

CHAPTER 19

The Cost of Capital for Foreign Projects

Opening Case 19: GM's Target Debt Ratio in its Overseas Expansion

Analysts say that global vehicle production will double in the next 20 years. "Projected growth in the global auto industry is going to occur in places other than North America and Europe, and most of that growth is going to occur in Asia," said Jim Bright, a Ford spokesman in Detroit. Thus, it should come as no surprise that European, Japanese, and US automakers have been expanding their operations in Asia aggressively.

General Motors (GM) sold 443,000 vehicles in the Asia-Pacific market in 1998, which accounted for 4 percent of the market. And GM wished to expand its Asian market to 10 percent by 2005. To accomplish its sales goal, GM has recently begun to establish a strong presence in Asia through construction of new plants, acquisitions and alliances, and strategic partnerships (see figure 19.1). As part of its aggressive expansion in Asia, GM made an offer to buy Daewoo Motor of Korea for \$5.5 billion in December 1999. Daewoo Motors, the debt-laden number two Korean automaker, is an affiliate of the Daewoo Group, which is being dismantled by its creditors after amassing almost \$80 billion in liabilities.

GM's plan for Daewoo Motors includes a \$5.5 billion cash payment, its offer of a one-third equity stake to creditors, and its demand for creditors to write off a substantial portion of their Daewoo Motors' debt. All these financial arrangements are designed to insure that the new Daewoo Motors's balance sheet will reflect a debt ratio of 40 percent. Analysts think that this 40 percent debt ratio is GM's target debt ratio, the combination of equity and debt that minimizes its cost of capital and maximizes its market value. How did GM arrive at a 40 percent debt ratio? In fact, GM's

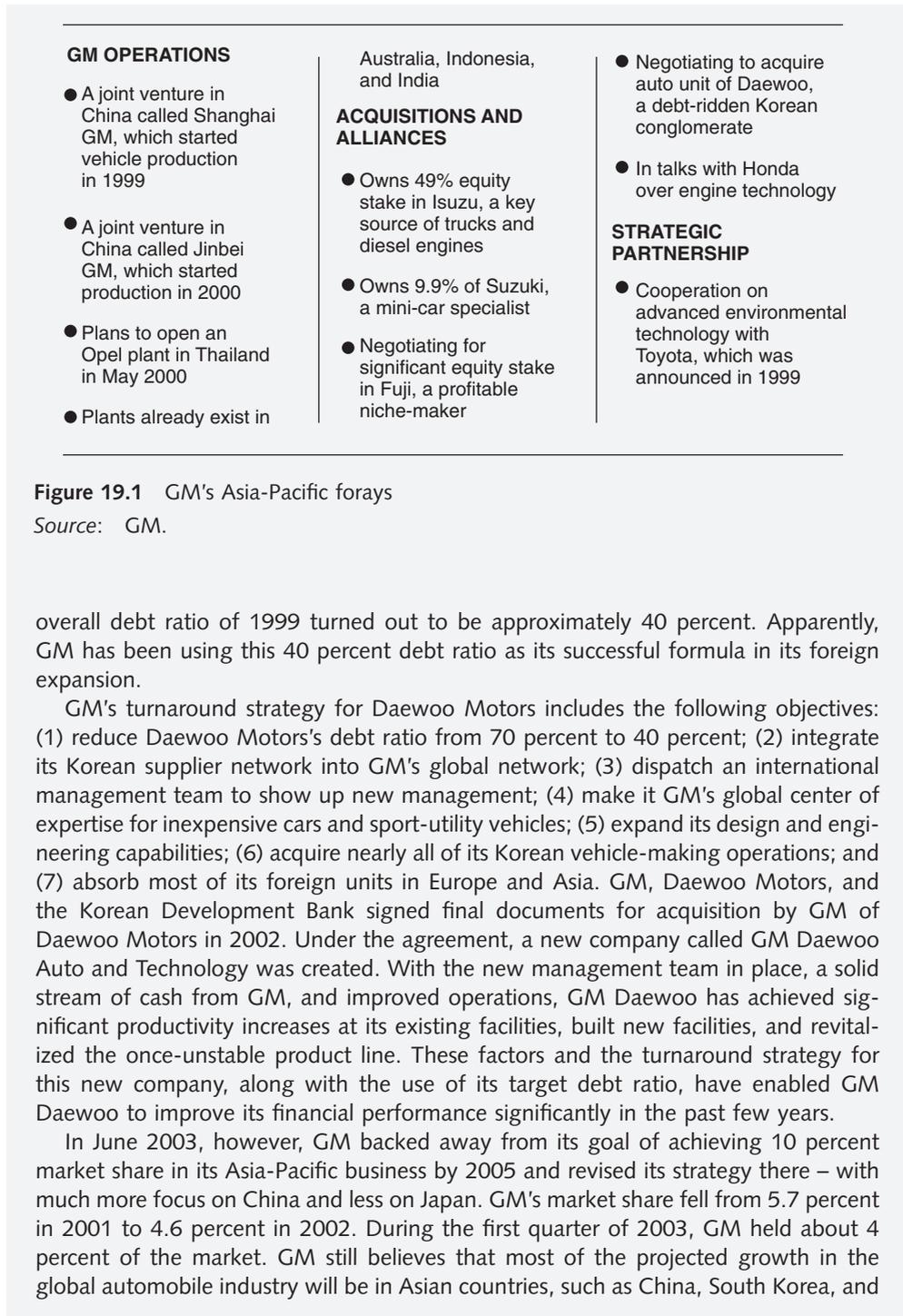


Figure 19.1 GM's Asia-Pacific forays

Source: GM.

