VALUATION

MEASURING AND MANAGING THE VALUE OF COMPANIES, SECOND EDITION

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Valuation Outside of the United States

In the first chapter of the book we argued that valuation is the best metric for decision making and that the increasing drive for higher productivity, which is being forced by globalization of the world economy, will require managers to take actions that maximize shareholder value. Managers in Europe and to a lesser extent in Asia are reluctant to accept the maximization of shareholder value as the primary reason for using valuation and are therefore unlikely to embrace value-based management. However, they do need to make transactions across borders—joint ventures, divestitures, and acquisitions. In these situations, it is absolutely necessary to have the correct value estimates. Overpaying for acquisitions is a classic mistake. Very often valuation ratios such as price/earnings or market/book ratios are used to accomplish the task. However, as shown in Exhibit 13.1, they are largely useless. Illustrated there are valuation multiples for nine companies in the automobile industry in 1988, located in six different countries. The price-earnings multiples range from 50.5 to 4.8. It is not entirely obvious that Daimler Benz or BMW in Germany would want to pay 19.9 times earnings for Ford, Chrysler, or General Motors when their average P/E is only 4.8. Market-to-book ratios are also badly aligned across countries.

There are two problems with trying to use ratios for cross-border valuations. First, accounting standards across national borders are often quite different. Consequently, earnings of Daimler in

Exhibit 13.1 **INTERNATIONAL COMPARISONS OF VALUATION MULTIPLES FOR NINE AUTOMOBILE COMPANIES, 1988**

Country	Number of companies	Price/ earnings	Market/ book	Dividend yield
USA	3	4.8	.74	6.5%
Japan	1	17.2	1.90	0.8
England*	1	50.5	5.19	1.8
Sweden	1	10.4	2.33	3.0
Italy	1	5.5	1.21	2.1
W. Germany	2	19.9	2.23	2.0

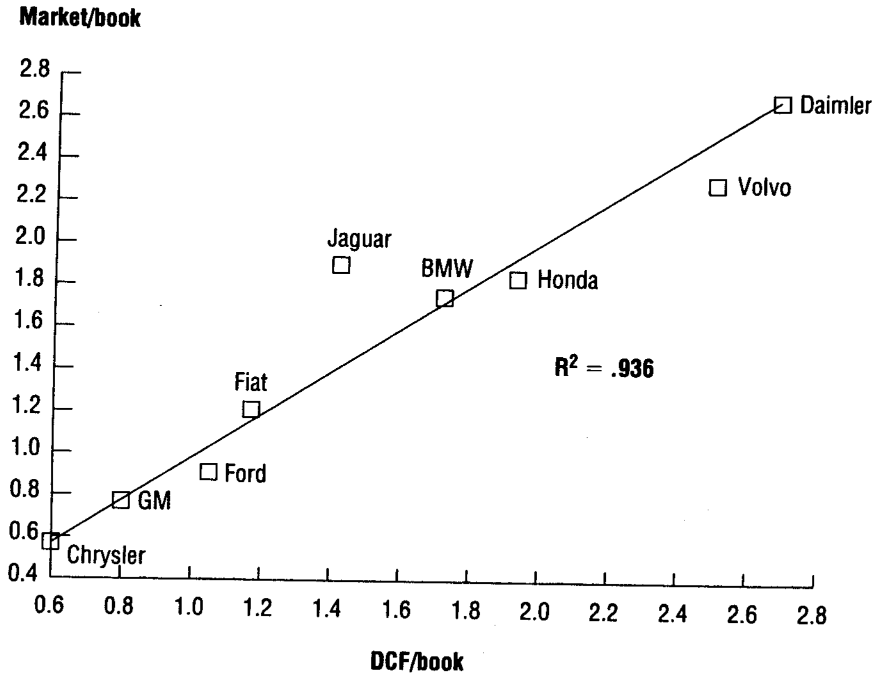
*Reflects takeover bid for Jaguar by Ford.

Germany, using German commonly accepted accounting principals, is not the same as earnings for Daimler using U.S. GAAP. For example, for the first nine months of 1993 Daimler lost $105 million according to German accounting standards, but according to U.S. GAAP the company lost $1.19 billion. Either way, cash flow was the same. Second, it is much better to understand the synergies in a merger using a detailed discounted cash flow approach rather than a valuation multiple approach, because the details often force clearer thinking.

Exhibit 13.2 shows the DCF valuation of the nine automobile companies. Each was valued using nominal cash flows denominated in the company's home currency (e.g. deutsch marks for Daimler Benz). Discount rates were also taken from the home country. The market value of the company scaled by its book value was then regressed against the DCF value also scaled by book. The results show a 93+ percent correlation. Clearly, DCF valuation works well outside of the United States. In fact, in our collective experience, we have valued companies in over two dozen different countries for activities as diverse as privatization, merger, value-based management, joint venture, and divestiture. The first edition of this book was translated into Italian, French, Japanese, and German. Discounted cash flow valuation is an important decision-making tool that is being used more and more all around the world.

The remainder of this chapter illustrates many of the problems of doing valuations around the world by organizing the material

Exhibit 13.2 **CORRELATION BETWEEN DCF AND MARKET VALUE FOR NINE AUTOMOBILE COMPANIES, DECEMBER 1988**



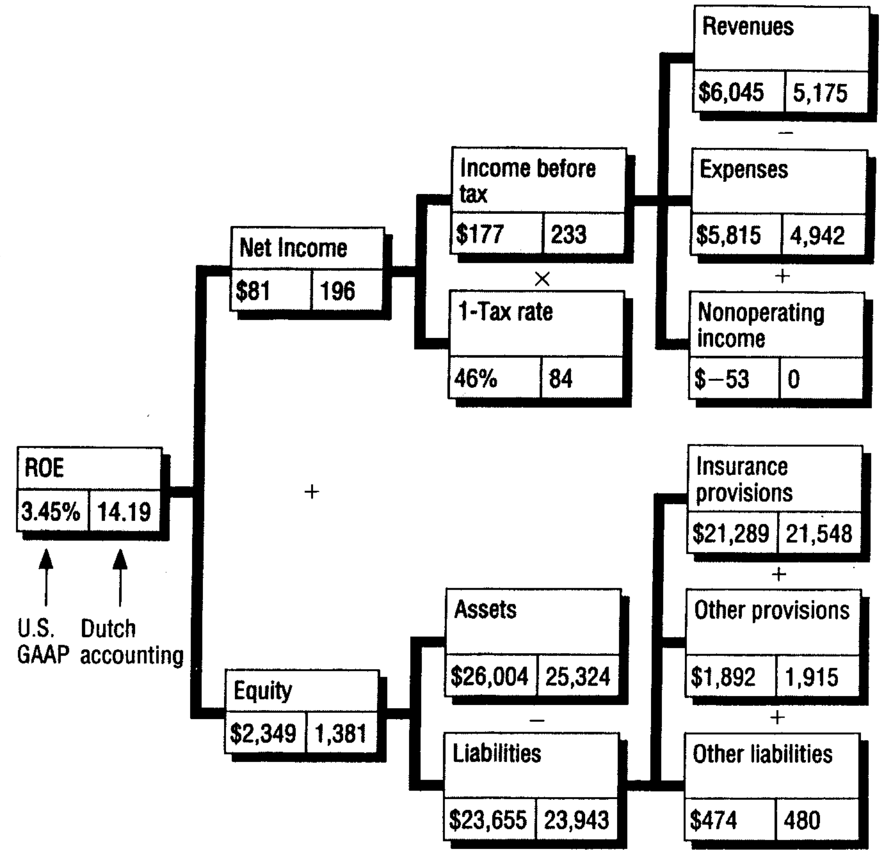
Source: Compustat; Value Line; McKinsey analysis.

into four nonmutually exclusive and certainly not exhaustive segments. The first covers differences in accounting standards that affect the estimation of cash flows. The second discusses the cultural differences that are relevant for valuations—especially in Japan. The third answers whether or not differences in the cost of capital across national borders is an impediment to business activities. And the fourth reviews some of the special problems of valuation in less developed countries.

