



MULTINATIONAL COST OF CAPITAL AND CAPITAL STRUCTURE

LEARNING OBJECTIVES

The specific objectives of this chapter are to:

- explain how corporate and country characteristics influence an MNC's cost of capital,
- explain why there are differences in the costs of capital among countries, and
- explain how corporate and country characteristics are considered by an MNC when it establishes its capital structure.

An MNC finances its operations by using a mixture of fixed interest borrowing and equity financing that can minimize the overall cost of capital (the weighted average of its interest rate and dividend payments). By minimizing the cost of capital used to finance a given size and risk of operations, financial managers can maximize the value of the company and therefore maximize shareholder wealth.

BACKGROUND ON COST OF CAPITAL

Apart from working capital, a firm's capital consists of equity (retained earnings and funds obtained by issuing shares) and debt (borrowed funds). With these funds a firm invests in a portfolio of projects, each project potentially offering different risks and different returns. The interest rate that the firm applies or charges to these projects (the cost of using the firm's capital) will therefore vary according to the project's particular risk. Profitable investment in this context is where the firm invests in projects that achieve returns greater than that required by their risk. A project that achieves a 20% return from investing in car parks (safe) is arguably a better performer than a project achieving a 25% return from financing a musical show (risky) in that many of the musical shows will fail and most of the investments in car parks will succeed – it is only a higher *expected* return. For convenience, rather than use NPV terminology we use the closely related IRR (internal rate of return) concept of return. Remember that NPV calculations are based on the cash flows that the firm *hopes* to achieve in the future, it is *ex ante* or before the event and is calculated as follows:

$$NPV = -I_0 + \frac{E(CF_1)}{(1+r)^1} + \frac{E(CF_2)}{(1+r)^2} + \frac{E(CF_3)}{(1+r)^3} + \frac{E(CF_4)}{(1+r)^4} + \frac{E(CF_5)}{(1+r)^5} \dots + \frac{E(CF_n)}{(1+r)^n}$$

where:

- R = required return for the project
- $E(CF_1)$ = expected cash flow in period 1
- n = last period of the project
- NPV = net present value
- $-I_0$ = initial investment.

Actual outcome is just one of the possible anticipated range of outcomes. The next musical show may do much better or much worse; the next car park may do a little better or a little worse if it is less risky.

A project is simply a defined set of activities evaluated in finance by their cash flows. The firm itself can, of course, be viewed as a project. In some cases, e.g. car manufacturers or food retailers, the activities (or sub-projects) of the company are in similar markets and will be charged similar interest rates. In the case of a conglomerate such as Invensys plc, the widely varying projects, from rail signalling systems to a control system in a Venezuelan chemical plant, will be charged differing rates according to the differing risks of the projects. For an MNC it is likely that the firm will be engaging in projects of widely varying risks. Even if it is the same physical activity, for example Michelin and tyre manufacturing, the differing international markets will present a range of risks.

The firm can be valued as one would value any project. The combined cash flows from each activity or sub-project should be discounted with an interest rate that includes a premium for the risks of each sub-project. The overall discount rate to be applied would be the firm's weighted average cost of capital. The problem for an investor is that firms do not disclose sufficient details about their individual projects to make this approach possible.

The traditional and more accessible way of valuing the firm is to measure return as dividends and share price growth and to calculate the weighted average cost of capital (the effective discount rate to be applied to the returns) by taking a weighted average of the returns demanded by shareholders and debt holders, i.e. all the lenders to the firm. Like any individual project, value is maximized by achieving a cash flow higher than required by the cost of capital.

Calculating the cost of capital in a single market

An MNC, as with other firms, is financed through two principal sources of finance. Equity or shares and fixed interest debt often in the form of debentures or bonds. The main financial difference between the two types of lending is risk. A share represents part ownership of the company, shareholders appoint the managing director and through this influence have the most important voice in running the company. A share is rewarded through the payment of dividends. Dividends are not fixed and may not be paid at all. The value

of the share entirely depends on the profitability of the company from which the dividends are paid. If the company fails, the shareholder will be last in line to receive anything from selling off the assets. Holding shares is risky, whereas holding debentures is less risky. Debentures are rewarded through the payment of interest, that is, a guaranteed amount irrespective of the performance of the company. The terms of the debenture will normally include a lien or 'hold' on assets. If interest payments are not made, a meeting of creditors can be held and the company declared bankrupt. In such a case the debenture holders will have a right to sell off the assets held under a lien in order to repay interest and the value of their investment. As the debenture has more assurances as to returns than shares, the cost for the company of financing with debentures is less. As in all efficient markets, a less risky investment requires less return.

A firm's weighted average cost of capital (referred to as k_c) can be measured as

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

Where:

D = market value of firm's debt

k_d = the before-tax cost of its debt

t = the corporate tax rate

E = the firm's equity at market value, and

k_e = the cost of financing with equity.

The ratios reflect the percentage of capital represented by debt and equity, respectively. In total the cost of capital, k_c is the average cost of all providers of finance to the firm.

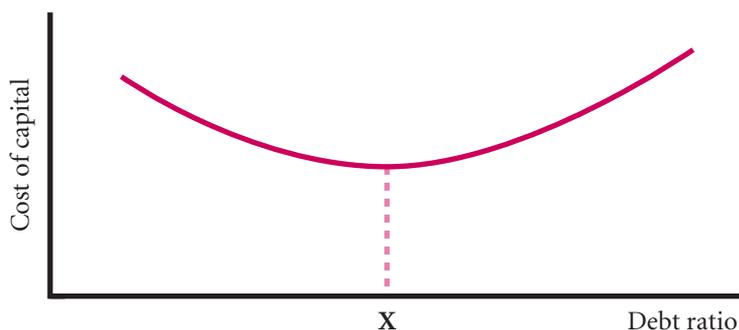
Initially, using cheaper fixed interest debt (D) to finance company projects may seem attractive. The drawback is that the greater the percentage of overall finance in the form of fixed interest debt, the more variable (risky) the prospective returns to shareholders. To see this, think of a firm with very high debt and therefore very high fixed interest payments (a highly geared firm). These payments have to be made in good times and bad times. Imagine if such a firm is doing badly and is able to just cover its interest payments, there will be nothing left for the shareholder. At very high levels of borrowing, profits may not be sufficient to pay interest charges and the firm could be declared bankrupt, so there is the additional risk of bankruptcy. But if the same company is financed mainly by shares (a low geared firm) there would have been much more for the shareholder. In bad times the low geared equivalent company will be able to pay out more because its interest rate bill will be lower. Calculation will also show that in good times the low geared equivalent company will pay out less than its high geared counterpart. This is because when the company is making profits, shareholders gain from high levels of borrowing at relatively low interest rates. The variation in returns to a low geared firm will therefore be less (more money available to pay as dividends in bad times and less in good times) and the company will therefore be seen as less risky.

Fundamental to the idea of the cost of capital are the propositions by Modigliani and Miller.¹ They demonstrate that, given a free market, the cost of capital should be constant at all proportions of debt that the company may wish to adopt. So, low geared companies being financed by only 10% fixed interest debt and 90% equity, ranging to a high geared companies being financed by, say, 80% debt and only 20% of its finances being provided by shareholders, would all have the same *overall* cost of capital (k_c as above). They showed that a shareholder in a low geared firm could, without selling the shares, obtain the same return as if holding shares in a company with identical earnings but with high gearing. This can be done by *personal* gearing, borrowing and investing money in the same low geared firm. If gearing can be changed by shareholders independently of the company, then gearing cannot play a part in the valuation of the company – it is not relevant. The cost of capital is central to valuing the company, it is the rate at which future cash flows are discounted (see Chapter 1 of the book). Therefore, if changing debt levels does not affect the discount rate nor (with some assumptions) the cash flows, the value of the company is unchanged.

Looking at the cost of capital formula it is a simple matter of arithmetic to show that if k_c is to remain constant at higher levels of D , then the cost of equity capital (k_e) must increase to compensate, as the cost of debt k_d is less than the cost of equity and is fixed.

¹For example see P. Vernimmen (2005) *Corporate Finance: Theory and Practice*, New York: Wiley, pp. 660 *et seq.*

EXHIBIT 2.1 Determining the appropriate capital structure



There are two general exceptions. The first is that at a very high level of debt, for example if 90% of a firm's finance were from fixed interest borrowings, there would be a risk of bankruptcy due to non-payment of the interest charges. So one would therefore expect to see an increase in the cost of capital at high levels of debt. The second exception is tax. Debt is tax deductible for companies but not for individuals. Moderate levels of debt enable the company to obtain savings otherwise not accessible to shareholders as individuals. Where the shareholder is an investment company or insurance company, this will not be the case.

The tradeoff between debt's advantage (tax deductibility of interest) and its disadvantage (increased risk of bankruptcy) is illustrated in Exhibit 2.1). As the exhibit shows, the firm's cost of capital initially decreases as the ratio of debt to total capital increases. However, after some point (labelled X in Exhibit 2.1), the cost of capital rises as the ratio of debt to total capital increases. This suggests that the firm should increase its use of debt financing until the point at which the bankruptcy probability becomes large enough to offset the tax advantage of using debt. To go beyond that point would increase the firm's overall cost of capital.

COST OF CAPITAL FOR MNCs

The cost of capital for MNCs may differ from that for domestic firms because of the following characteristics that differentiate MNCs from domestic firms:

- *Size of firm.* An MNC that often borrows substantial amounts may receive preferential treatment from creditors, thereby reducing its cost of capital. Furthermore, its relatively large issues of stocks or bonds allow for reduced flotation costs (as a percentage of the amount of financing). Note, however, that these advantages are due to the MNC's size and not to its internationalized business. A domestic corporation may receive the same treatment if it is large enough. Nevertheless, a firm's growth is more restricted if it is not willing to operate internationally. Because MNCs may more easily achieve growth, they may be more able than purely domestic firms to reach the necessary size to receive preferential treatment from creditors.
- *International diversification.* An MNC has a greater opportunity to exploit profitable investment. As markets are not highly correlated, these opportunities can help offset poor performance in the home market. So, to the extent that individual economies are independent of each other, net cash flows from a portfolio of subsidiaries should exhibit less variability, which may reduce the probability of bankruptcy and therefore reduce the cost of capital.
- *Exposure to exchange rate change.* All investments denominated in a foreign currency are unavoidably exposed to changes in the value of that currency. PPP suggests that exchange rate change will offset higher or lower inflation in that currency. So the translated value of the foreign currency will have the same inflation as the home currency (compare year 1 with year 0 in Exhibit 2.2). The exposure to exchange rate risk is therefore to changes in the real value of the currency, that is to say, those changes that are not explained by inflation differences, assuming PPP (compare year 2 with year 1 in Exhibit 2.2).