overall debt ratio of 1999 turned out to be approximately 40 percent. Apparently, GM has been using this 40 percent debt ratio as its successful formula in its foreign expansion.

GM's turnaround strategy for Daewoo Motors includes the following objectives: (1) reduce Daewoo Motors's debt ratio from 70 percent to 40 percent; (2) integrate its Korean supplier network into GM's global network; (3) dispatch an international management team to show up new management; (4) make it GM's global center of expertise for inexpensive cars and sport-utility vehicles; (5) expand its design and engineering capabilities; (6) acquire nearly all of its Korean vehicle-making operations; and (7) absorb most of its foreign units in Europe and Asia. GM, Daewoo Motors, and the Korean Development Bank signed final documents for acquisition by GM of Daewoo Motors in 2002. Under the agreement, a new company called GM Daewoo Auto and Technology was created. With the new management team in place, a solid stream of cash from GM, and improved operations, GM Daewoo has achieved significant productivity increases at its existing facilities, built new facilities, and revitalized the once-unstable product line. These factors and the turnaround strategy for this new company, along with the use of its target debt ratio, have enabled GM Daewoo to improve its financial performance significantly in the past few years.

In June 2003, however, GM backed away from its goal of achieving 10 percent market share in its Asia-Pacific business by 2005 and revised its strategy there – with much more focus on China and less on Japan. GM's market share fell from 5.7 percent in 2001 to 4.6 percent in 2002. During the first quarter of 2003, GM held about 4 percent of the market. GM still believes that most of the projected growth in the global automobile industry will be in Asian countries, such as China, South Korea, and

Thailand. GM's presence in Asia is formidable and will continue to grow, because otherwise it could risk losing its global leadership position. GM has automotive facilities and sales offices in 15 Asian countries. Main manufacturing and assembly operations are located in Australia, China, Indonesia, Korea, Vietnam, and Thailand.

Sources: "GM Offers Daewoo Creditors a Stake in Korean Firm in Exchange for Debt," *The Wall Street Journal*, Dec. 21, 1999, p. A3; "GM Pursues New Links with Japanese," *The Wall Street Journal*, Dec. 3, 1999, p. A3; "GM Alters Strategy in Asia Pacific," *The Detroit News*, June 12, 2003, pp. 1B, 4B; and www.gm.com.

In chapter 18, we discussed two discounted cash flow approaches: the net-present-value method and the internal-rate-of-return method. These methods evaluate the net cash flows of a project in terms of the required rate of return to determine its acceptability. The actual required rate of return applied by a multinational company (MNC) may be the cost of capital adjusted for political and exchange risks.

In this chapter, we consider four major topics. First, we discuss the weighted average cost of capital and its component costs of capital (the cost of debt and the cost of equity). In addition, this first section explains how corporate and country characteristics influence the cost of capital for multinational cases. Second, we analyze a firm's capital structure, which consists of long-term debt and common equity. In doing so, we explain how an MNC considers corporate and country characteristics when it establishes its capital structure. Third, we describe the relationship between the marginal cost of capital and foreign investment analysis. The marginal cost of capital refers to the cost of additional funds that the firm wishes to raise. Fourth, we compare the cost of capital and the capital structure across countries.

● 19.1 The Weighted Average Cost of Capital

The **weighted average cost of capital (WACC)** is a weighted average of the component costs: the cost of debt, the cost of preferred stock, and the cost of equity. The WACC is normally used as the firm's cost of capital for a number of reasons. First, if a single component cost is used as a criterion for acceptance, projects with a low rate of return may be accepted while projects with a high rate of return may be rejected. Some low-return projects would be accepted because they could be financed with a cheaper source of capital, such as debt. Some high-return projects would be rejected because they have to be financed with an expensive source of capital, such as equity. Second, if a firm accepts projects that yield more than its WACC, it can increase the market value of its common stock. In this situation, the market value of the common stock increases because these projects are expected to earn more on their equity-financed portion than the cost of equity.

The WACC is the cost for each type of capital multiplied by its proportion of the total amount of all capital issued by the firm:

$$k = \frac{S}{B+S}(k_e) + \frac{B}{B+S}(k_i) \quad (19.1)$$

where k is the weighted average cost of capital, k_e is the cost of equity, k_t is the after-tax cost of debt, B is the market value of the firm's debt, and S is the market value of the firm's equity.