DIFFERENCES IN ACCOUNTING STANDARDS

Exhibit 13.3 is a return on equity tree for a division of a Dutch insurance company, Aegon, shown two ways—using U.S. GAAP

Exhibit 13.3 **ROE IMPACT OF USING DUTCH ACCOUNTING PRACTICES RATHER THAN U.S. GAAP, 1988,** PERCENT; U.S. $ MILLIONS



Source: McKinsey analysis.

accounting and using Dutch accounting practices. Aegon's shares are listed on multiple stock exchanges and the company has to report its results using a variety of accounting principles. Using Dutch accounting, its ROE was 14.2 percent in 1988 and using U.S. GAAP its ROE was only 3.5 percent.

There are three major differences that explain the results. First, the Dutch balance sheet does not show goodwill and capitalized expenses. In the Netherlands, goodwill created in an acquisition is usually written off immediately. These differences accounted for 4 percent out of the 11 percent difference. Next, the Dutch income statement does not show nonoperating losses. This accounted for 2 percent out of the difference. Finally, the effective tax rate under Dutch accounting is much lower. This accounted for 5 percent out of the 11 percent difference. This simple example shows the frailty of using accounting based measures of performance, for example the spread between ROE and the cost of equity. Even the economic profit metric would probably show value being created according to Dutch accounting standards and value being destroyed according to U.S. accounting standards.

With discounted cash flow valuation, free cash flows are the same regardless of the accounting standards of the country you are working in. Cash is cash, and any accounting system that has complete information made publicly available can be used to estimate the future cash flows of a company. For example, Exhibit 13.4 shows the correlation between discounted cash flows and market values of 15 Italian companies in 1990. Even though Italian accounting standards are different than those in the U.S., discounted cash flow methodology works very well. The correlation is 95.4 percent.

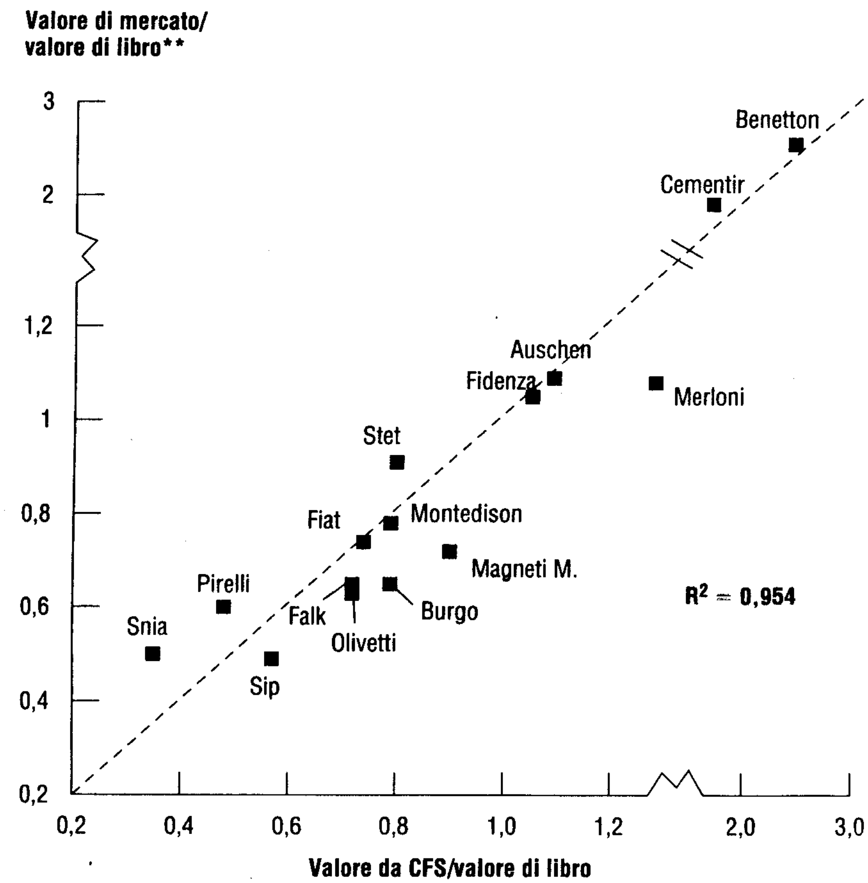
Six Major Accounting Difficulties

There are six primary areas of concern when comparing accounting systems. They are affected by local accounting standards. The European Economic Community (EEC) is working toward creating common standards within the continent. For example, the seventh directive, which requires consolidation of foreign subsidiaries, was implemented in 1992.

Failure to consolidate the earnings of partially owned or foreign subsidiaries can result in substantial underreporting of the parent company earnings. In some accounting systems the consolidation of foreign subsidiary earnings is voluntary even if the subsidiary is wholly owned. Although the EEC seventh directive has largely eliminated this problem, it remains an issue in other parts of the world.

Reserves are often used to create noncash write-offs of anticipated long-term expenses such as pensions, reorganization, maintenance, and other costs. On the other hand, sometimes deductions are taken from provisions on the balance sheet and taken onto the

Exhibit 13.4 **CORRELATION BETWEEN DCF AND MARKET VALUE FOR 15 ITALIAN COMPANIES, 1990**



Source: McKinsey analysis.

* Utillizzando informazioni pubbliche.

** Capitalizzazione al 28 settembre 1990 (Borsa valori di Milano), valore di libro del patrimonio netto di competenza al 30/6/1990.

income statement as a reduction of costs. These movements can have the effect of smoothing earnings and result in hidden reserves through excess provisions. To obtain free cash flows, the change in nontax provisions on the balance sheet should be added back to EBIT after taxes.

Many countries allow assets to be written up to market value, assessed value, or replacement cost. This practice can increase and easily distort cross company estimates of the return on invested capital. Furthermore, capital expenditures cannot be calculated as the increase in *net* property and equipment on the balance sheet plus depreciation expense for the period. When fixed assets are revalued at replacement cost (for example), the change in net fixed assets will include a noncash amount for reevaluation. If assets are revalued, capital expenditures must be estimated as the increase in net property, plant, and equipment, minus the change in the revaluation reserve, plus depreciation expenses.

In some countries, for example, Germany, the annual report to the shareholders and the tax books use virtually identical accounting standards, and in other countries, the United States, for example, there are two different sets of books. Differences between earnings as reported on the public financial statements and earnings on the tax books can be created by differences in depreciation methods, deferred tax effects, and by reserve accounting.

Capital and operating leases are substitutes for senior secured debt in the capital structure of the firm. If they are treated as "off balance sheet financing" it becomes more difficult to compare the financial results of companies within the same industry if their mix of owned and leased assets is substantially different.

Goodwill is the difference between the book value of the assets of an acquired company and the price paid in acquisition. The treatment of goodwill varies widely among countries. Goodwill may or may not be a tax deductible expense. It may be written off immediately against reserves (or equity) or it may be written off over a period as long as 40 years. Comparison of ROIC across companies (even within national borders) can be significantly distorted by the treatment of goodwill.