EXAMPLE

Bude plc (UK) is investing in Country N (currency the N). Last year's returns were N1 million at an exchange rate of N4 to the British pound or £0.25 for 1 N. The translated value was therefore $N1m \times 0.25 = £250\,000$. For the coming year, inflation in N is expected to be 20% compared to 2% in the UK. Bude's foreign earnings are expected to be in line with inflation, so expected earnings are N 1 200 000 (1 million $\times (1 + 0.20)$).

If the exchange rate behaves according to PPP, the value of the N will change to $£0.25 \times 1.02 / 1.20 = £0.2125$. The translated value for the coming year is expected to be $N1\,200\,000 \times 0.2125 = £255\,000$. This is the same value as if the British pound value of the earnings (£250 000) had been earned in the UK where it would have experienced UK inflation of 2%, because $£250\,000 \times 1.02 = £255\,000$. Thus the exchange rate change has simply protected Bude's investors from the effects of foreign inflation.

For the *following* year inflation is again expected to be 20% in N and 2% in the UK and earnings are again expected to be in line with inflation. In terms of Ns, the earnings are expected to be $N1\,200\,000 \times (1 + 0.20) = N1\,440\,000$.

Only this time because of concerns about the economic effects of inflation there is expected to be a 5% fall in the real value of the N. The total change in the

value of the N relative to the British pound will therefore be: $1.02 / (1.20 \times 1.05) - 1 = -0.190476$ or 19.0476%. The new expected exchange rate will be $£0.2125 \times (1 - 0.190476) = 0.17202385$. So earnings converted to British pounds will be $N1\,440\,000 \times 0.17202385 = £247\,714$. If it were not for the fall in the real value of the N, earnings would have been 5% higher at $247\,714 \times (1 + 0.05) = £260\,100$. As a check, UK inflation will have been 2%, so if the earnings had performed as well, only in the UK, UK earnings will be expected to be $£255\,000 \times (1 + 0.02) = £260\,100$. It is therefore only real changes in the value of foreign currency that affects the value of translated earnings if IFE prevails.

Expected change in the real value of the currency is the effect of the currency risk premium. It is that change in the value of a foreign currency that is not compensated by a difference in inflation. In the above example (Exhibit 2.2) the expected fall in the real value of N by 5% reflects a concern about the state of the economy. This concern includes the possibility that the expected revenues from Bude will not be as high as expected. The exchange rate therefore not only accounts for a difference in the expected inflation rates but also a difference in the expected overall risk between the two countries (the risk differential would not exist if the UK economy were thought to be equally precarious).

For MNCs therefore, exposure is to changes in the real value of the foreign currency. That does not imply that PPP has to hold, merely that some of the changes in the exchange rate will do no more than account for the inflation differences between the two countries, any further anticipated change will affect the translated value of the currency.

- *Access to international capital markets.* MNCs are normally able to obtain funds through the international capital markets. Since the cost of funds can vary among markets, the MNC's access to the international capital markets may allow it to obtain funds at a lower cost than that paid by domestic firms. In addition, subsidiaries may be able to obtain funds locally at a lower cost than that available to the parent if the prevailing interest rates in the host country are relatively low.

The use of foreign funds can reduce the MNC's exposure to exchange rate risk. Firms can borrow in the currency in which they earn (sometimes referred to in reports as 'natural hedging'). A British MNC earning in dollars will suffer if it translates its earnings into pounds when the dollar is weak. To offset this loss, if it *borrow*s in dollars then the reduced revenue value from the weak dollar will be partially compensated by the reduced cost of the interest payments that are made in dollars. The disadvantage of this approach is that when the dollar is strong, some of the benefit will be lost because interest payments will be higher. The exposure to the effects of *variability* of the foreign currency is nevertheless reduced.

EXHIBIT 2.2 The effect of exchange rates on translated foreign earnings

	Translated £ value of MNC earnings in Country N (N 1 million per year in year 0 values)						
		Country N				UK	
	Country N inflation	Change in real value of N	Foreign earnings N1m per year in year 0 terms	Exchange rate £s per N assuming PPP	Translated £ value	UK inflation	Current value of £250 000 in year 0
Previous year (0)	0%	0%	N1 million	£0.25	£250 000	0%	£250 000
The coming year (1)	20%	0%	N1 200 000	£0.2125	£255 000	2%	£255 000
The following year (2)	20%	-5%	N1440 000	£0.17202385	£247 714	2%	£260 100

Notes:

Year 0: The MNC earns N1m which is translated into £s, $N1m \times 0.25 = £250\ 000$.

Year 1: Country N earnings have kept pace with Country N inflation. PPP assumes that the exchange rate has adjusted for the inflation differential $£0.25 \times 1.02 / 1.20 = £0.2125$ for 1N. Hence the 0% change in real value. The translated earnings ($N1\ 200\ 000 \times 0.2125 = £255\ 000$) are therefore in line with UK inflation as in this case the change in the value of N is exactly in line with PPP.

Year 2: Country N earnings have kept pace with Country N inflation. PPP type changes are still assumed to apply except that there has also been a 5% fall in the real value of the N. The new exchange rate will now change by $1.02 / (1.20 \times 1.05) - 1 = -0.190476$ or 19.0476%. So the new rate will now be: $0.2125 \times (1 - 0.190476) = 0.17202385$. As a result, translated foreign earnings of $N1\ 440\ 000 \times 0.17202385 = £247\ 714$ are 5% lower than the domestic equivalent: $247\ 714 \times (1 \times 0.05) = £260\ 100$.

- **Exposure to country risk.** An MNC that establishes foreign subsidiaries is subject to the possibility that a host country government may seize a subsidiary's assets. The probability of such an occurrence is influenced by many factors, including the attitude of the host country government and the industry of concern.

Other forms of country risk, such as changes in a host government's tax laws, could also affect an MNC's subsidiary's cash flows.

An MNC must decide whether or not the country risks being contemplated are a part of normal business risk or whether they should be considered separately. These issues were considered in the previous chapter.

EXAMPLE

ExxonMobil has much experience in assessing the feasibility of potential projects in foreign countries. If it detects a radical change in government or tax policy, it

adds a premium to the required return of related projects. Country risk is therefore treated as part of its normal business risk.

THE INTERNATIONAL CAPITAL ASSET PRICING MODEL (ICAPM)

The International Capital Asset Pricing Model (ICAPM) can be regarded as more formal treatment of the cost of capital elements in the previous section. The model is an international extension of the Capital Asset Pricing Model (CAPM). The CAPM addresses a single currency area and single financial market where there are no restrictions on financial transactions. The ICAPM extends this analysis to multiple currency areas

and multiple financial markets. Both models seek to answer the question: ‘What discount rate should be applied to the future cash flows of a particular project?’ The ‘project’ may be a venture managed from the Head Office, or it may be being run by a wholly owned subsidiary, or it may be applied to the MNC as a whole by a potential or existing investor. But in essence it is an outlay followed by a series of expected positive cash flows that need to be discounted by an interest rate that is appropriate to the required return of the cash flows.

The following outline looks first at the CAPM, addressing a single currency area; then the following section extends the analysis to the ICAPM.

The CAPM

The answer to the question: ‘What discount rate should be applied to the future cash flows of a particular project?’ is simple in outline. The discount (interest) rate that should be applied must reflect all required returns that cannot be diversified away by holding a portfolio of projects. In a single market non-diversifiable elements will include time preference, inflation and that element of project risk that is related to the risk of the market as a whole. These elements of the discount rate for the CAPM are examined in turn.

Time preference. If you are seeking to save £100 and the bank offered you a return in one year’s time to the value of £100 today (i.e. the same purchasing power), you would probably be dissatisfied. Most savers would want a guaranteed return value that is more than just the value of the original saving. More is required because saving means not consuming now and is an inconvenience for which investors will want a reward. The same is true for MNCs. On behalf of their shareholders, they need to earn a return in terms of today’s money to reward investors even if the project is perfectly safe. One may wonder if such returns differ on average between countries. The answer is yes, for reasons that are not clear. Some economies are less prone to saving than others, for example, two thirds of credit card debt in Europe is incurred by UK citizens suggesting a greater impatience and higher time preference in the UK. In Germany, on the other hand, people are compulsive savers. But in general, reward for saving is required by all investors hence it is a part of all interest rates.

Inflation. The decision not to consume (spend) earnings now but delay by saving the money would be most unattractive if the investor could not buy at least the same goods as could be purchased now. Investors want savings to keep pace at least with inflation. Otherwise, the investor may well find that he or she will not be able to buy as much after having saved than before. So a reward for inflation in the currency of calculation is required by investors as inflation cannot be avoided.

Risk. The element of risk that cannot be diversified away for the CAPM is market risk. How market risk is defined in the CAPM is a considerable practical problem. As CAPM deals with a single economy, the market risk is the return from investing in a weighted average of investments in that economy. In many cases this is approximated in the UK as the return on the Financial Times Stock Exchange (FTSE) index. In practice, an individual or firm may invest in assets outside the Stock Exchange, such as land and private businesses. The assumption is that the returns from changes in land prices and businesses outside the exchange somehow are reflected in the returns of at least some of the businesses that are quoted. The investments of an MNC, it is argued, can through diversification avoid all risk except that element of risk that is common to all investments in the economy. Hence the extent to which the returns of a particular project move in line with the market is important in assessing its unavoidable or systematic risk. All other sources of risk, termed individual risk, can be diversified away by having a range of investments.

To assess required rates of return for purely domestic projects, the capital asset pricing model (CAPM) can be applied. It defines the required return (k_j) on a project or a share (j) as:

$$k_j = R_f + \beta_j (R_m - R_f)$$

where:

R_f = risk free rate of return (time preference and inflation)

R_m = market return (return on the FTSE index)

β = beta of a particular share or a project.

The CAPM suggests that the required return on a firm's stock is a positive function of: (1) the risk-free rate of interest, (2) the market rate of return, and (3) the stock's beta.

The beta represents the sensitivity of the stock's returns to market returns (a stock market index). If the beta is 1, the returns on the investment are perfectly correlated with the market returns. The model will charge the whole of the market risk premium ($R_m - R_f$) to the investment. As the model adds back the risk-free element R_f , the cost of capital where beta is 1.0 is R_m , the market return. Some simple examples will confirm that if beta is less than 1.0 the required return will be less than the market return; if beta is greater than 1.0, the required return will be greater than the market return. Thus the CAPM defines the required return in relation to the overall market return known as the systematic risk. The overall risk of a project, defined as the variance of returns can therefore be broken down into two elements: (1) unsystematic variability in cash flows unique to the firm, and (2) systematic risk. Capital asset pricing theory suggests that the unsystematic risk of projects can be ignored because it will be diversified away.

However, systematic risk (measured by the beta of an investment) is not diversified away because all projects are similarly affected. The lower a project's beta, the lower is the project's systematic risk and the lower its required rate of return. Note that in theory at least, as individual risk can be ignored, it would be possible in the CAPM world to have a project with a higher total risk (variance of returns) but with a lower k_e due to a lower systematic risk.