19.1.1 The cost of equity

Interest and preferred dividends are directly measurable components of debt and preferred stocks, but we do not have such a measurable element for the cost of common equity. The reason is apparent once we realize that dividend declarations on common stock are made at the discretion of a firm's board of directors. Consequently, the cost of common equity is the most difficult concept to measure.

The **cost of equity** for a firm is the minimum rate of return necessary to attract investors to buy or hold a firm's common stock. This required rate of return is the discount rate that equates the present value of all expected future dividends per share with the current price per share. If dividends per share are expected to grow at a constant growth rate indefinitely, we can measure the cost of equity by the following formula:

$$k_e = \frac{D_1}{P} + g \quad (19.2)$$

where D_1 is the expected dividends per share to be paid at the end of 1 year, P is the current market price per share, and g is the annual dividend growth rate.

An alternative approach to the above dividend valuation model for the cost of capital is the capital asset pricing model (CAPM) described in chapter 16. If a market is in equilibrium, the expected rate of return on an individual security (j) is stated as follows:

$$R_j = R_f + (R_m - R_f)\beta_j \quad (19.3)$$

where R_j is the expected rate of return on security j ; R_f is the riskless rate of interest; R_m is the expected rate of return on the market portfolio, which is a group of risky securities such as Standard & Poor's 500 Stocks; and β_j is the systematic risk of security j . This equation is known as the **security market line**, which consists of the riskless rate of interest (R_f) and a risk premium $[(R_m - R_f)\beta_j]$ for a particular firm j ; the term $(R_m - R_f)$ is known as the **market risk premium**.

The CAPM is based on the assumption that intelligent risk-averse investors seek to diversify their risks. As a result, the only risk that is rewarded with a risk premium is systematic or undiversifiable risk. This theory suggests that the cost of capital for MNCs is generally lower than the cost of capital for domestic companies. In chapter 16, we saw that a well-diversified MNC company can significantly cut the systematic risk of a well-diversified domestic company. Within the international context, systematic risk relates to such global events as worldwide recessions, world wars, and changes in the world energy supply. Unsystematic risk relates to such national events as expropriation, currency controls, inflation, and exchange rate changes.

One potential problem with using the CAPM is how to compute beta (β). Beta may be estimated solely on the basis of subjective probability distributions. But it is a common practice to use past data to estimate future betas. If the beta computed from historical data is a reliable surrogate for a future beta, financial managers have an important tool in formulating profitable investment decisions. Some empirical surveys indicate that past betas are useful in predicting

future betas. Betas tend to have greater stability when the number of securities in a portfolio is larger and when the time intervals being studied are longer.

Another approach to measuring the cost of equity is the **price–earnings ratio**, which is the price per share divided by the earnings per share. More accurately, the price–earnings ratio can be used to determine the rate of return demanded by shareholders. If we denote the price–earnings ratio by “P–E ratio,” we can calculate the cost of equity using the following formula:

$$k_e = \frac{1}{\text{P–E ratio}} \quad (19.4)$$

As shown in equation 19.4, the cost of equity is one (1) divided by the P–E ratio. Thus a high P–E ratio suggests a low cost of capital. This model assumes a zero growth rate in profits and a 100 percent dividend payout ratio, so that equation 19.4 is identical with equation 19.2.

The main difference between the three approaches to the cost of equity is that the dividend valuation model and the P–E ratio emphasize the total risk of expected returns, while the CAPM emphasizes only the systematic risk of expected returns. In any case, the cost of equity is some function of the market’s preference for return and risk.

19.1.2 Cost of debt

The **explicit cost of debt** for a firm may be defined as the discount rate that equates the net proceeds of the debt issue with the present value of interest and principal payments. If we want to express all cost-of-capital rates on an after-tax basis, we must adjust this explicit cost of debt for taxes, because interest charges are usually tax deductible. We denote the after-tax cost of debt by k_t and determine it using the following equation:

$$k_t = k_i(1 - t) \quad (19.5)$$

where k_i is the before-tax cost of debt and t is the tax rate.

MNCs must account for a number of complicated factors to measure the cost of debt. First, MNCs can borrow in Eurocurrency markets, international bond markets, or national capital markets. Hence, they must – in order to measure the before-tax cost of debt – estimate interest rates and the proportion of debt to be raised in each market. Second, MNCs must – in order to measure the after-tax cost of debt – estimate tax rates in each market in which they intend to borrow and determine the deductibility of interest by each national tax authority. Third, the nominal cost of principal and interest in foreign currency must be adjusted for foreign-exchange gains or losses when MNCs issue debt denominated in a foreign currency.

For example, the before-tax cost of foreign currency denominated debt equals the before-tax cost of repaying the principal and interest in terms of the parent’s own currency. This before-tax cost of capital includes the nominal cost of principal and interest in foreign-currency terms, adjusted for any foreign-exchange gains or losses:

$$k_i = (k_f \times k_a) + k_p \quad (19.6)$$

where k_f is the before-tax interest in foreign-currency terms, k_a is the additional interest due to exchange rate change, and k_p is the additional principal due to exchange rate change.

