 ways to finance the acquisition of the Polish subsidiary if it buys it. First, it could use 50% equity funding (in dollars) from the parent and 50% borrowed funds in dollars. Second, it could use 50% equity funding (in dollars) from the parent and 50% borrowed funds in Polish zloty. Third, it could use 50% equity funding by selling new stock to Polish investors denominated in Polish zloty and 50% borrowed funds denominated in Polish zloty. Assuming that Texas Co. decides to acquire the Polish subsidiary, which financing method for the Polish subsidiary would minimize the exposure of Texas to exchange rate risk? Explain.

**ANSWER:** Since all revenue is generated in dollars, Texas Co. should obtain all financing (debt and equity) in dollars. It will have some exposure because of expenses at the subsidiary in Poland, but it would not want any more cash outflows in zloty, because it already has a net cash outflows position.

**26. Cost of Capital and Risk of Foreign Financing.** Vogl Co. is a U.S. firm that conducts major importing and exporting business in Japan, whereby all transactions are invoiced in dollars. It obtained debt in the U.S. at an interest rate of 10 percent per year. The long-term risk-free rate in the U.S. is 8 percent. The stock market return in the U.S. is expected to be 14 percent annually. Vogl’s beta is 1.2. Its target capital structure is 30 percent debt and 70 percent equity. Vogl Co. is subject to a 25% corporate tax rate.
a. Estimate the cost of capital to Vogl Co.

b. Vogl has no subsidiaries in foreign countries but plans to replace some of its dollar-denominated debt with Japanese yen-denominated debt, since Japanese interest rates are low. It will obtain yen-denominated debt at an interest rate of 5 percent. It can not effectively hedge the exchange rate risk resulting from this debt because of parity conditions that makes the price of derivatives contracts reflect the interest rate differential. How could Vogl Co. reduce its exposure to the exchange rate risk resulting from the yen-denominated debt without moving its operations?

**ANSWER:**

a. Cost of debt = 10% × (1 – .25%) = 7.5%
   Cost of equity = 8% + 1.2 (14% – 8%) = 15.2%
   Cost of capital = (7.5% × 30%) + (15.2% × 70%) = 12.89%

b. Invoice exports in yen, and use yen to pay off loan.

**Solution to Continuing Case Problem: Blades, Inc.**

1. If Blades expands into Thailand, do you think its cost of capital will be higher or lower than the cost of capital of roller blade manufacturers operating solely in the United States? Substantiate your answer by outlining how Blades’ characteristics distinguish it from domestic roller blade manufacturers.

**ANSWER:** Blades’ cost of capital will probably be higher than the cost of capital of roller blade manufacturers operating solely in the U.S. as a result of Blades’ expansion into Thailand. Usually, an MNCs size, its access to international capital markets, and international diversification are favorable to an MNC’s cost of capital. However, Blades is still relatively small compared to U.S. roller blade manufacturers and may consequently not receive preferential treatment from creditors. Furthermore, although expanding into Thailand will give Blades access to the Thai capital markets, interest rates in Thailand are relatively high. Thus, this access to the Thai capital markets will not reduce Blades’ cost of capital. Since the probability that Blades will go bankrupt is reduced as a result of its expansion into Thailand, Blades’ cost of capital may be favorably affected by this factor. The high levels of exchange rate and country risk will both increase Blades’ cost of capital. In sum, it appears that Blades’ cost of capital will be negatively affected by its expansion into Thailand.

2. According to the CAPM, how would Blades’ required rate of return be affected by an expansion into Thailand? How do you reconcile this result with your answer to question 1? Do you think Blades should use the required rate or return resulting from the CAPM to discount the cash flows of the Thai subsidiary to determine its NPV?

**ANSWER:** Before Blades’ expansion into Thailand, its required rate of return according to the CAPM was:

\[ k_e = R_f + B(R_m - R_f) \]
\[ = 5% + 2(12\% - 5\%) \]
\[ = 19\% \]
Subsequent to Blades’ expansion into Thailand, its required rate of return according to the CAPM will be:

\[ k_e = R_f + B(R_m - R_f) \]
\[ = 5\% + 1.8(12\% - 5\%) \]
\[ = 17.6\% \]

Thus, the required rate of return on equity would decrease by 1.4 percent as a result of Blades’ expansion into Thailand.

The answer to question 1 suggests that Blades’ cost of capital would increase as a result of its expansion into Thailand. The CAPM considers only systematic (i.e., non-diversifiable) risk. Since Blades’ exposure to U.S. market conditions would be reduced as a result of its expansion into Thailand, its systematic risk would decline, resulting in a lower beta. The answer to question 1 considers unsystematic (i.e., diversifiable) risks associated with operating in Thailand, such as Thailand’s exchange rate and country risks. Consideration of unsystematic risk results in a higher cost of capital for Blades.