The ICAPM

The ICAPM extends the analysis of the CAPM to a multimarket, multicurrency scenario. Essentially the ICAPM is the relevant model for MNCs as they are able to invest in a range of stock markets and have investments in a range of currencies. The ability of an MNC to diversify is therefore much greater. As with the CAPM the required return is the non-diversifiable risk.

The risk-free element in the ICAPM is the risk free rate in the currency in which the overall returns are being measured. Thus if the MNC is measuring its returns in British pounds the rate will be the pound risk-free rate; if measured in euros, the rate will be the risk-free rate for the euro.

The market return and the sensitivity of the investments to markets returns will remain as an element in the ICAPM. Thus projects will still have betas. The change is in the measure of the market. Instead of the FTSE index, the measure is of a world index. MNCs can invest in differing markets worldwide and can therefore avoid all risk through diversification except world risk. The beta for a particular project will therefore be with a world risk premium or $b_j (R_w - R_f)$ where R_f is the risk-free rate in the valuation currency and R_w is the return on a world index.

Additionally, projects will have exposure to non-diversifiable currency risks. A business will need to know how the returns translated into the home currency are likely to be affected by changes in the value of the foreign currency. This exposure will vary from project to project and will depend on the hedging policy adopted by the MNC. If all revenues are in the foreign currency and costs in the domestic currency with no futures, forwards or options taken out, the currency exposure risk will be much greater than if some of the costs are in the foreign currency and the company has hedged its returns. Additionally, some currencies have greater real exchange rate risk than others (as a reminder, real exchange rate risk is the movement in the value of a foreign currency that is not compensated by the higher or lower inflation in that country (see Exhibit 2.2)). The sensitivity of a project to currency variation is sometimes referred to as the currency beta.

CAPM and ICAPM application issues

The application of the CAPM model and the ICAPM model presents considerable practical problems for an MNC. The company first has to find a like project of a similar risk class to identify an appropriate beta. If the project is like all the other projects being undertaken by the firm, then the company's cost of capital will serve the task. But if there is a sufficient difference between projects because maybe the project is in a very different economy or is a different activity not normally carried out by the company, then the beta of another company that undertakes similar projects would be more appropriate. The choice of such companies is not an exact science. The measurement of market return is also problematic. To what extent does the

market return represent the return on all potential investments in society? Highly correlated measures of return can nevertheless produce very different betas.

There is also a problem of meaning. Why a beta is particularly high or low or why it changes is not easy to explain. Selecting the appropriate beta may well not be easy. Beyond beta being some measure of correlation with the market return, the actual beta score can easily appear as a *deus ex machina* (Greek for ‘a god from a machine’). The prospect for an MNC is that a project is rejected due to a measure over which there is much approximation and little understanding. The more user friendly subjective probability estimation appears attractive in comparison. Even why the return on the Stock Market has been so high over the years is also not well understood (this is known as the equity premium puzzle). Briefly, investment can be seen as deferred or delayed consumption. So another way of approximating risk for the investment market as a whole is to look at the variation in the growth rate of consumption. It turns out that historically this variance has been far too low to justify the fact that in real terms (i.e. excluding inflation) the US stock market has been 7.8 percentage points (i.e. 8.4% – 0.6%) above the riskless return in the post-war period and in the UK the stock market has been 4.6 percentage points above the market over a similar period (Mehra 2003).²

A final critique is that the model is not complete. The application of the ICAPM or any discount cash flow model does not account for the role of real options in investments. For the MNC, the option to abandon is a very important safeguard in estimating country risk – this is effectively an American style put option on an investment. Also, many would dispute that the market is the only non-diversifiable risk source, exposure to interest rate changes and changes in the price of oil are also not easily diversified away.

EXAMPLE

Blat plc is considering building a factory in country X or country Y. Both factories will serve the European market. In country X the costs are much lower than in Y and the net present value of the project is much higher. But in country Y the government has given a guarantee that Blat can sell the factory back to them

at the purchase price and that all labour liabilities will be taken over by the government. This option can be exercised at any time. Blat decides that country Y is the better prospect even though the net present value of the project is lower.

Implications of the ICAPM and CAPM for an MNC's risk

In view of the issues raised in the previous section it is natural to think that there may indeed be few implications for the CAPM and ICAPM in estimating risk for an MNC. This would be wrong. These models clearly have measurement problems and it would be wrong to see them as formulas that can be applied as a simple numerical calculation. Their value is that they provide a logical construct around which an MNC can formulate its thinking.

Capital asset pricing theory suggests that the cost of capital should be generally lower for MNCs than for domestic firms. MNCs have a greater opportunity to diversify across different financial markets. The systematic or non-diversifiable element of their investments should be lower. However, investing abroad is risky, more risky than domestic investment. The non-systematic part of risk may therefore reasonably be expected to be greater. For particular MNCs diversification opportunities may be limited. Michelin make tyres, GlaxoSmithKlein formulate medicines and SABMiller brew beer. Different markets are possible, but the product and demand for the product is fairly narrow. The extensive use of derivatives by MNCs is an attempt to lower such risk.

²R. Mehra (2003) ‘The Equity Premium: Why Is It A Puzzle?’, *Financial Analysts Journal*, 54–69.

At present it is still the case that MNC shares react predominantly to their home stock market index. Those indexes are over time increasingly becoming international as companies are quoted in more than one market. In the case of SABMiller (South African Breweries) the share is quoted on the London Stock Exchange, its functional (i.e. reporting) currency is the US dollar. It calculates its weighted average cost of capital as being a lowly 8.75%. Its attitude to risk is summarized in the Managing for Value section below.

We cannot say with certainty whether an MNC will have a lower cost of capital than a purely domestic firm in the same industry. However, we can use this discussion to understand how an MNC may attempt to take full advantage of the favourable aspects that reduce its cost of capital, while minimizing exposure to the unfavourable aspects that increase its cost of capital.

Costs of capital across countries

An understanding as to why the cost of capital can vary among countries is relevant for three reasons. First, it can explain why MNCs based in some countries may have a competitive advantage over others. Just as technology and resources differ across countries, so does the cost of capital. MNCs based in some countries will have a larger set of feasible (positive net present value) projects because their cost of capital is lower; thus, these MNCs can more easily increase their world market share. MNCs operating in countries with a high cost of capital will be forced to decline projects that might be feasible for MNCs operating in countries with a low cost of capital.

Second, MNCs may be able to adjust their international operations and sources of funds to capitalize on differences in the cost of capital among countries. Third, differences in the costs of each capital component (debt and equity) can help explain why MNCs based in some countries tend to use a more debt-intensive capital structure than MNCs based elsewhere. Country differences in the cost of debt are discussed next, followed by country differences in the cost of equity.

Country differences in the cost of debt

The cost of debt to a firm is primarily determined by the prevailing risk-free interest rate in the currency borrowed and the risk premium required by creditors. The cost of debt for firms is higher in some countries

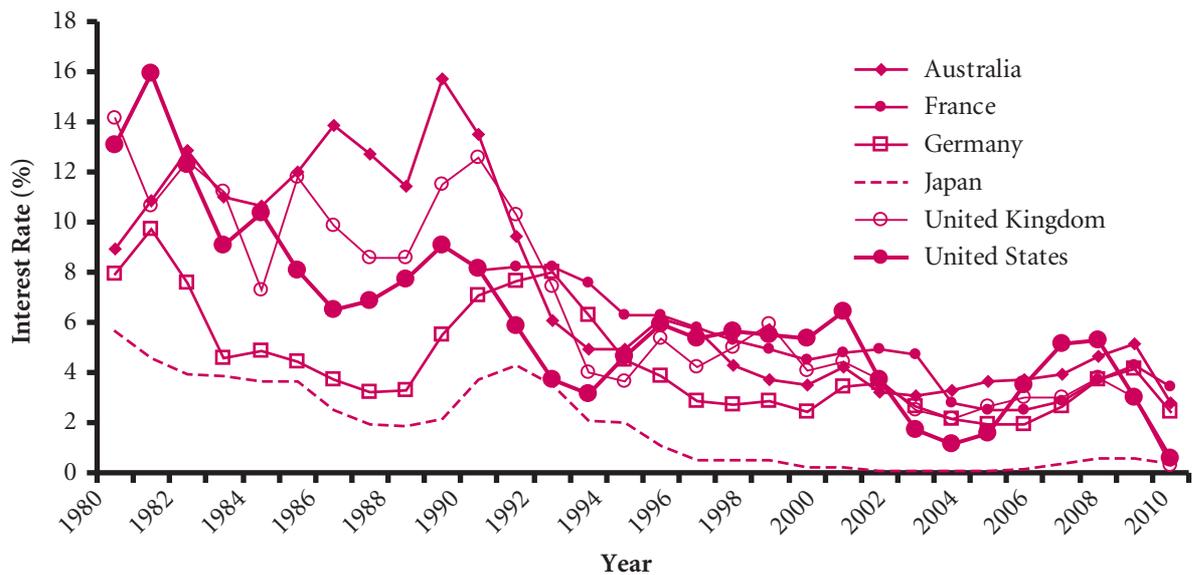
MANAGING FOR VALUE

SABMiller

SABMiller is quoted on the London Stock exchange and is in the FTSE100 index. The group's weighted average cost of capital in the 2005 accounts is stated as 8.75% after taking into account 'relevant individual country profiles and the group's overall debt profile'. To reduce currency risk, the group borrows in euro, Polish zloty, Czech krone and US dollars. That is the fixed and variable interest rate costs of this borrowing is set off against earnings in those currencies. Its reporting currency is the dollar. Its policy is to hedge against currency movements such that a 10% change in the value of the currency, for example the Polish zloty, will not affect overall profits (which are reported in dollars) by more than 1%. Any

transaction over \$60m is therefore hedged. In fact it reports that its exposure to foreign currency movement, described as a simultaneous change of 10% in all the foreign (non-US) currencies would affect profits by about half that amount. Interest rate risk and occasional commodity risk (aluminium) is also hedged. Thus in working out its cost of capital, SABMiller recognize currency risk, the weighted average cost of capital and country risk. No detailed calculations are provided but at least the ICAPM model has pointed to the principal factors. Note that risk is defined by the company in relation to its functional currency the dollar despite the fact that it is quoted on the London Stock Exchange.

EXHIBIT 2.3 Risk-free interest rates across countries



than in others because the corresponding risk-free rate is higher at a specific point in time or because the risk premium is higher (see Exhibit 2.3). Explanations for country differences in the risk-free rate and in the risk premium follow.

Differences in the risk-free rate. The risk-free rate is determined by the interaction of the supply of and demand for funds. Any factors that influence the supply and/or demand will affect the risk-free rate. These factors include tax laws, demographics, monetary policies and economic conditions, in particular inflation, all of which differ among countries.