Example 19.1

A US company borrows euros for 1 year at 7 percent. During the year, the euro appreciates 9 percent relative to the dollar. The US tax rate is 35 percent. What is the after-tax cost of this debt in US dollar terms?

The before-tax cost of this debt is computed as follows:

$$\begin{aligned} k_i &= (k_f \times k_a) + k_p \\ &= (0.07 \times 1.09) + 0.09 \\ &= 16.63\% \end{aligned}$$

The added 9.63 percent cost of this debt in terms of US dollars is reported as a foreign-exchange transaction loss. The nominal interest rate of 7 percent and the added cost of 9.63 percent are deductible for tax purposes. Thus, the after-tax cost of this debt would be:

$$\begin{aligned} k_t &= k_i(1 - t) \\ &= 0.1663(1 - 0.35) \\ &= 10.81\% \end{aligned}$$

19.1.3 *The appropriate cost of capital*

If MNCs make separate allowance for different levels of risk in foreign projects, they must use the WACC as an appropriate cost of capital. They have three choices in deciding their subsidiary cost of capital: (1) the cost of capital to the parent company, (2) the cost of capital to the subsidiary, or (3) some weighted average of the two.

If a parent company finances the entire cost of its foreign project by itself, the cost of capital to the parent company may be used as the appropriate cost of capital. If its foreign subsidiary obtains all of the capital for the project overseas, the foreign cost of capital may be used as the appropriate cost of capital. In most cases, however, the MNC uses the whole world as a combined source of funds. Thus, the appropriate cost of capital is usually an overall weighted average of the two.

If the analyst wishes to reflect local inflation for local projects, the inflation-adjusted discount rate may have to be used as an appropriate cost of capital. However, inflation tends to be built into the cost of debt and equity for a company, because the WACC reflects such anticipated price changes. When lenders and equity holders anticipate price increases, they will demand a rate of return higher than in ordinary cases, so that the WACC reflects inflation. Thus, the MNC should not add an increase to the discount rate derived from the cost of capital in order to adjust for inflation.

● 19.2 The Optimum Capital Structure

The **optimum capital structure** is defined as the combination of debt and equity that yields the lowest cost of capital. In this situation, the amount of capital to be obtained is fixed, but the debt ratio is changed to determine the optimum capital structure. For example, the capital structure of companies in the same industry varies widely from country to country because of different environmental variables.

19.2.1 *Book-value versus market-value weights*

To measure the WACC, we first calculate the cost of each component of the capital structure. Once we have computed the costs of individual components of the capital structure, we need to weigh them according to some standard. Two alternative ways to specify the proportions of the capital structure are practiced, as follows:

- **Book-value weights** are derived from the stated values of individual components of the capital structure on the firm's current balance sheet. There are two major advantages to book-value weights. First, the proportions of the capital structure are stable over time, because book-value weights do not depend on market prices. Second, book-value weights are easy to determine, because they are derived from stated values on the firm's balance sheet. However, book-value weights may misstate the WACC, because the market values of bonds and stocks change over time and thus do not reflect the desired capital structure.
- **Market-value weights** are based on the current market prices of bonds and stocks. Because the primary goal of a firm is to maximize its market value, market-value weights are consistent with the company's objective. The market values of a business's existing securities depend on the expected earnings of the company and the risk of the securities as perceived by investors. In other words, market values reflect assessments of current buyers and sellers of future earnings and risk. Thus, the WACC with market-value weights should be the valid average rate of return required by investors in the firm's securities.

19.2.2 *Implications*

The traditional approach to valuation and leverage assumes that an optimum capital structure exists. This model implies that the varying effects on the market capitalization rates for debt and equity allow the firm to lower its cost of capital by the intelligent use of leverage (debt). Debt has two types of cost: explicit cost and implicit or bankruptcy cost. The explicit cost is the interest rate, whereas the implicit cost refers to added debt that increases the cost of equity and debt.

If we start with an all-equity capital structure, the introduction of debt enables a firm to lower its cost of capital. The WACC falls with increases in leverage because the increase in the cost of equity does not completely offset the use of low-cost debt. Therefore, the traditional approach implies that beyond some point both the cost of equity and the cost of debt increase at an increasing rate. With the heavy use of leverage, the increase in the cost of equity more than offsets the use of low-cost debt. Thus, at a critical point, such as a 40 percent debt ratio in figure 19.2, the subsequent introduction of additional leverage increases the overall cost of capital. The optimum capital structure is the point at which the WACC bottoms out.

Example 19.2

A company is planning to raise \$200 million for foreign investments. It wishes to hold the amount of capital constant and to change only the combination of financing sources. As given in table 19.1, there are three different financial structures under consideration by the company: A, B, and C.