Many MNCs consider unsystematic risk when assessing the risk of operating in a foreign country. Since Blades is not currently operating in other countries besides the U.S. and Thailand, economic conditions in Thailand will probably have a large impact on Blades’ cash flow. Consequently, Blades may decide to consider unsystematic risk in its assessment of the cost of capital. Thus, Blades should probably not use the required rate of return resulting from the CAPM to discount the cash flow of the Thai subsidiary.

3. If Blades borrows funds in Thailand to support its Thai subsidiary, how would this affect its cost of capital? Why?

ANSWER: If Blades borrows funds in Thailand to support its Thai subsidiary, its cost of capital would probably increase. This is because the cost of debt in Thailand is greater than that in the U.S.

4. Given the high level of interest rates in Thailand, the high level of exchange rate risk, and the high (perceived) level of country risk, do you think Blades will be more or less likely to use debt in its capital structure as a result of its expansion into Thailand? Why?

ANSWER: Given the high levels of interest rates, exchange rate risk, and (perceived) country risk in Thailand, it is uncertain whether Blades will use more or less debt in its capital structure as a result of its expansion into Thailand. The high cost of borrowing funds in Thailand may deter Blades from accessing the capital markets in Thailand. Conversely, expectations of a future depreciation of the baht may induce Blades to borrow funds in Thailand (in lieu of using parent funds) in order to reduce the baht-denominated cash flows remitted back to the U.S. Furthermore, if Blades is exposed to a high degree of country risk, it may use much debt financing in Thailand to give Thai creditors a genuine interest in ensuring that Blades is treated fairly by the Thai government. The net effect on Blades’ capital structure is uncertain and depends on the weights given to each of these forces.
Solution to Supplemental Case: Sabre Computer Corporation

a. The cost of financing is composed of a risk-free rate and a risk premium. The Mexican joint venture would likely have a higher risk-free rate since its inflation rate is usually much higher than Hungary’s. The risk premium should probably be higher on the Hungarian venture because there is more uncertainty about the revenue to be generated from that venture. However, the advantage on the risk premium for the Mexican venture will be overwhelmed by the disadvantage on the risk-free rate. Overall, the cost of financing the Mexican project will be higher.

b. While the Mexican venture will have higher financing costs, the Mexican subsidiary will not necessarily experience lower returns. The high inflation that causes a high risk-free rate also can inflate periodic cash flows. Thus, there may be an offsetting effect. Recall that the price of computers in Mexico is tied to the inflation rate.

c. If the debt is backed by the parent, the creditors may be less inclined to charge a high risk premium.

d. The Hungarian subsidiary may have to pay a higher interest rate, because it would not have the implicit backing of the Hungarian government. The Hungarian-owned companies could possibly receive some government support if they experienced financial problems. Therefore, they may be able to obtain funds at a lower cost.

e. The risk-free interest rate is likely to rise in response to an increase in inflation. Therefore, the cost of funds should rise as well. The cost of production may also rise by a similar degree. The revenue from selling the computers is not tied to Hungarian inflation because the computers are sold in other countries. Those countries are not expected to experience inflated economies. Overall, the costs should increase without any impact on revenue.

Small Business Dilemma

Multinational Capital Structure Decision at the Sports Exports Company

1. What is an advantage of using equity to support the subsidiary? What is a disadvantage?

   ANSWER: An advantage is that retained earnings may be a relatively low-cost method of financing. The use of equity to support the subsidiary is especially effective if Jim did not have any other plan for using the equity.

   A disadvantage of using equity is that it has to be converted into pounds to support the British subsidiary. This creates a new form of exposure to the future value of the pound, which is similar to the exposure that the firm would have reduced by producing the footballs in the United Kingdom. When earnings are remitted to the U.S., they are converted into dollars and are exposed to exchange rate movements. The firm could have reduced this exposure by using pound-denominated debt and owing interest payments denominated in pounds. In this case, there would be a smaller amount of pounds remitted to the U.S., because the cost of using debt capital would be pulled out before any pounds are sent to the U.S.

2. If Jim decided to use long-term debt as its primary form of capital to support this subsidiary, should he use dollar-denominated debt or pound-denominated debt?
ANSWER: Jim should use pound-denominated debt, because this creates a cash outflow on interest payments that offsets part of the cash inflow, and therefore reduces the exchange rate risk. Even though the dollar-denominated debt has a slightly lower interest rate, the actual cost of financing with dollar-denominated debt could be much higher if the pound weakens over time (because it would take more pounds to convert to dollars to make the interest payments).

3. How can the equity proportion of this firm’s capital structure increase over time after it is more established?

ANSWER: It will generate earnings that can be retained and reinvested as an equity investment in the firm.