Tax laws in some countries offer more incentives to save than those in others, which can influence the supply of savings and, therefore, interest rates. A country's corporate tax laws related to depreciation and investment tax credits can also affect interest rates through their influence on the corporate demand for funds.

A country's demographics influence the supply of savings available and the amount of loanable funds demanded. Since demographics differ among countries, so will supply and demand conditions and, therefore, nominal interest rates. Countries with younger populations are likely to experience higher interest rates because younger households tend to save less and borrow more.

The monetary policy implemented by a country's central bank influences the supply of loanable funds and therefore influences interest rates. Each central bank implements its own monetary policy, and this can cause interest rates to differ among countries. One exception is the set of European countries that rely on the European Central Bank to control the supply of euros. All of these countries now have the same risk-free rate because they use the same currency.

Since economic conditions influence interest rates, they can cause interest rates to vary across countries. The cost of debt is much higher in many less developed countries than in industrialized countries, primarily because of economic conditions. Countries such as Brazil and Russia commonly have a high risk-free interest rate, which is partially attributed to high inflation. Investors in these countries will invest in a firm's debt securities only if they are compensated beyond the degree to which prices of products are expected to increase.

If interest parity were to hold, higher foreign risk free interest rates would be offset by a depreciating currency; lower foreign interest rates would be compensated for by an appreciating currency. Looking at historic data, interest parity does not appear to hold well.

Differences in the risk premium. The risk premium on debt must be large enough to compensate creditors for the risk that the borrower may be unable to meet its payment obligations. This risk can vary among

countries because of differences in economic conditions, relationships between corporations and creditors, government intervention and degree of financial leverage.

When a country's economic conditions tend to be stable, the risk of a recession in that country is relatively low. Thus, the probability that a firm might not meet its obligations is lower, allowing for a lower risk premium.

Corporations and creditors have closer relationships in some countries than in others. In Japan, creditors stand ready to extend credit in the event of a corporation's financial distress, which reduces the risk of illiquidity. The cost of a Japanese firm's financial problems may be shared in various ways by the firm's management, business customers and consumers. Since the financial problems are not borne entirely by creditors, all parties involved have more incentive to see that the problems are resolved. Thus, there is less likelihood (for a given level of debt) that Japanese firms will go bankrupt, allowing for a lower risk premium on the debt of Japanese firms.

Governments in some countries are more willing to intervene and rescue failing firms. In China and Russia large energy companies tend to be partly state owned. It may be in the government's best interest to rescue firms that it partially owns. Even if the government is not a partial owner, it may provide direct subsidies or extend loans to failing firms. Increasingly, government rescues are less likely because taxpayers prefer not to bear the cost of corporate mismanagement. In Europe government subsidies are likely to break EU competition policy. Where the probability that a failing firm will be rescued by the government is lower the risk premium on a given level of debt may be higher than for firms of other countries.

Firms in some countries have greater borrowing capacity because their creditors are willing to tolerate a higher degree of financial leverage. For example, firms in Japan and Germany have a higher degree of financial leverage than firms in the United States. If all other factors were equal, these high-leverage firms would have to pay a higher risk premium to their shareholders. However, all other factors are not equal. In fact, these firms are allowed to use a higher degree of financial leverage because of their unique relationships with the creditors and governments.

Comparative costs of debt across countries. The risk free cost of borrowing, to which risk premiums dependant on MNCs' individual credit ratings must be added, are displayed for various countries in Exhibit 2.3. There is considerable correlation between country cost-of-debt levels over time. The nominal cost of debt for firms in many countries declined in 2001–02 and in 2009 due to global recessions. However, some rates declined more than others. The disparity in the cost of debt among the countries is due primarily to the disparity in their risk-free interest rates.

Country differences in the cost of equity

A firm's cost of equity represents an opportunity cost: what shareholders could earn on investments with similar risk if the equity funds were distributed to them. This return on equity can be measured as a risk-free interest rate that could have been earned by shareholders, plus a premium to reflect the risk of the firm. For reasons explained in the previous section, the risk premium and hence the cost of equity will vary according to different economic environments.

Impact of the euro. The adoption of the euro has facilitated the integration of European stock markets because investors from each country are more willing to invest in other countries where the euro is used as the currency. As demand for shares by investors has increased, trading volume has increased, making the European stock markets more liquid. Investors in one euro-zone country no longer need to be concerned about exchange rate risk when they buy stock of a firm based in another euro-zone country. In addition, the euro allows the valuations of firms to be more transparent because firms throughout the euro-zone can be more easily compared since their values are all denominated in the same currency. Given the increased willingness of European investors to invest in stocks, MNCs based in Europe may obtain equity financing at a lower cost.

Combining the costs of debt and equity

The costs of debt and equity can be combined to derive an overall cost of capital (see above). The relative proportions of debt and equity used by firms in each country must be applied as weights to reasonably

estimate this cost of capital. Given the differences in the costs of debt and equity across countries, it is understandable that the cost of capital may be lower for firms based in specific countries. Japan, for example, commonly has a relatively low cost of capital. It usually has a relatively low risk-free interest rate, which not only affects the cost of debt but also indirectly affects the cost of equity. In addition, the price-earnings multiples of Japanese firms are usually high, allowing these firms to obtain equity funding at a relatively low cost. MNCs can attempt to access capital from countries where capital costs are low, but when the capital is used to support operations in other countries, the cost of using that capital is exposed to exchange rate risk. Thus, the cost of capital may ultimately turn out to be higher than expected. As stated above, the international Fisher effect predicts that the exchange rate should offset any differences, thus the value of the yen should increase relative to other currencies to offer a similar return.

Estimating the cost of debt and equity

When financing new projects, MNCs estimate their cost of debt and equity from various sources. They consider these estimates when they decide on the capital structure to use for financing the projects.

The after-tax cost of debt can be estimated with reasonable accuracy using public information on the present costs of debt (bond yields) incurred by other firms whose risk level is similar to that of the project. The cost of equity is an opportunity cost: what investors could earn on alternative equity investments with similar risk. The MNC can attempt to measure the expected return on a set of stocks that exhibit the same risk as its project. This expected return can serve as the cost of equity. The required rate of return on the project will be the project's weighted cost of capital, based on the estimates as explained here.

EXAMPLE

Lexon plc, a successful UK-based MNC, is considering how to obtain funding for a project in Argentina during the next year. It considers the following information:

- UK risk-free rate = 6%.
- Argentine risk-free rate = 10%.
- Risk premium on pound-denominated debt provided by UK creditors = 3%. Risk premium on Argentine peso-denominated debt provided by Argentine creditors = 5%.
- Beta of project (expected sensitivity of project returns to UK investors in response to the UK market) = 1.5.
- Expected UK market return = 14%.
- UK corporate tax rate = 30%.
- Argentine corporate tax rate = 30%.
- Creditors are likely to allow no more than 50% of the financing to be in the form of debt, which implies that equity must provide at least half of the financing.

Lexon's Cost of Each Component of Capital

Cost of pound-denominated debt	= $(6\% + 3\%) \times (1 - 0.3) = 6.3\%$
Cost of Argentine peso-denominated debt	= $(10\% + 5\%) \times (1 - 0.3) = 10.5\%$
Cost of pound-denominated equity	= $6\% + 1.5(14\% - 6\%) = 18\%$

Notice that Lexon's cheapest source of funds is pound-denominated debt. However, creditors have imposed restrictions on the total amount of debt funding that Lexon can obtain.

Lexon considers four different capital structures for this new project, as shown in Exhibit 2.4. Its weighted average cost of capital (WACC) for this project can be derived by summing the products of the

EXHIBIT 2.4 Lexon's estimated weighted average cost of capital (WACC) for financing a project

Possible Capital Structure	UK Debt (Cost = 6.3%)	Argentine Debt (Cost = 10.5%)	Equity (Estimated Cost)	Estimated WACC
30% UK debt, 70% equity	$30\% \times 6.3\% = 1.89\%$		$70\% \times 18\% = 12.6\%$	14.49%
50% UK debt, 50% UK equity	$50\% \times 6.3\% = 3.15\%$		$50\% \times 20\% = 10\%$	13.15%
20% UK debt, 30% Argentine debt, 50% UK equity	$20\% \times 6.3\% = 1.26\%$	$30\% \times 10.5\% = 3.15\%$	$50\% \times 20\% = 10\%$	14.41%
50% Argentine debt, 50% UK equity		$50\% \times 10.5\% = 5.25\%$	$50\% \times 20\% = 10\%$	15.25%

Note:

The cost of equity will vary according to the level of borrowing (leverage). We assume a constant exchange rate.

weight times the cost for each component of capital. The weight assigned to each component is the proportion of total funds obtained from that component.

The exhibit shows that lowest estimate of the WACC results from a capital structure of 50% UK debt and 50% equity. Although it is useful to estimate the costs of possible capital structures as shown here, the estimated WACC does not account for the exposure to exchange rate risk. Thus, Lexon will not necessarily choose the capital structure with the lowest estimated WACC. Lexon can attempt to incorporate the exchange rate effects in various ways, as explained in the following section.

USING THE COST OF CAPITAL FOR ASSESSING FOREIGN PROJECTS

When an MNC's parent proposes an investment in a foreign project that has the same risk as the MNC itself, it can use its weighted average cost of capital as the required rate of return for the project. However, many foreign projects exhibit different risk levels than the risk of the MNC. There are various ways for an MNC to account for the risk differential in its capital budgeting process.

Derive net present values based on the weighted average cost of capital

EXAMPLE

Recall that Lexon estimated that its WACC will be 13.15% if it uses 50% pound-denominated debt and 50% equity. It considers assessing the project in Argentina based on a required rate of return of 13.15%. Yet, by financing the Argentine project com-

pletely with pounds, Lexon will likely be highly exposed to exchange rate movements. It can attempt to account for the way in which expected exchange rate movements will affect its cash flows when it conducts its capital budgeting analysis.

Furthermore, Lexon could account for the risk within its cash flow estimates. Many possible values for each input variable (such as exchange rate, demand, price, labour cost, etc.) can be incorporated into the estimated future cash flows. Risk may then be assessed independently by looking at the returns and their

probability and standard deviation of those returns. The standard deviation as a measure of risk can then be translated into a discount rate and *NPV* processes applied. Alternatively, Lexon may wish to look at worst case scenarios and value options available. Computer software programs that perform sensitivity analysis and simulation can be used to facilitate the process.

Adjust the weighted average cost of capital for the risk differential

An alternative method of accounting for a foreign project's risk is to adjust the firm's weighted average cost of capital for the risk differential. For example, if the foreign project is thought to exhibit more risk than the MNC exhibits, a premium can be added to the WACC to derive the required rate of return on the project. Then, the capital budgeting process will incorporate this required rate of return as the discount rate. If the foreign project exhibits lower risk, the MNC will use a required rate of return on the project that is less than its WACC.