Table 19.1 Three different financial plans

<i>Financial plan</i>	<i>After-tax cost</i>	<i>Weight</i>	<i>Weighted average cost</i>
Plan A:			
Debt	6.5%	20%	1.3%
Equity	12.0%	80%	<u>9.6%</u>
WACC			10.9%
Plan B:			
Debt	7.0%	40%	2.8%
Equity	12.5%	60%	<u>7.5%</u>
WACC			10.3%
Plan C:			
Debt	9.0%	60%	5.4%
Equity	15.0%	40%	<u>6.0%</u>
WACC			11.4%

The company initially reduces the cost of capital with leverage, but beyond plan B the continued use of debt increases the cost of capital. Most theorists believe that there is a U-shaped capital-cost curve in relation to debt–equity mixes for the company. Figure 19.2 shows that the optimum capital structure occurs at a 40 percent debt ratio.

Most companies use 30–50 percent debt in their capital structure without exceeding norms acceptable to creditors and investors. This rather broad, flat area with a wide range of debt ratios, 30–50 percent in figure 19.2, is usually called an optimal or target debt range, where little difference exists in the cost of capital. The optimal range of the flat area and the location of a particular company's debt ratio within that range are determined by a variety of noncost variables, such as availability of capital and financial risk. The international availability of capital to an MNC and its lower financial risk permit it to maintain its desired debt ratio, even if significant amounts of new funds must be raised. In other words, the marginal cost of capital for an MNC is constant for a broad range of its capital budget.

In summary, the company's optimum capital structure simultaneously (a) minimizes the company's WACC, (b) maximizes the value of the company, and (c) maximizes the company's share price. As debt is added to the capital structure, the WACC falls. This increases the value of the firm. Because this increase in the company's value accrues to the owners of the company, the price of the company's stock rises.

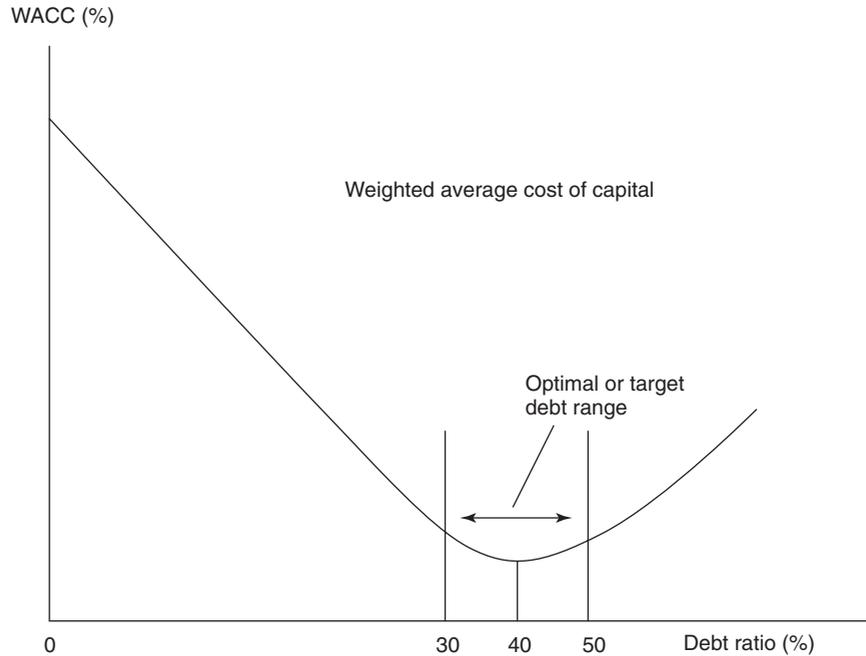


Figure 19.2 Debt ratio and the cost of capital

● 19.3 The Marginal Cost of Capital and Investment Decisions

When companies raise funds for new investment projects, they are concerned with the marginal cost of new funds. Companies should always expand their capital budget by raising funds in the same proportion as their optimum capital structure. However, as their capital budget expands in absolute terms, their marginal cost of capital (MCC) will eventually increase. This means that companies can tap only the capital market for some limited amount in the short run before their MCC rises, even though the same optimum capital structure is maintained. The **marginal cost of capital** is the cost of an additional dollar of new funds.

THE OPTIMUM CAPITAL BUDGET In one analysis, we hold the total amount of capital constant and change only the combination of financing sources. We seek the optimum or target capital structure that yields the lowest cost of capital. In a second analysis, we attempt to determine the size of the capital budget in relation to the levels of the MCC, so that the optimum capital budget can be determined. The **optimum capital budget** is defined as the amount of investment that maximizes the value of the company. It is obtained at the intersection between the internal rate of return (IRR) and the MCC; at this point total profit is maximized.