Exhibits 13.5 and 13.6 summarize the accounting treatment of the aforementioned issues as of the beginning of 1993 for most European countries and the United States.

Converting to Cash Flow: A German Example

For all practical purposes German financial statements are identical for tax purposes and for reporting to the public. Since German managers have incentives to reduce their company's tax burden, many accounting practices are used to reduce reported earnings

Exhibit 13.5 **SUMMARY OF MAJOR ACCOUNTING DIFFICULTIES, 1993**

Country	Consolidation of parent and subsidiary accounts required?	Transfers to/from reserves are reasonably traceable?	Periodic asset revaluation allowed?	Reported financial statements may differ from tax accounts
Belgium	Only if ownership exceeds 50%.	Yes.	Only on an item-by-item basis.	Seldom, due to relatively minor timing differences.
Denmark	Yes.	Yes.	Assets may be written up to market value.	Yes, mainly due to book depreciation differing from tax depreciation.
France	Yes, when listed on the stock exchange.	Yes.	Write-up to appraised value is allowed.	Yes, deferred tax effects disclosed in footnotes.
Germany	Required as of December 31, 1989.	Varies, large contingent liabilities or reserves may be undisclosed.	No, fixed assets are carried at cost.	Seldom, due to relatively minor timing issues.
Italy	Only if required by the securities regulatory agency.	Varies, few disclosures and limited prior data restrict tracing.	Yes, according to an index and government decree.	Minor differences due to timing issues.
Netherlands	Mandatory only for group companies.	Yes.	Yes, up to replacement value.	Yes, due to major differences in depreciation and timing methods.

Exhibit 13.5 Continued

Country	Consolidation of parent and subsidiary accounts required?	Transfers to/from reserves are reasonably traceable?	Periodic asset revaluation allowed?	Reported financial statements may differ from tax accounts
Norway	Only if ownership exceeds 50%.	Varies, significant disclosures may be unavailable.	Only under special circumstances.	Extremely rare.
Portugal	No requirement.	No, prior period data and disclosures are usually unavailable.	Yes, according to an official index and government decree.	No.
Spain	No requirement.	Varies, significant disclosures may be unavailable.	Yes, according to an official index and government decree.	Seldom, book and tax accounts are normally the same.
Sweden	Only if ownership exceeds 50%.	Varies, significant disclosures may be unavailable.	Only under special circumstances.	Extremely rare.
Switzerland	No requirements.	No, significant reserves may be undisclosed.	No, historical cost method only.	Extremely rare.
United Kingdom	Yes.	Yes.	Fixed assets may be carried at market value.	Yes, mainly due to depreciation and timing differences.
United States	Yes, if ownership exceeds 50%.	Yes.	No.	Yes.

Exhibit 13.6 **ADDITIONAL MAJOR ACCOUNTING DIFFICULTIES, 1993**

Country	Capitalization of financial leases required?	Purchased goodwill amortization period	Independent third-party audit required for listed companies?
Belgium	Yes.	Immediately against reserves.* to a maximum of 5 years.**	Yes.
Denmark	No requirement.	Immediately against reserves.* to a maximum of 5 years.**	Yes.
France	Not permitted, rental commitments disclosed in notes.	Immediately against reserves.* to a maximum of 5 years.**	Yes.
Germany	No requirement in the civil code.	Amortized up to 15 years for taxes; 1 to 4 years in annual report.	Yes.
Italy	No requirement in the civil code.	Immediately against reserves.* to a maximum of 5 years.**	Yes.
Netherlands	Yes.	Immediately against reserves* to a maximum of 5 years.**	Yes.

Exhibit 13.6 Continued

Country	Capitalization of financial leases required?	Purchased goodwill amortization period	Independent third-party audit required for listed companies?
Norway	No requirement.	Amortized over a "reasonable: period.	Yes.
Portugal	No requirement.	Goodwill accounting not recognized in civil code.	No.
Spain	No requirement.	Amortized over a "reasonable" period.	No.
Sweden	No, unless lease transfers ownership.	Amortized over 10–20 years.	Yes.
Switzerland	No requirement.	Amortized over a "reasonable" period.	Yes.
United Kingdom	Yes.	Immediately against reserves* up to "useful" economic life.	Yes.
United States	Yes.	40 years.	Yes.

* No income statement impact.
** May be extended under certain circumstances.

and thereby tax payments, even thought the "true" economic situation may be different.

Exhibits 13.7 and 13.8 give the income statement and balance sheets for a hypothetical German company. Exhibit 13.9 calculates the free cash flows and the financial flows. To show how the German financial statements can be used to estimate the company's cash flows, we will go through an explanation of each item in Exhibit 13.9. Notice that the total free cash flows from operations equal the total financial flows. The principal of separating operating cash flows from the financial flows is maintained.

Earnings before interest and taxes (EBIT) is the pretax income that the company would have earned if it had no debt and is often equal to the line called "Operating Income" on the company's income statement. EBIT is calculated by subtracting all tax deductible expenses from revenue. Revenue will normally include increases (decreases) in inventory and "own work capitalized," which reflects inventory increases. In Germany, depreciation and goodwill amortization are both tax deductible expenses. One problem for forecasting is that "other income and expense" may contain both ordinary and extraordinary items, which may not be separable except through interviews with management.

For most German corporations, taxable income is determined by annual changes in net worth. Under the net worth comparison method, taxable income is computed with reference to the increase in the company's net worth during the year, excluding items such as contributions to capital, premiums on shares issued, and certain types of foreign source income that are exempt from German taxes under a tax treaty.

Beginning in 1990, the standard rate of corporate income tax for resident companies is 50 percent. This must be considered in conjunction with a dividend distribution rate of 36 percent. For example, suppose a company has profits of DM 100 after all other taxes except for corporate income taxes. A resident company pays corporate income taxes of DM 50 if it retains all profits, or DM 36 if it fully distributes them, giving a dividend of DM 64. Losses may be carried forward indefinitely and carried back two years. These losses may not be transferred via merger or acquisition. Foreign losses may be deducted only if they are sustained in connection with certain "productive" activities (such as the production or distribution of goods). Special rules apply to losses incurred in countries with which Germany has a tax treaty.

Exhibit 13.7 **INCOME STATEMENT, HYPOTHETICAL GERMAN COMPANY,** DM MILLIONS

Umsatz	Sales Revenue	15,000
– Erhöhung order Verninderung des Bestands an fertigen und unfertigen Erzeugnissen	– Increase in finished goods inventory	(100)
+ Andere aktivierte Eigenleistungen	+ Own work capitalized	0
+ Sonstiger betrieblicher Ertag	+ Other operating income	0
– Materialaufwand	– Cost of materials	(6,000)
– Personalaufarand	– Personnel expenses	(4,000)
– Gesamt-Abschreibungen	– Depreciation and amortization	(400)
– Sonstige betriebliche Aufwendungen	– Other expenses	(3,060)*
= Ergebnis der gewöhnlichen Geschäftstätigkeit	= Operating income	1,440
+ Erträge aus Beteiligungen	+ Income from participations	0
+ Erträge aus Werpapieren sowie Zins-und ähnliche Ertäge	+ Other financial (interest) income	17
– Zins-und ähnlicher Aufwand	– Interest expense	(431)
= Ergebnis der gewöhnlichen Geschäftstätgkeit	= Results from ordinary activities	1,026
– Sonstige steuern	– Miscellaneous taxes	0
– Steuern vom Einkommen und Ertrag	– Income taxes	(463)
= Jähresüberschuss	= Net income	563
	Dividends	350

* Including change in other provisions of DM 60.