EXAMPLE

Lexon estimated that its WACC will be 13.15% if it uses the capital structure of 50% pound-denominated debt and 50% equity. But it recognizes that its Argentine project will be exposed to exchange rate risk and that this project is exposed to more risk than its

normal operations. Lexon considers adding a risk premium of 6 percentage points to the estimated WACC to derive the required rate of return. In this case, the required rate of return would be $13.15\% + 6\% = 19.15\%$.

The usefulness of this method is limited because the risk premium is arbitrarily determined and is subject to error. The risk premium is dependent on the manager who conducts the analysis. Thus, the decision to accept or reject the foreign project, which is based on the estimated *NPV* of the project, could be dependent on the manager's decision about the risk premium to use within the required rate of return. Such judgments are inevitable given that the Argentine peso exhibited great stability and then in 2001/02 devalued suddenly by 40%. Statistics cannot easily cope with such jumps.

Derive the net present value of the equity investment

The two methods described up to this point discount cash flows based on the total cost of the project's capital. That is, they compare the *NPV* of the project's cash flows to the initial capital outlay. They ignore debt payments because the cost of debt is captured within the required rate of return on the capital to be invested in the project. When an MNC is considering financing a portion of the foreign project within that country, these methods are less effective because they do not measure how the debt payments could affect pound cash flows. Some of the MNC's debt payments in the foreign country may reduce its exposure to exchange rate risk, which affects the cash flows that will ultimately be received by the parent.

To explicitly account for the exchange rate effects, an MNC can assess the project by measuring the *NPV* of the equity investment in the project. All debt payments are explicitly accounted for when using this method, so the analysis fully accounts for the effects of expected exchange rate movements. Then, the present value of all cash flows received by the parent can be compared to the parent's initial equity investment in the project. The MNC can conduct this same analysis for various financing alternatives to determine the one that yields the most favourable *NPV* for the project.

EXAMPLE

To illustrate, reconsider Lexon plc, which might finance the Argentine project with partial financing from Argentina. More details are needed to illustrate this point. Assume that Lexon would need to invest 80 million Argentine pesos (AP) in the project. Since the peso is currently worth £0.30, Lexon needs the equivalent of £26 million. It will use equity for 50% of the funds needed, or £13 million. It will use debt to obtain the remaining capital. For its debt financing, Lexon decides that it will either borrow pounds and convert the funds into pesos or borrow pesos. The project will be terminated in one year; at that time, the debt will be repaid, and any earnings generated by the project will be remitted to Lexon's parent in the United Kingdom. The project is expected to result in revenue of AP200 million, and operating expenses in Argentina will be AP10 million. Lexon expects that the Argentine peso will be valued at £0.24 in one year.

This project will not generate any revenue in the United Kingdom, but Lexon does expect to incur operating expenses of £6 million in the United Kingdom. It will also incur pound-denominated interest expenses if it finances the project with pound-denominated debt. Any pound-denominated expenses provide tax benefits, as the expenses will reduce UK taxable income from other operations. The amount of debt used in each country affects the interest payments incurred and the taxes paid in that country.

The previous two methods are not effective for analyzing this type of financing decision. To compare the two financing alternatives, the analysis needs to incorporate the debt payments directly into the cash flow estimates. Consequently, the focus is on comparing the present value of pound cash flows earned on the equity investment to the initial equity outlay. If neither alternative has a positive *NPV*, the proposed project will not be undertaken. If both alternatives have positive *NPVs*, the project will be financed with the capital structure that is expected to generate a higher *NPV*.

As with the capital budgeting analysis in Chapter 14, it is necessary to assess the project from the perspective of the parent's local equity holders. A project should be considered only if it is beneficial to the parent's shareholders. The payments from Lexon to any creditors in the United Kingdom or in a foreign country should be explicitly accounted for in order to measure the cash flows that flow back to the parent's shareholders after payments have been made to creditors. This allows for a more accurate measure of the remitted cash flows that are exposed to exchange rate movements. Cash flows to the parent are discounted at the parent's cost of equity, which represents the required rate of return on the project by the parent's shareholders. Since the debt payments are explicitly accounted for, the analysis compares the present value of the project's cash flows to the initial equity investment that would be invested in the project.

The analysis of the two financing alternatives is provided in Exhibit 2.5. If Lexon uses pound-denominated debt, a larger amount of funds will be remitted and thus will be subject to the exchange rate effect. Conversely, if Lexon uses peso-denominated debt, the amount of remitted funds is smaller. The analysis shows that the project generates an *NPV* of -£1.42 million if the project is partially financed with pound-denominated debt versus an *NPV* of £1.26 million if it is partially financed with peso-denominated debt. Since the peso is expected to depreciate significantly over the year, Lexon will be better off using the more expensive peso-denominated debt than the pound-denominated debt. That is, the higher cost of the debt is more than offset by the reduced exposure to adverse exchange rate effects. Consequently, Lexon should finance this project with a capital structure that includes the peso-denominated debt, even though the interest rate on this debt is high.

Relationship between project's net present value and capital structure. The *NPV* of the foreign project is dependent on the project's capital structure for two reasons. First, the capital structure can affect the cost of capital. Second, the capital structure influences the amount of cash flows that are distributed to creditors in the local country before taxes are imposed and funds are remitted to the parent. Since the capital structure influences the tax and exchange rate effects, it affects the cash flows that are ultimately received by the parent.

Tradeoff when financing in developing countries. The results here do not imply that foreign debt should always be used to finance a foreign project. The advantage of using foreign debt to offset foreign revenue (reduce exchange rate risk) must be weighed against the cost of that debt. Many developing countries commonly have high interest rates on debt, but their local currencies tend to weaken against the dollar. Thus, US-based MNCs must either tolerate a high cost of local debt financing or borrow in dollars but be exposed to significant exchange rate risk. The tradeoff can best be assessed by estimating the *NPV* of the MNC's equity investment under each financing alternative, as illustrated in the previous example.

Accounting for multiple periods. The preceding example focused on just one period to illustrate how the analysis is conducted. The analysis can easily be adapted to assess multiple periods, however. The same analysis shown for a single year in Exhibit 2.5 could be applied to multiple years. For each year, the revenue

EXHIBIT 2.5 Analysis of Lexion's project based on two financing alternatives (numbers are in millions)

(Currency in millions)	Rely on UK Debt (£13 million Borrowed) and Equity of £13 million	Rely on Argentine Debt (40 million pesos Borrowed) and Equity of £13 million
Argentine revenue	AP200	AP200
– Argentine operating expenses	–AP10	–AP10
– Argentine interest expenses (15% rate)	<u>–AP0</u>	<u>–AP6</u>
= Argentine earnings before taxes	= AP190	= AP184
– Taxes (30% tax rate)	<u>–AP57</u>	<u>–AP55.2</u>
= Argentine earnings after taxes	= AP133	= AP128.8
– Principal payments on Argentine debt	<u>–AP0</u>	<u>–AP40</u>
= Amount of pesos to be remitted	= AP133	= AP88.8
× Expected exchange rate of AP	<u>×£0.24</u>	<u>×£0.24</u>
= Amount of pounds received from converting pesos	= £31.92	= £21.31
– UK operating expenses	–£6	–£6
– UK interest expenses (9% rate)	–£1.17	–\$0
+ UK tax benefits on UK expenses (based on 30% tax rate)	+£2.15	+£1.8
– Principal payments on UK debt	<u>–£13</u>	<u>–£0</u>
= Pound cash flows	= £13.90	= £17.11
Present value of pound cash flows, discounted at the cost of equity (assumed to be 20%)	£11.58	£14.26
– Initial equity outlay	<u>£13</u>	<u>£13</u>
= <i>NPV</i>	= –£1.42	= £1.26

and expenses would be recorded, with the debt payments explicitly accounted for. The tax and exchange rate effects would be measured to derive the amount of cash flows received in each year. A discount rate that reflects the required rate of return on equity would be applied to measure the present value of the cash flows to be received by the parent. The discount rate would reflect the risk applicable to the estimates.

Comparing alternative debt compositions. In the Lexon example, the focus was on whether the debt should be in pesos or in pounds. Other debt compositions could also have been considered, such as the following:

- 75% of the debt denominated in Argentine pesos, and the remaining debt denominated in pounds.
- 50% of the debt denominated in Argentine pesos, and the remaining debt denominated in pounds.
- 25% of the debt denominated in Argentine pesos, and the remaining debt denominated in pounds.

The analysis can also account for different debt maturity structures. For example, if an MNC is considering a short-term Argentine loan that would be paid off in one year, it can estimate the cash outflow payments associated with the debt repayment. If it is considering a medium-term or long-term loan denominated in pesos, the payments will be spread out more and incorporated within the cash outflows over time. The analysis can easily account for a combination of short-term loans in Argentina and long-term loans in the UK or vice versa. It can account for floating-rate loans that adjust to market interest rates by developing one or more scenarios for how market interest rates will change in the future. The key is that all interest and principal payments on the debt are accounted for, along with any other cash flows. Then the present value of the cash flows can be compared to the initial outlay to determine whether the equity investment is feasible.

Comparing alternative capital structures. In the example of Lexon plc the proportion of debt versus equity was held constant for both alternatives that were analyzed. In reality, the capital structure decision will consider not only the composition of the debt, but also the proportion of equity versus debt that should be obtained. The same type of analysis could have been used to compare different capital structures, such as the following:

- 50% equity and 50% debt.
- 60% equity and 40% debt.
- 70% equity and 30% debt.

If Lexon in the previous example used more UK equity, there would be three obvious effects:

- 1 A higher initial equity investment would be needed.
- 2 The higher the level of debt the greater the gearing and hence the risk to equity. The cost of equity capital will therefore increase. Modigliani and Miller argue that the increase in the required return to equity capital is such that the overall cost of capital will remain constant.
- 3 With the lower debt level, the cash outflows needed to make debt payments would be reduced, so the present value of cash flows would increase but the required return on equity would increase to compensate.

The first effect would reduce the *NPV* of the equity investment in the project, whereas the second effect would increase it. As in the previous example, an analysis would have to be conducted to determine whether using more equity would result in a higher *NPV* generated by the equity investment.

Assessing alternative exchange rate scenarios. The example used only one exchange rate scenario, which may not be realistic. A spreadsheet can easily compare the *NPVs* of the two alternatives based on other exchange rate projections. This type of analysis would show that because of the greater exposure, the *NPV*

of the project will be more sensitive to exchange rate scenarios if the project is financed with pound-denominated debt than if it is financed with peso-denominated debt. The reason is simply that setting costs in a currency (interest payments) against revenues in that currency reduces the exposure to exchange rate changes as it is only the net amount that will affect the wealth of the MNC.

Considering foreign stock ownership. Some capital structure decisions also include foreign shareholders, but the analysis can still be conducted in the same manner. The analysis becomes complicated only if the foreign ownership changes the corporate governance in some way that affects the firm's cash flows. Many MNCs have issued stock in foreign countries where they do business. They will consider issuing stock only in countries where there is a sufficient demand for it. When there is not sufficient foreign demand, an MNC can more easily place its stock in its home market.