A variety of factors affect a company's cost of capital: its size, access to capital markets, diversification, tax concessions, exchange rate risk, and political risk. The first four factors favor the MNC, whereas the last two factors appear to favor the purely domestic company. For a number

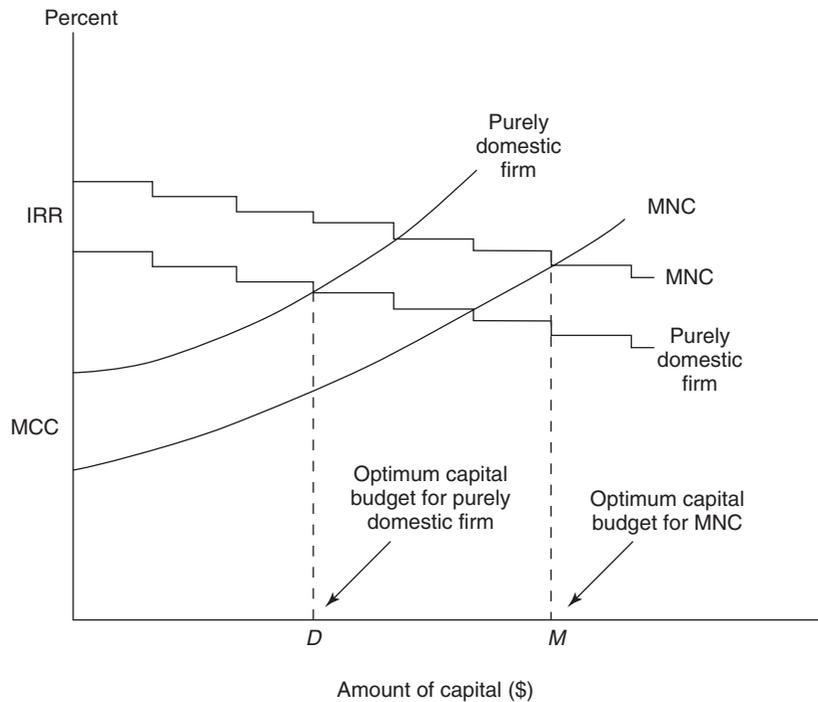


Figure 19.3 Optimum capital budget: domestic firm versus multinational

of reasons, as shown in figure 19.3, MNCs usually enjoy a lower cost of capital than purely domestic companies. First, MNCs may borrow money at lower rates of interest because they are bigger. Second, they may raise funds in a number of capital markets such as the Euromarkets, local capital markets, and foreign capital markets. Third, their overall cost of capital may be lower than that of purely domestic companies, because they are more diversified. Fourth, they may lower their overall taxes, because they can use tax-haven countries, tax-saving holding companies, and transfer pricing.

It seems reasonable to assume that investments outside the United States are, for a US company, riskier than investment in US assets. However, this is not necessarily true, because returns on foreign investments are not perfectly positively correlated with returns on US investments. In other words, MNCs may be less risky than companies that operate strictly within the boundaries of any one country. Consequently, to minimize risk, companies should diversify not only across domestic investment projects but also across countries. The lower overall risk of MNCs tends to reduce their overall cost of capital.

Figure 19.3 shows that the optimum capital budget (M) of a typical MNC is higher than the optimum capital budget (D) of a purely domestic company. MNCs can tap foreign capital markets when domestic capital markets are saturated, and their risk is lower than that of domestic companies. International capital availability and lower risk permit MNCs to lower their cost of capital and to maintain a constant MCC for a broad range of their capital budget. They have more investment opportunities than purely domestic companies. These two factors – the lower

cost of capital and better investment opportunities – give MNCs higher optimum capital budgets than the optimum capital budgets of domestic companies.

Many analysts believe that some countries, such as Germany and Japan, enjoy capital cost advantage mainly due to their high leverage. As the debt ratio increases, the weighted average cost of capital decreases because of the heavier weight of low-cost debt compared to high-cost equity. The low cost of debt is, of course, due to the tax deductibility of interest.

Example 19.3

Assume that there are two countries: X and Y. The cost of debt (10 percent), the cost of equity (15 percent), and the tax rate (50 percent) are the same for these two countries. However, X's capital structure is 20 percent debt and 80 percent equity, while Y's capital structure is 50 percent debt and 50 percent equity. Compare the cost of capital in the two countries. The WACC for country X is 13 percent $[(0.20 \times 0.10)(1 - 0.50) + (0.80 \times 0.15)]$. If we apply the same costs of debt and equity to the more leveraged country, it would have a WACC of 10 percent $[(0.50 \times 0.10)(1 - 0.50) + (0.50 \times 0.15)]$. Hence, the more leveraged country (Y) has a lower cost of capital than the less leveraged country (X).

Companies in Germany and Japan have greater borrowing capacity because their creditors tolerate a high degree of financial leverage. Traditionally, banks in both countries have played a much more important role in corporate financing than capital markets. Companies in both countries could carry a high degree of financial leverage because banks frequently hold bonds and stocks of these companies. Finally, German and Japanese companies have close working relationships with their governments. Hence, it may be in the best interest of the governments to rescue failing companies through direct subsidies and long-term loans, which have enabled these companies to carry a high degree of financial leverage.