Exhibit 13.8 **BALANCE SHEET, HYPOTHETICAL GERMAN COMPANY,** DM MILLIONS

		Prior Year	Current Year
Gesamtvermögen =	Total Assets =	12,370	12,663
Netto Sachanlagevermögen =	Net property, plant, and equipment =	4,800	5,000
+ Brutto Sachanagevermögen	+ Gross property plant	7,500	8,000
– Kumulierte Abschreibungen	– Accumulated depreciation	(2,700)	(3,000)
Übriges Vermögen	Other assets	950	1,000
Umlaufveriögen =	Short-term assets =	6,620	6,663
Flüssige Mittel	Cash	90	100
+ Wertpapiere	+ Marketable securities	320	163
+ Forderungen	+ Accounts receivable	2,900	3,000
+ Vorräte	+ Inventories	3,310	3,400
Gesamtes Eigen-und Fremdkapital =	Total liabilities and shareholders equity =	12,370	12,663
Eigenkapital =	Total shareholders equity =	4,390	4,603
Gezeichnetes kapital	Common shares	1,000	1,000
+ Kapitalrücklage	+ Share premium account	150	150
+ Gewinnrücklagen	+ Reserves	3,240	3,453
Gesamte langfristige Verbindlichkeiten =	Total long-term liabilities =	4,000	4,060
Langfristige Verbindlichkeiten	Long-term debt	3,500	3,500
+ Rückstellungen	+ Provisions	500	560
Kurzfristige Verbindlichkeiten =	Short-term liabilities =	3,980	4,000
Kurzfristige Schuldpositionen	Short-term debt	1,030	1,000
+ Verbindlichkeiten aus Lieferungen und leistungen	+ Accounts payable	2,050	2,000
+ Sonstige (Kurzfristige) Rückstellungen	+ Accrued liabilities	900	1000

Exhibit 13.9 **FREE CASH FLOW AND FINANCIAL FLOWS, HYPOTHETICAL GERMAN COMPANY,** DM MILLIONS

Free cash flows	Current year
1. Earnings before interest and taxes (EBIT)	1,440
2. − Taxes on EBIT	(507)
3. + Deferred taxes	0
4. + Increase in provisions	60
5. = Net operating profit less adjusted taxes (NOPLAT)	993
6. + Depreciation	400
7. = Gross cash flow	1,393
8. Increase in working capital	150
9. + Capital expenditures	600
10. + Investment in goodwill	0
11. + Increase in other assets	50
12. = Gross investment	800
Gross cash flow	1,393
12. − Gross investment	(800)
= Free cash flow from operations	593
13. + Non operating cash flows	0
= Total free cash flows	593

Financial flows	Current year
14. Decrease in excess marketable securities	(157)
15. − After-tax interest income*	(7)
16. + Decrease in debt	30
17. + After-tax interest expense*	180**
18. + Dividends	350
19. + Tax credit to shareholders on dividends	197
= Total financial flows	593

* Marginal effective cash tax rate = 58.3% (i.e., 16.67% + 50% − 50%(16.67%)).
** Interest expense of 431 multiplied by 1 − T = 1 − 0.583.

Taxes on EBIT are the taxes the company would pay if it had no debt or excess marketable securities. Cash taxes on operating income equal the total income tax provision (not including other taxes, e.g., property tax, which are already deducted from revenue) adjusted for the income taxes attributable to interest expense, interest income, and nonoperating items. Using exhibit 13.7, the calculation is:

Total income tax provision	DM 463
− Tax credit to shareholders	(197)
+ Tax shield on interest expense	251
− Tax on interest income	(10)
− Tax on non-operating income	0
= Tax on EBIT	DM 507

To compute the tax credit to shareholders, note that since net dividends were DM 350, gross dividends must have been DM 350, divided by one minus the 36 percent dividend tax rate, i.e., DM 350 ÷ (1−.64) = DM 547. Therefore DM 547 − DM 350 = DM 197 was withheld as a dividend tax. The tax shield on interest expense is a marginal tax rate of 58.3 percent multiplied times the interest expense of DM 43.1. The marginal tax rate results from a deductible municipal tax rate of 16.67 percent and the corporate tax rate.

Municipal tax rate (16.67%)(1 − 0.5)	=	8.33%
Corporate tax rate 50.00%	=	50.00%
Marginal tax rate		58.33%

Unlike the United States, deferred taxes are rarely created for a German corporation because tax and reporting statements are usually the same. In our example, deferred taxes are zero.

Nontax provisions in Germany are frequently made for anticipated long-term expenses such as pensions, reorganization, maintenance, and other costs. These provisions are added to the liabilities side of the balance sheet. Deductions are also made from provisions on the balance sheet and taken into the income statement as a reduction of costs These movements can have the effect of smoothing earnings and can result in hidden reserves through excess provisions. Just as in provisions for deferred taxes, an increase in provisions on the balance sheet represents a noncash transfer. Adjustments to a cash basis can be calculated by adding back the change in nontax provisions on the balance sheet to EBIT after taxes. In our numerical example this amount is DM 60.

In Germany, depreciation is based on assets valued at historical cost. Depreciation expense on the income statement (DM 400) is added to NOPLAT in order to arrive at gross cash flow (DM 1,393).

As in the U.S., operating working capital includes cash necessary for operations, plus receivables and inventories, minus accounts payable and accruals. It does not include excess marketable securities or cash, or any interest-bearing liability. The change in operating working capital for our example is:

Current year operating current assets	DM 6,500
− Current year operating current liabilities	(3,000)
− Previous year operating current assets	(6,300)
+ Previous year operating current liabilities	2,950
	DM 150

German capital expenditures on new property, plant, and equipment can be calculated as the increase in *net* property, plant, and equipment on the balance sheet, plus depreciation expense for the period. Technically, this calculation results in capital expenditures, less the net book value of retired assets. For our example:

Increase in net property, plant, and equipment	DM 200
+ Depreciation expense	400
= Capital expenditures	DM 600

Goodwill, which used to be a nondepreciable asset in Germany, can now be amortized over a 15-year period (for taxable years beginning after 1987) as a tax deductible expense. This applies only if the goodwill is acquired from a third party. In an individual company's balance sheet, the goodwill element inherent in the cost of an investment may not be amortized. In consolidated accounts, goodwill arising from consolidation is capitalized and amortized. The investment in goodwill is best calculated as the change in the goodwill account plus the amortization of goodwill in that period.

The increase in net other assets equals the expenditure on all other operating assets, including capitalized intangibles (such as patents or trademarks) and prepaid expenses, but net of increases in concurrent noninterest-bearing liabilities. In Germany, most noninterest-bearing liabilities are provisions. Increases in net other assets can be calculated directly from the change in the balance sheet accounts plus any amortization included in the "depreciation and amortization" account. In our example, the increase in net other assets in DM 50.

Gross investment is DM 800. When subtracted from gross cash flow of DM 1,393 we see that free cash flow is DM 593. Since there are no nonoperating cash flows, total free cash flow is also DM 593.