Normally, an MNC will focus its stock offerings in a few countries where it does most of its business. The stock will be listed on the local stock exchange in the countries where the shares are issued and will be denominated in the local currency. The listing is necessary to create a secondary market for the stock in the foreign country. Many investors will consider purchasing a stock only if there is a local secondary market where they can easily sell their shares.

THE MNC'S CAPITAL STRUCTURE DECISION

An MNC's capital structure decision involves the choice of debt versus equity financing within all of its subsidiaries. Thus, its overall capital structure is essentially a combination of all of its subsidiaries' capital structures. MNCs recognize the tradeoff between using debt and using equity for financing their operations. The advantages of using debt as opposed to equity vary with corporate characteristics specific to each MNC and specific to the countries where the MNC has established subsidiaries. Some of the more relevant corporate characteristics specific to an MNC that can affect its capital structure are identified first, followed by country characteristics.

Influence of corporate characteristics

Characteristics unique to each MNC can influence its capital structure. Some of the more common firm-specific characteristics that affect the MNC's capital structure are identified here.

Stability of MNC's cash flows. MNCs with more stable cash flows can handle more debt because there is a constant stream of cash inflows to cover periodic interest payments. Conversely, MNCs with erratic cash flows may prefer less debt because they are not assured of generating enough cash in each period to make larger interest payments on debt. MNCs that are diversified across several countries may have more stable cash flows since the conditions in any single country should not have a major impact on their cash flows. Consequently, these MNCs may be able to handle a more debt-intensive capital structure.

MNC's credit risk. MNCs that have lower credit risk (risk of default on loans provided by creditors) have more access to credit. Any factors that influence credit risk can affect an MNC's choice of using debt versus equity. For example, if an MNC's management is thought to be strong and competent, the MNC's credit risk may be low, allowing for easier access to debt. MNCs with assets that serve as acceptable collateral (such as buildings, trucks, and adaptable machinery) are more able to obtain loans and may prefer to emphasize debt financing. Conversely, MNCs with assets that are not marketable have less acceptable collateral and may need to use a higher proportion of equity financing.

MNC's access to retained earnings. Highly profitable MNCs may be able to finance most of their investment with retained earnings and therefore use an equity-intensive capital structure. Conversely, MNCs that have small levels of retained earnings may rely on debt financing. Growth-oriented MNCs are less able to

finance their expansion with retained earnings and tend to rely on debt financing. MNCs with less growth need less new financing and may rely on retained earnings (equity) rather than debt.

MNC's guarantees on debt. If the parent backs the debt of its subsidiary, the subsidiary's borrowing capacity might be increased. Therefore, the subsidiary might need less equity financing. At the same time, however, the parent's borrowing capacity might be reduced, as creditors will be less willing to provide funds to the parent if those funds might be needed to rescue the subsidiary.

MNC's agency problems. If a subsidiary in a foreign country cannot easily be monitored by investors from the parent's country, agency costs are higher. To maximize the firm's stock price, the parent may ask the subsidiary to issue stock rather than debt in the local market so that its managers there will be monitored. In this case, the foreign subsidiary is referred to as 'partially owned' rather than 'wholly owned' by the MNC's parent. This strategy can affect the MNC's capital structure. It may be feasible when the MNC's parent can enhance the subsidiary's image and presence in the host country or can motivate the subsidiary's managers by allowing them partial ownership.

One concern about a partially owned foreign subsidiary is a potential conflict of interest, especially when its managers are minority shareholders. These managers may make decisions that can benefit the subsidiary at the expense of the MNC overall. For example, they may use funds for projects that are feasible from their perspective but not from the parent's perspective.

Influence of country characteristics

In addition to characteristics unique to each MNC, the characteristics unique to each host country can influence the MNC's choice of debt versus equity financing and therefore influence the MNC's capital structure. Specific country characteristics that can influence an MNC's choice of equity versus debt financing are described here.

Share restrictions in host countries. In some countries, governments allow investors to invest only in local shares. Even when investors are allowed to invest in other countries, they may not have complete information about shares of companies outside their home countries. This represents an implicit barrier to cross-border investing. Furthermore, potential adverse exchange rate effects and tax effects can discourage investors from investing outside their home countries. Such impediments to worldwide investing can cause some investors to have fewer share investment opportunities than others. Consequently, an MNC operating in countries where investors have fewer investment opportunities may be able to raise equity in those countries at a relatively low cost. This could entice the MNC to use more equity by issuing shares in these countries to finance its operations.

<http://>

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Interest rates in host countries. Because of government-imposed barriers on capital flows along with potential adverse exchange rate, tax and country risk effects, loanable funds do not always flow to where they are needed most. Thus, the price of loanable funds (the interest rate) can vary across countries. MNCs may be able to obtain loanable funds (debt) at a relatively low cost in specific countries, while the cost of debt in other countries may be very high. Consequently, an MNC's preference for debt may depend on the costs of debt in the countries where it operates. If markets are somewhat segmented and the cost of funds in the subsidiary's country appears excessive, the parent may use its own equity to support projects implemented by the subsidiary.

Strength of host country currencies. If an MNC is concerned about the potential weakness of the currencies in its subsidiaries' host countries, it may attempt to finance a large proportion of its foreign operations by borrowing those currencies instead of relying on parent funds. In this way, the subsidiaries will remit a smaller amount in earnings because they will be making interest payments on local debt. This strategy reduces the MNC's exposure to exchange rate risk.

If the parent believes that a subsidiary's local currency will appreciate against the parent's currency, it may have the subsidiary retain and reinvest more of its earnings. The parent may also provide an immediate cash infusion to finance growth in the subsidiary. As a result, there will be a transfer of internal funds from the parent to the subsidiary, possibly resulting in more external financing by the parent and less debt financing by the subsidiary.

Country risk in host countries. A relatively mild form of country risk is the possibility that the host government will temporarily block funds to be remitted by the subsidiary to the parent. Subsidiaries that are prevented from remitting earnings over a period may prefer to use local debt financing. This strategy reduces the amount of funds that are blocked because the subsidiary can use some of the funds to pay interest on local debt.

If an MNC's subsidiary is exposed to risk that a host government might confiscate its assets, the subsidiary may use much debt financing in that host country. Then local creditors that have lent funds will have a genuine interest in ensuring that the subsidiary is treated fairly by the host government. In addition, if the MNC's operations in a foreign country are terminated by the host government, it will not lose as much if its operations are financed by local creditors. Under these circumstances, the local creditors will have to negotiate with the host government to obtain all or part of the funds they have lent after the host government liquidates the assets it confiscates from the MNC.

A less likely way to reduce exposure to a high degree of country risk is for the subsidiary to issue stock in the host country. Minority shareholders benefit directly from a profitable subsidiary. Therefore, they could pressure their government to refrain from imposing excessive taxes, environmental constraints, or any other provisions that would reduce the profits of the subsidiary. Having local investors own a minority interest in a subsidiary may also offer some protection against threats of adverse actions by the host government. Another advantage of a partially owned subsidiary is that it may open up additional opportunities in the host country. The subsidiary's name will become better known when its shares are acquired by minority shareholders in that country.

Tax laws in host countries. Foreign subsidiaries of an MNC may be subject to a withholding tax when they remit earnings. By using local debt financing instead of relying on parent financing, they will have to make interest payments on the local debt and thus may be able to reduce the amount to be remitted periodically. Thus, they may reduce the withholding taxes by using more local debt financing. Foreign subsidiaries may also consider using local debt if the host governments impose high corporate tax rates on foreign earnings; in this way, the subsidiaries can benefit from the tax advantage of using debt where taxes are high (unless the higher taxes paid would be fully offset by tax credits received by the parent).

Revising the capital structure in response to changing conditions

As economic and political conditions in a country change or an MNC's business changes, the costs or benefits of each component cost of capital can change as well. An MNC may revise its capital structure in response to the changing conditions.

- 1 A firm discontinues its business in Argentina and decides to reduce its Argentine debt. It no longer has Argentine peso revenue that it used to offset to reduce exchange rate risk.
- 2 The UK government reduces taxes on dividends, which makes stocks more attractive to investors than investing in debt securities. Thus, the cost of equity has decreased, causing some MNCs to shift their capital structure.

- 3 Interest rates in Europe increase, causing some UK-based MNCs to support their European operations with pound-denominated debt.
- 4 Interest rates in Singapore decrease, causing some UK-based MNCs with operations in Singapore to increase their use of debt denominated in Singapore dollars.
- 5 Political risk in Peru increases, causing some UK-based MNCs to finance more of their business there with local debt so that they have some support from local institutions with political connections.

In recent years, MNCs have revised their capital structures to reduce their withholding taxes on remitted earnings by subsidiaries.

EXAMPLE

Clayton plc is a UK-based MNC whose parent plans to raise £50 million of capital in the United Kingdom by issuing stock in the United Kingdom. The parent plans to convert the £50 million into 100 million Australian dollars (A\$) and use the funds to build a subsidiary in Australia. Since the parent may need some return on this capital to pay its shareholders' dividends, it will require that its Australian subsidiary remit A\$4 million per year. Assume that the Australian government will impose a withholding tax of 10% on the remitted earnings, which will amount to A\$400 000 per year. Clayton plc can revise its capital structure in several different ways to reduce or avoid this tax. Most solutions involve reducing the reliance of the subsidiary on the parent's capital.

First, Clayton's Australian subsidiary could borrow funds in Australia as its main source of capital instead of relying on the UK parent. Thus, it would use some of its earnings to pay its local creditors interest instead of remitting a large amount of earnings to the UK parent. This financing strategy minimizes the amount of funds that would be remitted and can therefore minimize the withholding taxes that would be paid to the Australian government. In addition, the subsidiary would not need

as much equity investment from the parent. One limitation of this strategy is that the subsidiary may increase its debt to an excessive level.

If Clayton prefers not to increase the subsidiary's debt, the subsidiary could raise funds by issuing stock in the host country. In this case, the subsidiary would use a portion of its funds to pay dividends to local shareholders rather than remit those funds to the parent. Once again, withholding taxes are minimized because the subsidiary would not remit much money to the parent. The issuance of stock would create a minority ownership in Australia, which reduces the parent's control over the subsidiary. The parent could retain control, however, by instructing the subsidiary to issue non-voting stock.

Both strategies minimize Clayton's withholding tax, but the first strategy reflects a more debt-intensive capital structure while the second strategy reflects a more equity-intensive capital structure. The two strategies are illustrated in Exhibit 2.6. These strategies could also have been used to reduce Clayton's exposure to exchange rate risk because they minimize the amount of Australian dollars that will be converted into British pounds.