● 19.4 Cultural Values and Capital Structure

Can cultural values be used to predict capital structure across countries? Differences in institutional backgrounds provide only a partial answer to the question of why countries have differences in capital structure (Chui et al. 2002). Researchers from different disciplines have investigated the effects of culture on various business practices, such as the study of management functions, organization design, business performance, compensation practices, cross-border acquisition performance, and managerial attitudes, the perceived importance of job outcomes and job satisfaction, and investor stock-trading decisions. Alternatively, Sekely and Collins (1988) analyzed the relationship between economic variables and international differences in capital structure, but their test results indicated no significant relationship between the two. These two groups of researchers

found the role of culture to be active in differences in the capital structure (debt ratio) across countries.

Empirical studies have found that capital structure norms for companies vary widely from one country to another, but they cluster together for companies domiciled in the same industry. For example, Sekely and Collins (1988) compared debt ratios for 677 companies in nine industries from 23 countries. The researchers concluded that cultural factors, such as political, legal, social, institutional, and tax environments, cause debt ratios to cluster by country rather than by industry or size. They classified these 23 countries into several cultural “realms” with similarities in capital structure norms:

Anglo-American region	Australia, Canada, South Africa, the United States, and the United Kingdom
Latin American region	Argentina, Brazil, Chile, and Mexico
West Central Europe	Benelux, Switzerland, and Germany
Mediterranean Europe	France, Italy, and Spain
Scandinavian region	Denmark, Finland, Norway, and Sweden
Indian Peninsula	India and Pakistan
Southeast Asia	Malaysia and Singapore

Table 19.2 shows mean debt ratios for these seven regions. They found low debt ratios in the Southeast Asian, Latin American, and Anglo-American groups of countries. They found high debt ratios in the Scandinavian, Mediterranean Europe, and Indian Peninsula groups. The West Central European countries had debt ratios in the middle of the seven groups.

Have these debt ratio norms of different regions changed since 1988? Yes, but not much, according to a study by Chui, Lloyd, and Kwok. Like the 1988 study, this 2002 study found low debt ratios in the Southeast Asian, Anglo-American, and Latin American groups of countries; it found high ratios in the Mediterranean Europe and Scandinavian groups. One major exception is West Central Europe, whose mean debt ratio has changed from the middle group to the high group. The increase in the high debt ratio of the West Central Europe has almost exclusively to do with the increased debt ratios of German companies. The high cost of German unification may be partly blamed for this increase in its overall debt ratio. Chui, Lloyd, and Kwok compared debt ratios for 5,591 companies in four different industries across 22 countries, to determine the impact of cultural factors on national corporate debt ratios. To achieve this objective, they tested two hypotheses: (1) the corporate debt ratio of a country is negatively related to the country's

Table 19.2 Debt ratios for seven regions

	<i>Sekely and Collins (1988)</i>	<i>Chui et al. (2002)</i>
Anglo-American region	0.53	0.46
Latin American region	0.46	0.51
West Central Europe	0.59	0.65
Mediterranean Europe	0.70	0.60
Scandinavian region	0.69	0.56
Indian Peninsula	0.67	–
Southeast Asia	0.35	0.48

level of conservatism; and (2) the corporate debt ratio of a country is negatively related to the country's level of mastery. Conservatism includes values that are important in close-knit harmonious relationships, in which the interests of the individual are not viewed as distinct from those of the group. These values are primarily concerned with security, conformity, and tradition. Mastery accentuates active mastery of the social environment through self-assertion, by placing more emphasis on control and individual success. Such values promote their surroundings and propel them ahead of others.

Their empirical findings support these two hypotheses at both the national and firm levels, which mean that countries with high scores on the cultural dimensions of "conservatism" and "mastery" tend to have low corporate debt ratios. The results are robust even after controlling for the industry effect, the differences in economic performance, legal systems, financial institution development, and other well-known determinants of debt ratios in each country (such as assets tangibility, agency cost, firm size, and profitability).

SUMMARY

The cost of capital, the optimum capital structure, and the optimum capital budget have a major impact on an MNC's value. The cost of capital is used to evaluate foreign investment projects. The optimum capital structure is a particular debt ratio that simultaneously (a) minimizes the company's WACC, (b) maximizes the value of the company, and (c) maximizes its share price. The optimum capital budget is the amount of investment that will maximize an MNC's total profits.

Although the main issues used to analyze the cost of capital in the domestic case provide the foundation for the multinational case, it is necessary to analyze the unique impact of foreign-exchange risks, institutional variables, and cultural values. International capital availability, lower risks, and more investment opportunities permit MNCs to lower their cost of capital and to earn more profits.

Questions

- 1 Explain both systematic risk and unsystematic risk within the international context.
- 2 What are the complicated factors in measuring the cost of debt for multinational companies?
- 3 List three choices in deciding a foreign subsidiary's cost of capital. Which of these three choices is usually used by most multinational companies?
- 4 What factors affect a company's cost of capital? Why do multinational companies usually enjoy a lower cost of capital than purely domestic companies?
- 5 Some observers believe that American companies can borrow in Japan at relatively low rates of interest. Comment on this argument.