Financial flows must equal total free cash flows. The first financial flow is the decrease in marketable securities, which is DM 157 from the balance sheet. Next is after-tax interest income, which is calculated as interest income, DM 17, times one minus the marginal tax rate of 58.83%. The result is DM 7. The decrease in the debt (short-term) is DM 30. After-tax interest expense is the interest expense of DM 431, multiplied by one minus the tax rate (i.e., 1 − .583), resulting in an amount of DM 180. Net dividends are DM 350. And finally, the tax credit to shareholders on dividends is DM 197. These add up to total financial flows of DM 593, equaling total free cash flows.

The calculation of free cash flows for the German company serves to illustrate that cash is cash regardless of the accounting conventions that are being used. As long as the financial statements contain complete information, then it is possible to estimate the actual free cash flows and financial flows of a company—regardless of where it is domiciled.

CULTURAL DIFFERENCES

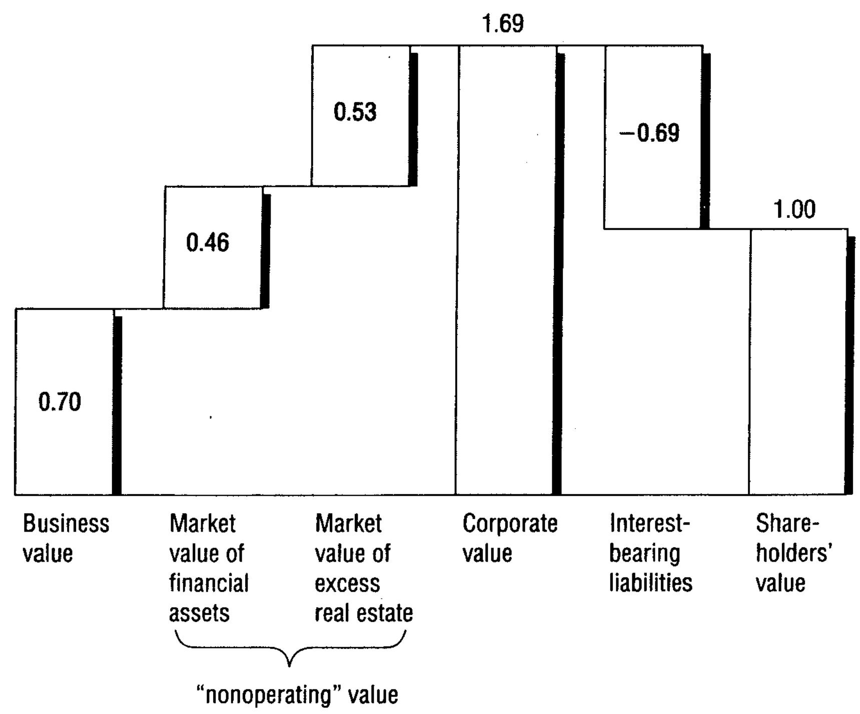
In additional to accounting differences across borders, one must also be aware of cultural differences. Let's use Japan as an example.

It is not unusual to find that the lion's share of a Japanese company's stock value does not come from the present value of its operating free cash flows. There are several reasons for this. First of all, cross holding of shares is customary for maintaining good business relationships. It is not unusual for a large Japanese company to hold an enormous portfolio of marketable securities, composed of small positions in the equity of every supplier and customer company. This propensity is encouraged in part by the fact that share repurchase is prohibited in Japan and that dividend payout is customarily quite a low percentage of earnings. Consequently, companies with excess cash flow find themselves putting it into marketable securities. One can think of these securities portfolios as negative debt—a reminder that the book debt-to-equity ratio of Japanese companies often overstates the riskiness of their financial position if they are willing to liquidate their marketable securities position to repay debt when needed.

A second source of nonoperating value is excess real estate held by Japanese companies. Banks often require that land be put up as collateral for loans. Also, many Japanese managers still believe real estate is a good investment. When companies hold excess real estate, the value of so doing is not captured in operating cash flows.

Exhibit 13.10 shows the components of value for a Japanese electronics company. Only 41 percent of the corporate entity value comes from the present value of operating cash flows (0.70 trillion

Exhibit 13.10 **VALUATION OF A JAPANESE ELECTRONICS COMPANY, 1992,** ¥ TRILLIONS



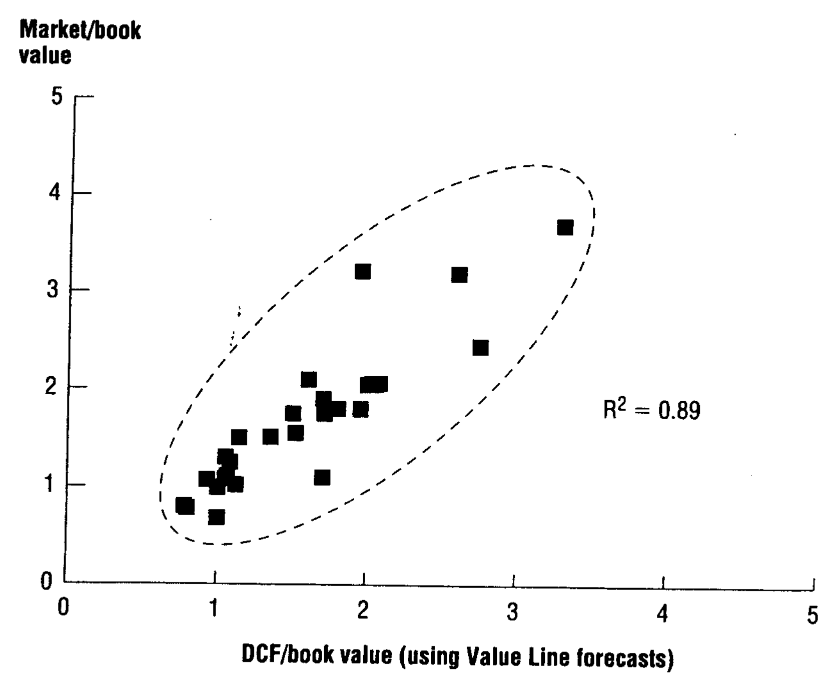
Source: 10K's; McKinsey analysis.

yen out of 1.69 trillion yen). Also note that although the market value debt to equity ratio is 0.69, if we net out the value of financial assets (excess marketable securities) from the value of debt the debt to equity ratio falls to 0.23, more than a 50 percent decrease.

The necessity of estimating the market value of nonoperating assets makes it difficult to value Japanese companies. In particular, one needs to track down the market value of excess real estate holdings. Once these difficulties are overcome there is a high correspondence between the market value and the discounted cash flow value of Japanese companies.

Exhibit 13.11 shows the results for the valuation of 28 companies in 1993, well after the end of the "bubble economy." When the market/book value is correlated with the DCF/book value based on Value Line forecasts, the correlation is 89 percent. Discounted cash flow valuation methodology works well in Japan also.

Exhibit 13.11 **HIGH CORRELATION BETWEEN MARKET VALUE AND DCF VALUES FOR 28 JAPANESE COMPANIES, 1993**



THE COST OF CAPITAL ACROSS BORDERS

One often hears the argument, especially in the popular press, that one country or another has a competitive advantage because the cost of capital is lower. For example the cost of capital in Japan might be lower because of the high Japanese savings rate.