INTERACTION BETWEEN SUBSIDIARY AND PARENT FINANCING DECISIONS

The decision by a subsidiary to use internal equity financing (retaining and reinvesting its earnings) or obtain debt financing can affect its degree of reliance on parent financing and the amount of funds that it can remit to the parent. Thus, its financing decisions should be made in consultation with the parent. The potential impact of two common subsidiary financing situations on the parent's capital structure are explained next.

EXHIBIT 2.6 Adjusting the multinational capital structure to reduce withholding taxes**Initial Situation****Strategy of Increased Debt Financing by Subsidiary****Strategy of Increased Equity Financing by Subsidiary****Impact of increased debt financing by the subsidiary**

When global conditions increase a subsidiary's debt financing, the amount of internal equity financing needed by the subsidiary is reduced. As these extra internal funds are remitted to the parent, the parent will have a larger amount of internal funds to use for financing before resorting to external financing. Assuming that the parent's operations absorb all internal funds and require some debt financing, there are offsetting effects on the capital structures of the subsidiary and the parent. The increased use of debt financing by the subsidiary is offset by the reduced debt financing of the parent. Nevertheless, the cost of capital for the MNC overall could have changed for two reasons. First, the revised composition of debt financing (more by the subsidiary, less by the parent) could affect the interest charged on the debt. Second, it could affect the MNC's overall exposure to exchange rate risk and therefore influence the risk premium on capital.

In some situations, the subsidiary's increased use of debt financing will not be offset by the parent's reduced debt financing. For example, if there are any restrictions or excessive taxes on remitted funds, the parent may not be able to rely on the subsidiary and may need some debt financing as well. In this case, international conditions that encourage increased use of debt financing by the subsidiary will result in a more debt-intensive capital structure for the MNC. Again, for reasons already mentioned, the cost of

EXHIBIT 2.7 Effect of global conditions on financing

	Amount of Local Debt Financing by Subsidiary	Amount of Internal Funds Available to Parent	Amount of Debt Financing Provided by Parent
Higher country risk	Higher	Higher	Lower
Higher interest rates	Lower	Lower	Higher
Lower interest rates	Higher	Higher	Lower
Expected weakness of local currency	Higher	Higher	Lower
Expected strength of local currency	Lower	Lower	Higher
Blocked funds	Higher	Higher	Lower
High withholding taxes	Higher	Higher	Lower
Higher corporate taxes	Higher	Higher	Lower

capital to the MNC could be affected by the subsidiary's increased debt financing. In addition, the use of a higher proportion of debt financing for the MNC overall would also affect the cost of capital.

Impact of reduced debt financing by the subsidiary

When global conditions encourage the subsidiary to use less debt financing, the subsidiary will need to use more internal financing. Consequently, it will remit fewer funds to the parent, reducing the amount of internal funds available to the parent. If the parent's operations absorb all internal funds and require some debt financing, there are offsetting effects on the capital structures of the subsidiary and parent. The subsidiary's reduced use of debt financing is offset by the parent's increased use. For reasons expressed earlier, the cost of capital may change even if the MNC's overall capital structure does not.

If the parent's operations can be fully financed with internal funds, the parent will probably not use debt financing. Thus, the subsidiary's reduced debt financing is not offset by the parent's increased debt financing, and the MNC's overall capital structure becomes more equity-intensive. MNC's will have an overall target for the level of debt financing. Changing currency exposure, the maturity of old debts and new finance requirements will mean a constant review of borrowing policy.

Summary of interaction between subsidiary and parent financing decisions

Exhibit 2.7 provides a summary of some of the more relevant characteristics of the host country that can affect a subsidiary's preference for debt or equity financing. The decision by a subsidiary to finance with local debt affects the amount of funds remitted to the parent and therefore affects the amount of internal financing available to the parent. Since the subsidiary's local debt financing decisions are influenced by country-specific characteristics like those shown in Exhibit 2.7, the MNC's overall capital structure is partially influenced by the locations of the foreign subsidiaries.

LOCAL VERSUS GLOBAL TARGET CAPITAL STRUCTURE

An MNC may deviate from its 'local' target capital structure in each country where financing is obtained, yet still achieve its 'global' target capital structure (based on consolidating the capital structures of all its

subsidiaries). The following examples of particular foreign country conditions illustrate the motive behind deviating from a local target capital structure while still satisfying a global target capital structure.

Offsetting a subsidiary's high degree of financial leverage

First, consider that Country A does not allow MNCs with headquarters elsewhere to list their stocks on its local stock exchange. Under these conditions, an MNC's subsidiary that desires to expand its operations is likely to borrow funds by issuing bonds or obtaining bank loans rather than by issuing stock in this country. By being forced to use debt financing here, the MNC may deviate from its target capital structure, which could raise its overall cost of capital. The parent might offset this concentration in debt by using more equity financing for its own operations.

Alternatively, consider an MNC that desires financing in Country B, which is experiencing political turmoil. The use of local bank loans would be most appropriate since local banks may be able to prevent the subsidiary's operations from being affected by political conditions in that country. If the local banks serve as creditors to the MNC's subsidiary, it is in their interest to ensure that the subsidiary's operations are sufficiently profitable to repay its loans. Since the subsidiary may have more financial leverage than is desired for the MNC overall, the parent may use less financial leverage to finance its own operations in order to achieve its overall ('global') target capital structure.

Offsetting a subsidiary's low degree of financial leverage

Suppose that Country C allows the MNC's subsidiary to issue stock there and list its stock on its local exchange. Also assume that the project to be implemented in that country will not generate net cash flows for five years, thereby limiting the subsidiary's ability to generate internal financing. In this case, equity financing by the subsidiary may be more appropriate. The subsidiary could issue stock, and, by paying low or zero dividends, it could avoid any major cash outflows for the next five years. The parent might offset the subsidiary's concentration in equity by instructing one of its other foreign subsidiaries in some other host country to use mostly debt financing. Alternatively, the parent could use more debt financing to support its own operations.

Limitations in offsetting a subsidiary's abnormal degree of financial leverage

The examples provided up to this point suggest that the parent can offset the imbalance created by a foreign subsidiary by adjusting the way it finances its own operations. However, the revision of the parent's capital structure may result in a higher cost of capital for the parent. Given that the subsidiary's financing decision could affect the parent's capital structure and therefore affect the parent's cost of capital, the subsidiary must consider the impact of its decision on the parent. The subsidiary's decision to use an unusually high or low degree of financial leverage should be made only if the benefits outweigh any costs for the MNC overall.

The strategy of ignoring a 'local' target capital structure in favour of a 'global' target capital structure is rational as long as it is acceptable to foreign creditors and investors. However, if foreign creditors and investors monitor each subsidiary's local capital structure, they may require a higher rate of return on funds provided to the MNC. For example, the 'local' target capital structures for the subsidiaries based in Country A (from the earlier example) and in Country B are debt-intensive. Creditors in these two countries may penalize the subsidiary for its highly leveraged local capital structure, even though the MNC's global capital structure is more balanced, because they believe that the subsidiary may be unable to meet its high debt repayments. If the parent plans to back the subsidiaries, however, it could guarantee debt repayment to the creditors in the foreign countries, which might reduce their risk perception and lower the cost of the debt. Many MNC parents stand ready to financially back their subsidiaries because, if they did not, their subsidiaries would be unable to obtain adequate financing.

SUMMARY

- The cost of capital may be lower for an MNC than for a domestic firm because of characteristics peculiar to the MNC, including its size, its access to international capital markets and its degree of international diversification. Yet, some characteristics peculiar to an MNC can increase the MNC's cost of capital, such as exposure to exchange rate risk and to country risk.
- Costs of capital vary across countries because of country differences in the components that comprise the cost of capital. Specifically, there are differences in the risk-free rate, the risk premium on debt and the cost of equity among countries. Countries with a higher risk-free rate tend to exhibit a higher cost of capital.
- An MNC's capital structure decision is influenced by corporate characteristics such as the stability of

the MNC's cash flows, its credit risk and its access to earnings. The capital structure is also influenced by characteristics of the countries where the MNC conducts business, such as stock restrictions, interest rates, strength of local currencies, country risk and tax laws. Some characteristics favour an equity-intensive capital structure because they discourage the use of debt. Other characteristics favour a debt-intensive structure because of the desire to protect against risks by creating foreign debt. Given that the relative costs of capital components vary among countries, the MNC's capital structure may be dependent on the specific mix of countries in which it conducts operations.

CRITICAL DEBATE

Is the cost of capital really relevant for valuing projects?

Proposition. No. The cost of capital is a discount rate that is applied when using the *NPV* approach to valuing projects similar to the average risk project of the company. An MNC looking at a project in another country will find that the individual risks are very high and outweigh any idea of an average. Valuing the option to abandon, the risk of bankruptcy, the risk of a collapse in the currency are more important than worrying about whether or not the discount rate should be 12% or 10%. In any case looking ahead a number of years is impossible when the individual risk of a project is high.

Opposing view. Although the risks of failure are there, they are not as great as imagined. Otherwise there would not be the great increase in MNC activity that we see today. Levels of borrowing and the market risk of a project do matter. If the WACC does not provide the right risk measure, the ICAPM will provide a measure in effect using the cost of capital of a more appropriate firm. When a firm accepts a project or carries on with an existing project, by implication, it accepts that it is better off as a result. Measuring how much better off by using the CAPM makes good sense.

With whom do you agree? Provide a reasoned argument as to why you agree or disagree with one of the above views.

SELF TEST

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

- 1 When Goshen Ltd (UK) focused only on domestic business in the United Kingdom, it had a low debt level. As it expanded into other countries, it increased its degree of financial leverage (on a consolidated basis). What factors would have caused Goshen to increase its financial leverage (assuming that country risk was not a concern)?
- 2 Lynde Ltd is a UK-based MNC with a large subsidiary in the Philippines financed with equity from the parent. In response to news about a possible change in the Philippine government, the subsidiary revised its capital structure by borrowing from local banks

and transferring the equity investment back to the UK parent. Explain the likely motive behind these actions.

- 3 Duever Ltd (a UK firm) noticed that its financial leverage was substantially lower than that of most successful firms in Germany and Japan in the same industry. Is Duever's capital structure less than optimal?
- 4 Atlanta plc has a large subsidiary in Venezuela, where interest rates are very high and the currency is expected to weaken. Assume that Atlanta perceives the country risk to be high. Explain the tradeoff

involved in financing the subsidiary with local debt versus an equity investment from the parent.

- 5 Reno SA (France) is considering a project to establish a plant for producing and selling consumer goods in an undeveloped country. Assume that the host country's economy is very dependent on oil prices, the local currency of the country is very volatile, and the country risk is very high. Also assume that the country's economic conditions are unrelated to European conditions. Should the required rate of return (and therefore the risk premium) on the project be higher or lower than that of other alternative projects in Europe?