- 6 In 2002, Chui, Lloyd, and Kwok attempted to find answers to the question of how cultural values can be used to predict capital structure across countries, and why knowing the culture of the country is important for the determination of capital structure. Discuss their findings in some detail.
- 7 Explain why foreign investments for a US company may be less risky than its investment in US assets.
- 8 Why is the optimum capital budget of a multinational company typically higher than that of a purely domestic company?
- 9 Explain why the capital-cost gap across major industrial countries may fall in the future.

Problems

- 1 A foreign project has a beta of 0.50, a risk-free interest rate of 8 percent, and the expected rate of return on the market portfolio is 15 percent. What is the cost of capital for the project?
- 2 A US company borrows Japanese yen for 1 year at 8 percent. During the year, the yen appreciates 10 percent relative to the dollar. The US tax rate is 50 percent. What is the after-tax cost of this debt in US dollar terms?
- 3 The cost of debt (10 percent), the cost of equity (15 percent), and the tax rate (50 percent) are the same for countries A and B. However, A's capital structure is zero percent debt and 100 percent equity, while B's capital structure is 50 percent debt and 50 percent equity. Compare the cost of capital in the two countries.
- 4 A company earns \$300 per year after taxes and is expected to earn the same amount of profits per year in the future. The company considers three financial plans: A with a debt ratio of 20 percent and a WACC of 15 percent; B with a debt ratio of 40 percent and a WACC of 10 percent; and C with a debt ratio of 80 percent and a WACC of 20 percent. Which debt ratio will maximize the value of the company?
- 5 Assume that a company wishes to sell \$6 million worth of bonds and \$14 million worth of common stock. The bonds have 13 percent before-tax interest and the stock is expected to pay \$1.4 million in dividends. The growth rate of dividends has been 8 percent and is expected to continue at the same rate. Determine the weighted average cost of capital if the tax rate on income is 50 percent.

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Case Problem 19: Do Multinational Firms Have Lower Debt Ratios than Domestic Firms?

Authors of international finance textbooks have suggested a number of practical concepts. First, MNCs should support more debt in their capital structure than purely domestic companies. They point out that an MNC should have a higher target debt ratio than its domestic counterpart because of its size, access to capital markets, diversification, and tax concessions. The target debt ratio is the optimum capital structure, which is defined as the combination of debt and common equity that yields the lowest cost of capital. Second, MNCs should have lower business risk than purely domestic companies. Business risk, such as the cost of financial distress and expected bankruptcy cost, refers to the variability of operating profits or the possibility that the firm will not be able to cover its fixed costs. An MNC operates in many different countries and thus this diversification should translate into lower earnings volatility.

Some financial analysts argue that there is an inverse relationship between business risk and the optimum debt level. Companies with less business risk are supposed to assume more debt without added risk. Debt has two types of cost: explicit cost and implicit or bankruptcy cost. The explicit cost is the interest rate, whereas the implicit cost refers to added debt, which increases the possibility of liquidating a business. Thus, given the traditional paradigm of a trade-off between the tax shelter of debt and the expected bankruptcy cost, MNCs should have lower expected bankruptcy costs and hence higher leverage ratios. In other words, MNCs should be able to carry higher debt loads because they are able to diversify their business risk across national economies.

Third, an MNC is more sensitive to exchange rate fluctuations than a purely domestic company. A purely domestic company may not face economic exchange rate risk because it

operates in just one country. Finally, an MNC should have higher agency costs than a purely domestic company because the MNC faces higher auditing costs, language differences, sovereign uncertainty, divergent political and economic systems, and varying accounting systems.

To ascertain these four concepts, Burgman (1996) has conducted an extensive empirical study of 251 domestic firms and 236 MNCs. His findings are as follows. First, the mean leverage ratio for the multinational sample is significantly less than that for the domestic sample at the 1 percent level. Second, the operating profits of the multinational sample are more volatile than the domestic sample, although the statistical significance of the difference is weak. Third, domestic companies are significantly more sensitive to exchange rate risk than MNCs at the 5 percent level. Finally, MNCs have significantly higher agency costs than their domestic counterparts at the 1 percent level. Thus, Burgman's study confirmed only the fourth concept and rejected the other three concepts.

Case Questions

- 1 What is the agency problem? What are agency costs? Why do multinational companies incur higher agency costs than domestic companies?
- 2 Contrary to common expectations, the 1996 study by Burgman has found that multinational companies have lower debt ratios and higher business risks than purely domestic companies. What are possible explanations for this finding?
- 3 What is economic exchange rate risk? Is it easy to hedge this risk? Contrary to common expectations, the 1996 study by Burgman has concluded that multinational companies have lower economic exchange rate risk than domestic companies. What are the possible explanations for this finding?
- 4 Use the website of Bloomberg, www.bloomberg.com/markets, to compare yield rates of government securities for several countries.

Sources: T. A. Burgman, "An Empirical Examination of Multinational Corporate Capital Structure," *Journal of International Business Studies*, Third Quarter 1996, pp. 553–70; and J. K. Wald, "How Firm Characteristics Affect Capital Structure: An International Comparison," *The Journal of Financial Research*, Summer 1999, pp. 161–87.