Briefly stated, our point of view is that there is no difference in the costs of capital among developed countries after adjusting nominal costs of capital for differences in expected rates of inflation, risk, and taxation. If the cost of capital is really lower in Japan, for example, then the world would rush to borrow from Japanese lenders until supply and demand imbalance was eliminated and the cost of capital was the same across borders. Of course, government regulations or taxes could serve as barriers to the flow of capital and lead to differences.[1]

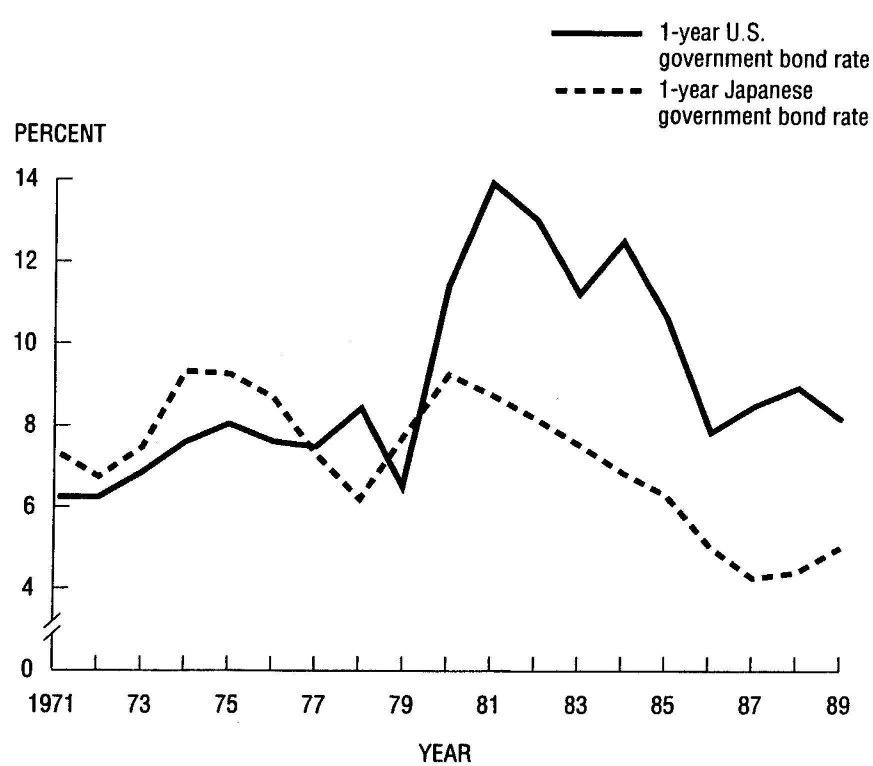
To compare the cost of capital in the U.S. versus Japan we studied differences in nominal default free rates on government debt, corporate debt rates, the cost of equity, and the debt-equity ratios. These are all components of a company's weighted average cost of capital. Apples-to-apples comparisons of cross border capital costs are not easy. For debt, one must be sure that the debt in both countries has (at least approximately) the same duration, credit risk, covenants, and special features (e.g., callability or convertibility). For equity, equivalent measures of risk must be used.

Government Debt

In both the U.S. and Japan, government bonds have little or no chance of default, therefore providing a relatively straightforward comparison as long as duration is held constant. Exhibit 13.12 shows nominal yields on 1 year government bonds in the U.S. and Japan. Nominal yields have been lower in Japan since 1977, but inflation rates have also been lower over the same time period as seen in Exhibit 13.13. The implication, of course, is that the dollar has depreciated against the yen. This is illustrated in Exhibit 13.14. Although differences in inflation are not the only explanation for devaluation of the dollar (differences in productivity and the balance of trade matter too), they are a major factor.

[1] We are not alone in our opinion, for example see J. Frankel, "The Japanese Cost of Finance: A Survey," *Financial Management*, Vol. 20, No. 1 (Spring 1991): 95–127; K. French and J. Poterba, "Are Japanese Stock Prices Too High?," CRSP Seminar on the Analysis of Securities Prices, University of Chicago, August 1989; and W. C. Kester, "Capital Ownership Structure Comparison of U.S. and Japanese Manufacturing Corporations," *Financial Management* (Spring 1986): 5–16.

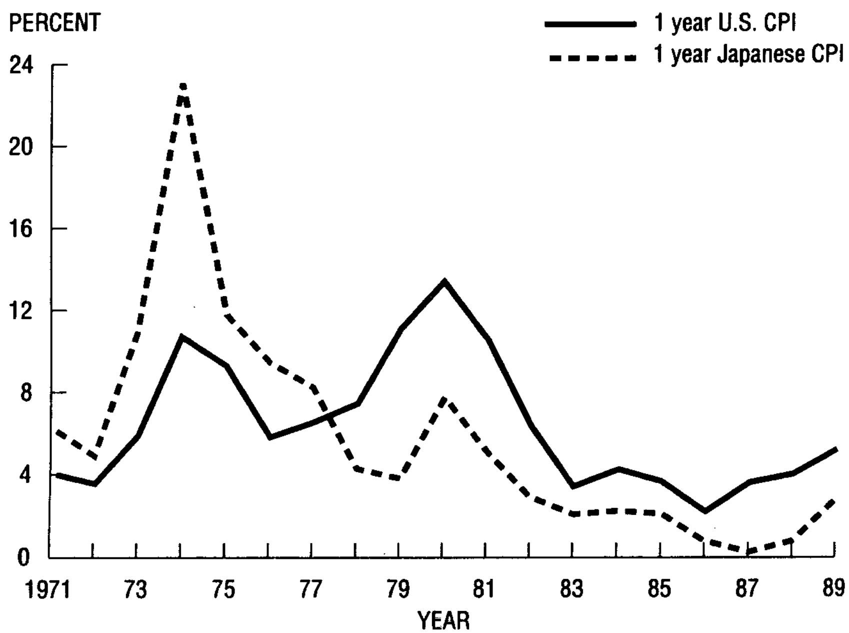
Exhibit 13.12 **NOMINAL YIELDS ON GOVERNMENT BONDS, U.S. AND JAPAN**



Source: International Financial Statistics; IMF.

To illustrate why it makes no difference whether one borrows in yen or dollars, let's look at an example. In December of 1989, the U.S. government could have issued one year notes at 5.77 percent payable in yen or 8.24 percent payable in dollars. The FX rate at that period of time was 145 yen to the dollar. The forward rate for exchange at the end of the year was 141.7 yen per dollar, anticipating

Exhibit 13.13 **RATE OF INCREASE IN CONSUMER PRICE INDEX, U.S. AND JAPAN**



Source: International Financial Statistics; IMF.

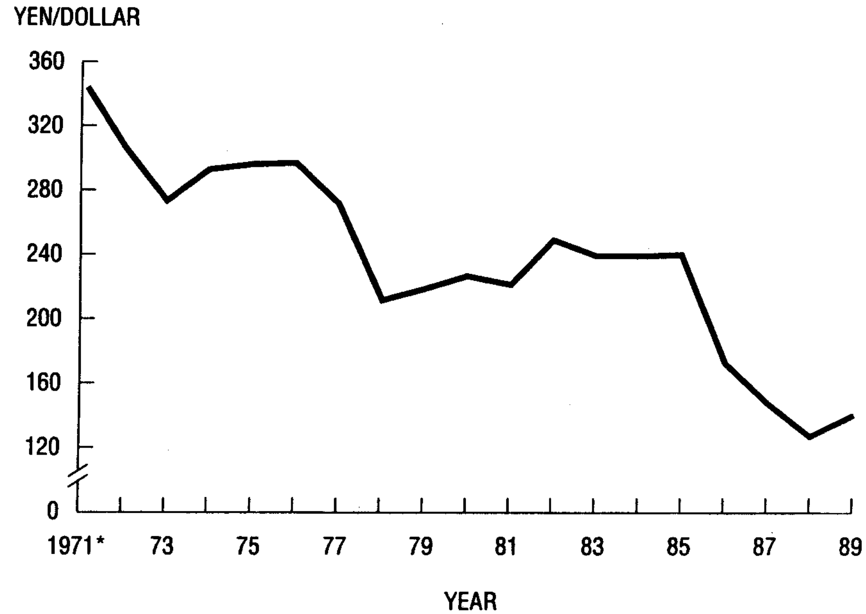
that the higher rate of inflation in the U.S. would cause the dollar to devalue relative to the yen.