QUESTIONS AND APPLICATIONS

- 1 **Capital structure of MNCs.** Present an argument in support of an MNC's favouring a debt-intensive capital structure. Present an argument in support of an MNC's favouring an equity-intensive capital structure.
- 2 **Optimal financing.** Wizard plc has a subsidiary in a country where the government allows only a small amount of earnings to be remitted to the United Kingdom 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?
- 3 **Country differences.** Describe general differences between the capital structures of firms based in the United Kingdom and those of firms based in Japan. Offer an explanation for these differences.
- 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?
- 5 **Cost of capital.** Explain how characteristics of MNCs can affect the 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.
- 7 **Target capital structure.** LaSalle SA is a French-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% debt and 50% equity, if it plans to use only debt financing for the subsidiaries in these countries?
- 8 **Financing decision.** Drexel Ltd is a UK-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?
- 9 **Financing decision.** Veer NV is a Netherlands-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.
- 10 **Financing tradeoffs.** Pullman Ltd, a UK 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.
- 11 **Costs of capital across countries.** Explain why the cost of capital for a UK-based MNC with a large subsidiary in Brazil is higher than for a UK-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.

- 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%, and its cost of financing with equity is 15%. The MNC has a corporate tax rate of 40%. What is this firm's weighted average cost of capital?
- 13 Cost of equity.** Wiley plc, an MNC, has a beta of 1.3. The UK stock market is expected to generate an annual return of 11%. Currently, Treasury bills yield 2%. Based on this information, what is Wiley's estimated cost of equity?
- 14 WACC.** Blues plc is an MNC located in the United Kingdom. Blues would like to estimate its weighted average cost of capital. On average, bonds issued by Blues yield 9%. Currently, T-bill rates are 3%. Fur-

thermore, Blues' shares have a beta of 1.5, and the return on the FTSE stock index is expected to be 10%. Blues' target capital structure is 30% debt and 70% equity. If Blues is in the 35% tax bracket, what is its weighted average cost of capital?

- 15 Political unrest.** Rose plc of Tralee (Ireland) needed to infuse capital into its foreign subsidiaries to support their expansion. It planned to issue stock in the United Kingdom. Recent political unrest in the subsidiary countries has made Rose change its plans to issuing long-term debt. Explain how political unrest could have altered the two forms of capital.
- 16 Adidas' cost of capital.** If Adidas decides to expand further in South America, why might its capital structure be affected? Why will its overall cost of capital be affected?

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 favourable 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.
- 18 Financing decision.** In recent years, several European 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 European 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.
- How might European-based MNCs expand in Mexico without incurring the high Mexican interest expenses when financing the expansion? Are any disadvantages associated with this strategy?
 - 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?

- 19 Financing decision.** Forest Co. produces goods in the United States, Germany and Australia and sells the goods in the areas where they are produced. Foreign earnings are periodically remitted to the US parent. As the euro's interest rates have declined to a very low level, Forest has decided to finance its German operations with borrowed funds in place of the parent's equity investment. Forest will transfer the US 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 Co.

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

- 20 Financing in a high-interest-rate country.** Fairfield plc, a UK firm, recently established a subsidiary in a less developed country that consistently experiences an annual inflation rate of 80% or more. The country does not have an established stock market, but loans by local banks are available with a 90% 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% interest rate?

21 Cost of foreign debt versus equity. Carazona SA is a Spanish firm that has a large subsidiary in Indonesia. It wants to finance the subsidiary's operations in Indonesia. However, the cost of debt is currently about 30% 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 Europe is about 14%, the Indonesian investors should be satisfied with a return of about 14% 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.

22 Integrating cost of capital and capital budgeting. Zylon plc is a UK 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 soft-

ware years ago. Zylon is subject to a 30% corporate income tax rate in the United Kingdom. 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 £0.40, and Zylon uses that spot exchange rate as a forecast of future exchange rates.

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

Quiso SA a French firm, wants to acquire Zylon and offers Zylon a price of 8 000 000 euros.

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.

PROJECT WORKSHOP

23 The cost of debt. The Bloomberg website provides interest rate data for many countries and various maturities. Its address is <http://www.bloomberg.com>.

Go to the 'Market data' section and then to 'Rates and Bonds'. Assume that an MNC would pay 1% more on borrowed funds than the risk-free (government) rates shown at the Bloomberg website.

Determine the cost of debt (use a ten-year maturity) for an MNC that borrows dollars. Then determine the cost of funds for a foreign subsidiary in Japan that borrows funds locally. Then determine the cost of debt for a subsidiary in Germany that borrows funds locally. Offer some explanations as to why the cost of debt may vary among the three countries.

BLADES PLC CASE STUDY

Assessment of cost of capital

Recall that Blades has tentatively decided to establish a subsidiary in Thailand to manufacture roller blades. The new plant will be utilized to produce 'Speedos', Blades' primary product. Once the subsidiary has been established in Thailand, it will be operated for ten years, at which time it is expected to be sold. Ben Holt, Blades' financial director, believes the growth potential in Thailand will be extremely high over the next few years. However, his optimism is not shared by most economic forecasters, who predict a slow recovery of the Thai economy, which has been very negatively affected by recent events in that country. Furthermore, forecasts for the future value of the baht indicate that the currency may continue to depreciate over the next few years.

Despite the pessimistic forecasts, Ben Holt believes Thailand is a good international target for Blades' products because of the high growth potential and lack of competitors in Thailand. At a recent meeting of the board of directors, Holt presented his capital budgeting analysis and pointed out that the establishment of a subsidiary in Thailand had a net present value (NPV) of over £5 million even when a 25% required rate of return is used to discount the cash flows resulting from the project. Blades' board of directors, while favourable to the idea of international expansion, remained sceptical. Specifically, the directors wondered where Holt obtained the 25% discount rate to conduct his capital budgeting analysis and whether this discount rate was high enough. Consequently, the decision to establish a subsidiary in Thailand has been delayed until the directors' meeting next month.

The directors also asked Holt to determine how operating a subsidiary in Thailand would affect Blades' required rate of return and its cost of capital. The directors would like to know how Blades' characteristics would affect its cost of capital relative to roller blade manufacturers operating solely in the United Kingdom. Furthermore, the capital asset pricing model (CAPM) was mentioned by two directors, who would like to know how Blades' systematic risk would be affected by expanding into Thailand. Another issue

that was raised is how the cost of debt and equity in Thailand differ from the corresponding costs in the United Kingdom, and whether these differences would affect Blades' cost of capital. The last issue that was raised during the meeting was whether Blades' capital structure would be affected by expanding into Thailand. The directors have asked Holt to conduct a thorough analysis of these issues and report back to them at their next meeting.

Ben Holt's knowledge of cost of capital and capital structure decisions is somewhat limited, and he requires your help. You are a financial analyst for Blades plc. Holt has gathered some information regarding Blades' characteristics that distinguish it from roller blade manufacturers operating solely in the United Kingdom, its systematic risk, and the costs of debt and equity in Thailand, and he wants to know whether and how this information will affect Blades' cost of capital and its capital structure decision.

Regarding Blades' characteristics, Holt has gathered information regarding Blades' size, its access to the Thai capital markets, its diversification benefits from a Thai expansion, its exposure to exchange rate risk, and its exposure to country risk. Although Blades' expansion into Thailand classifies the company as an MNC, Blades is still relatively small compared to UK roller blade manufacturers. Also, Blades' expansion into Thailand will give it access to the capital and money markets there. However, negotiations with various commercial banks in Thailand indicate that Blades will be able to borrow at interest rates of approximately 15%, versus 8% in the United Kingdom.

Expanding into Thailand will diversify Blades' operations. As a result of this expansion, Blades would be subject to economic conditions in Thailand as well as the United Kingdom. Ben Holt sees this as a major advantage since Blades' cash flows would no longer be solely dependent on the UK economy. Consequently, he believes that Blades' probability of bankruptcy would be reduced. Nevertheless, if Blades establishes a subsidiary in Thailand, all of the subsidiary's earnings will be remitted back to the UK parent, which would create a high level of exchange

rate risk. This is of particular concern because current economic forecasts for Thailand indicate that the baht will depreciate further over the next few years. Furthermore, Holt has already conducted a country risk analysis for Thailand, which resulted in an unfavourable country risk rating.

Regarding Blades' level of systematic risk, Holt has determined how Blades' beta, which measures systematic risk, would be affected by the establishment of a subsidiary in Thailand. Holt believes that Blades' beta would drop from its current level of 2.0 to 1.8 because the firm's exposure to UK market conditions would be reduced by the expansion into Thailand. Moreover, Holt estimates that the risk-free interest rate is 5% and the required return on the market is 12%.

Holt has also determined that the costs of both debt and equity are higher in Thailand than in the United Kingdom. Lenders such as commercial banks in Thailand require interest rates higher than UK rates. This is partially attributed to a higher risk premium, which reflects the larger degree of economic uncertainty in Thailand. The cost of equity is also higher in Thailand than in the United Kingdom. Thailand is not as developed as the United Kingdom in many ways, and various investment opportunities are available to Thai investors, which increases the opportunity cost. However, Holt is not sure that this higher cost of equity in Thailand would affect Blades, as all of Blades' shareholders are located in the United Kingdom.

Ben Holt has asked you to analyze this information and to determine how it may affect Blades' cost of capital and its capital structure. To help you in your analysis, Holt would like you to provide answers to the following questions:

- 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 Kingdom? Substantiate your answer by outlining how Blades' characteristics distinguish it from domestic roller blade manufacturers.
- 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 of return resulting from the CAPM to discount the cash flows of the Thai subsidiary to determine its NPV?
- 3 If Blades borrows funds in Thailand to support its Thai subsidiary, how would this affect its cost of capital? Why?
- 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?

SMALL BUSINESS DILEMMA

Multinational capital structure decision at the Sports Exports Company

The Sports Exports Company (Ireland) has considered a variety of projects, but all of its business is still in the United Kingdom. Since most of its business comes from exporting basketballs (denominated in pounds), it remains exposed to exchange rate risk. On the favourable side, the British demand for its basketballs has risen consistently every month. Jim Logan, the owner of the Sports Exports Company, has retained more

than 100 000 euros (after the pounds were converted into euros) in earnings since he began his business. At this point in time, his capital structure is mostly his own equity, with very little debt. Jim has periodically considered establishing a very small subsidiary in the United Kingdom to produce the basketballs there (so that he would not have to export them from Ireland). If he does establish this subsidiary, he has several

options for the capital structure that would be used to support it: (1) use all of his equity to invest in the firm, (2) use pound-denominated long-term debt, or (3) use euro-denominated long-term debt. The interest rate on British long-term debt is slightly higher than the interest rate on euro long-term debt.

- 1** What is an advantage of using equity to support the subsidiary? What is a disadvantage?
- 2** If Jim decides to use long-term debt as the primary form of capital to support this subsidiary, should he use dollar-denominated debt or pound-denominated debt?
- 3** How can the equity proportion of this firm's capital structure increase over time after it is established?