Tracing through the two alternatives, if the U.S. government borrows $1.00 today it expects to pay back $1.0824 at the end of the year. If it borrows 145 yen instead, it will pay back 1.0577 (145) = 153.4 yen at the end of the year. By that time the exchange rate is expected to be 141.7 yen per dollar, therefore 153.4 yen ÷ 141.7 yen/dollar equals $1.082. The cost is the same either way, and the U.S. government is not better off borrowing in yen. This implies that the cost of risk-free (default free) government debt is the same in both countries.

Corporate Debt

If the cost of government debt is the same in both countries, then similar forces serve to equilibrate the cost of capital for companies.

Exhibit 13.14 **YEN/DOLLAR EXCHANGE RATE, AVERAGE OF BEGINNING AND END-OF-YEAR AVERAGE SPOT EXCHANGE RATES**



Source: International Financial Statistics; IMF.

* In August of 1971 the U.S. suspended gold convertiblity and de facto the dollar began to float relative to other major currencies.

However, corporate debt cost comparisons between the U.S. and Japan are much more difficult than government bond comparisons because:

1. The public market for corporate debt in Japan is thin to nonexistent and merely thin in the U.S.
2. Japanese corporate bonds often have warrants attached or conversion privileges that lower their stated yield to maturity.
3. Covenants on Japanese and U.S. corporate bonds are quite different.
4. Japanese banks often have inside information about their

borrowers because of interlocking equity ownership (an arrangement forbidden by the Glass-Stegal Act in the U.S.).

5. Prime rates are not directly comparable because one can borrow below prime in the U.S. and because the list of Japanese prime borrowers is more restrictive and therefore more "blue chip" than the list of U.S. prime borrowers.

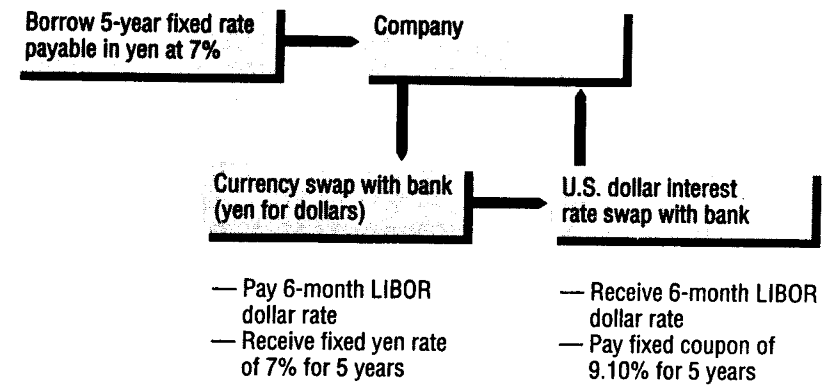
To the best of our knowledge, no one has yet published a study that makes a good apples-to-apples comparison of U.S. and Japanese corporate lending rates.

To make a direct comparison between U.S. and Japanese corporate borrowing rates for your company you need to obtain quotes from U.S. and Japanese lenders on equivalent loan agreements (e.g. same duration, covenants, principal amount, fixed or variable rate, caps, etc.). You also need to get quotes on foreign exchange swaps to exchange a dollar-denominated loan for an equivalent yen-denominated loan and vice versa. To illustrate, we obtained actual quotes on a $200 million 5-year fixed-rate loan for a U.S.-based company. The loan was assumed to be collateralized for an AAA-rated company and to have no call or conversion features. The 5-year yen fixed rate of 7.00 percent was equivalent to a U.S. 5-year dollar fixed rate of 9.10 percent as shown in Exhibit 13.15. If the company borrows yen at a 5-year rate of 7 percent, it is possible to engage in a currency swap and an interest rate swap so that the company ends up paying a dollar denominated rate of 9.10 percent for the 5 year loan.

Equity

To study differences in the cost of equity between the U.S. and Japan we focused on eight Japanese companies that have American Depository Receipts (ADRs) traded on the New York Stock Exchange. Except for small differences caused by transaction costs, the rate of return for the same stock (e.g. Honda) is the same on the NYSE and the Nikkei. The risk is also the same and therefore the cost of equity is the same. In Exhibit 13.16 the eight Japanese ADRs are matched with U.S. comparables in the same industry. Note that the average betas of the Japanese companies are only slightly lower than their U.S. counterparts when their ADR returns are regressed against the equally weighted U.S. index, but are significantly lower when regressed against the Nikkei. This illustrates the problem of

Exhibit 13.15 **EQUIVALENCE OF CORPORATE BOND BORROWING RATES**



estimating betas for cross national comparisons. The same set of eight Japanese companies had half the measured risk (beta of 0.54 versus 1.05) when regressed against the Nikkei.

Since there is no profit obtainable from arbitrage between ADRs traded on the NYSE and the same securities in Tokyo, we know the cost of equity capital must be the same in both countries for this sample of companies. Therefore, we can conclude that if we use the CAPM (see Chapter 8 for an explanation) to estimate the cost of equity, as shown in Exhibit 13.17, a 14.38 percent cost of equity in the U.S. is equivalent to a 10.72 percent cost of equity in Japan. Note also, the small difference between the cost of equity for U.S. comparable companies and the eight Japanese ADRs.

Capital Structure

One often hears the argument that the cost of capital is lower in Japan because the Japanese use more debt. This does not seem to be true for our sample of eight ADRs as illustrated in Exhibit 13.18. The book value debt–to–total-capital ratios are roughly the same for the Japanese companies and their U.S. comparables, and their market value debt–to–total-capital ratios are actually lower. Based on a much larger sample, Carl Kester (1986) concludes that ". . . on a market value basis there is no significant country difference in leverage between U.S. and Japanese manufacturing after control-

Exhibit 13.16 **JAPANESE ADRs VERSUS U.S. COMPARABLES (BASED ON 1987 YEAR-END ACCOUNTING DATA),** PERCENT

Company	Number of U.S. comparables	Dividend yield		Return on invested capital		Beta		
		Japan	U.S.	Japan	U.S.	Japan*	Japan**	U.S.
Hitachi	6	0.50	1.65	4.00	14.70	1.09	.61	1.23
Honda	3	0.80	3.53	11.20	22.80	1.08	.50	0.97
Kubota	3	0.60	1.97	4.20	14.40	0.74	1.00	0.99
Kyocera	5	0.80	0.50	12.40	2.90	1.11	.42	1.43
Matsushita	4	0.40	1.88	19.90	9.40	1.10	.95	1.12
Pioneer	5	0.80	0.00	9.60	1.60	0.98	.35	1.32
Sony	5	0.60	0.00	2.60	1.60	1.18	.30	1.32
TDK	4	0.80	1.78	8.30	9.50	1.09	.16	1.21
Average		0.60	1.41	9.02	9.61	1.05	.54	1.18

Source: McKinsey analysis, BARRA.

* Based on ADR stock returns regressed against an equally weighted U.S. index.
** Based on home country individual stock returns regressed against the home country index.

Exhibit 13.17 **EQUITY COST USING HOME COUNTRY BETAS AND U.S. BETAS**

HOME COUNTRY BETAS

Country	Cost of equity		Nominal risk-free rate*		Market price of risk**		Average beta	Risk premium component
U.S.	15.16%	=	8.08%	+	6.00%	×	1.18	7.08%
Japan	10.72%	=	6.40%	+	8.00%	×	0.54	4.32%
Difference	(4.44%)		(1.68%)					(2.76%)

U.S. BETAS

Country	Cost of equity		Nominal risk-free rate*		Market price of risk**		Average beta	Risk premium component
U.S.	15.16%	=	8.08%	+	6.00%	×	1.18	7.08%
Japan	14.38%	=	8.08%	+	6.00%	×	1.05	6.30%
Difference	(0.78%)		(0.00%)					(.78%)

* Rate on long-term government bonds, December 1989.
** Source: Ibbotson Associates, McKinsey analysis.

Exhibit 13.18 **COMPARABLE D/E RATIOS,** PERCENT

Company	Book value of debt/total capital		Market value of debt/total capital	
	Japan	U.S.	Japan	U.S.
Kubota	42.3	30.6	11.7	23.9
Hitachi	37.8	21.1	23.1	17.3
Matsushita	33.6	36.3	23.7	28.1
Pioneer	22.8	42.5	9.2	39.2
Sony	34.5	42.5	20.1	39.2
Kyocera	17.2	29.7	9.5	27.7
TDK	27.3	13.8	16.5	9.8
Honda	42.2	37.6	26.4	35.0
Average	32.2	31.7	17.5	27.5

ling for characteristics such as growth, profitability, risk, size, and industry classification."[2]

In sum, there are no differences in the cost of capital across national borders, at least for companies located in developed nations that have lowered their barriers to capital flows. The cost of government debt is the same after controlling for expected changes in FX rates. The cost of corporate debt is also the same after controlling for default as well as FX risk. And the cost of equity also appears to be the same after considering the difficulties of measuring beta. Last, but not least, the capital structures of companies in the same industry appear to be the same. It appears that the cost of capital is neither a source of advantage nor disadvantage across borders.

VALUATION IN DEVELOPING COUNTRIES

As globalization of the world economy brings mobile capital to more and more countries, valuation becomes more important—for privatization, for joint ventures, for mergers and acquisitions, and

[2] W.C. Kester, 1986.

for value-based management of subsidiaries in developing countries. Discounted cash flow methodology is certainly more difficult to use in these environments, and has greater error. Still, it is better than trying to use ratios based on comparables to do transactions. What do you do when a country has only 16 publicly traded companies and none of them are in the industry where you need to estimate a transaction price for an acquisition? You can't use price/earnings or market-to-book ratios from other countries, because the accounting standards and interest rates are different. Even if you do, these ratios provide little or no insight into how to value potential synergies or how to organize post merger integration of the businesses.

This brief section provides counsel on what to do with some of the thorny issues that have come to our attention:

- How to do valuations in high inflation environments.
- How to estimate the cost of capital when even the government has no debt being traded.
- What to do if there is government intervention.

Another issue, what to do about political risk, was discussed in Chapter 12.

Valuation in High Inflation Environments

Accounting numbers are quickly distorted by high inflation, making the historical perspective difficult to determine and forecasting a nightmare. If the government is not manipulating the foreign exchange market, one practical approach is to translate historical financial statements written in the domestic high inflation currency into a stable currency by using the historical spot FX rates. The restated financial statements usually show normal growth patterns for companies in the stable currency. It is also easier to forecast free cash flows in the stable currency. Having done so, they should be discounted at a weighted average cost of capital appropriate for companies of equivalent risk in the stable currency. For example, if the stable currency is U.S. dollars, then the discount rate would be a U.S.-based rate. The value of the company, obtained via this procedure, will be in U.S. dollars. It can be reconverted to the domestic currency of the developing country at the spot exchange rate.

There are two other approaches. Neither is without serious difficulties. You could try to forecast nominal cash flows and discount them at the nominal rate. However, developing countries with high inflation also tend to have highly variable inflation, making it very difficult to forecast nominal cash flows. Furthermore, uncertainty about inflation usually means there are no markets for long-term government debt instruments. Everything is short-term and indexed to the inflation rate. Consequently, it is difficult to figure out a long-term weighted average cost of capital. A second approach is to try to make all estimates in real terms. One tries to forecast the growth in revenues at the real rate appropriate for the products being marketed, costs at the real rate appropriate for them, and so on. The discount rate is the real risk-adjusted rate appropriate, given the riskiness of the free cash flows. This second approach is somewhat easier to apply because future rates of inflation need not be forecasted. However, it is not easy to estimate the real rates of growth that are appropriate for each portion of cash flows. Also, in developing economies the real rate is quite variable across time, and difficult to forecast.

Estimating the Cost of Capital

As mentioned above, financial markets in developing economies are often thin or nonexistent. If no long-term government bond yields are quoted, you need to come up with a substitute. Even if there is a quoted yield, it may not be default-free, as one would usually assume for the debt of developed nations.

Suppose you had to estimate the cost of capital for an equity position in a joint venture in an integrated oil company in China. Assuming that the venture will not use any debt, how would you estimate the required return on your equity? No one calculates CAPM betas for Chinese companies, the market risk premium is unknown, and there isn't any traded government debt that could be used to estimate the risk-free rate (even in the short term).

An approach that avoids the need to use sophisticated models like the CAPM or the APM (see Chapter 8) proceeds in two steps. First estimate the industrywide real required rate of return. Then either index your payments to inflation, or estimate the inflation premium you require and add it to the real rate.

The long-term rate of return on all equity securities investments in integrated oil companies can be estimated for the industry

as a whole. Equity prices are continuously and rapidly adjusted to new information so that investors can expect to receive a return that compensates them for the risk they take when they invest in the stock. If bad news is received by the market, the stock price drops enough so that anticipated returns move back to their equilibrium level. Over a long period of time, actual ex post returns are good estimates of future required rates of return, if the underlying riskiness of the industry hasn't changed. Therefore, long-term average rates of return are often adequate proxies for the cost of equity.

The cost of equity for integrated oil companies, measured as a real rate, can be estimated as follows:

- For every comparison company in the industry, collect data on the nominal rate of return over a long period of time, for example, 20 years, the market value debt-to-equity ratio year by year, the tax rate year by year, and the company's cost of debt, year by year.
- Convert the observed equity return each year k_s, into an unlevered equivalent, k_u, by using the Modigliani Miller formula,

  $$k_s = k_u + (k_u - k_b)(1 - T)\frac{B}{S},$$

  where k_u is the equity rate of return were the company 100 percent equity (i.e., the unlevered cost of equity); k_s is the observed levered equity return; k_b is the cost of debt; T is the statutory marginal tax rate; and B/S is the market value debt to equity ratio.
- Subtract the rate of inflation each year from the unlevered cost of equity, k_u, to obtain the real rate of return.
- Construct an industry index real rate of return by weighting each company k_u, by its market value of equity, divided by the market value of equity in the industry.
- Compute the geometric average real rate of return for the industry index.

The final result is an estimate of the real rate of return that is required on integrated oil investments in China.

China currently has double digit inflation, which is nearly impossible to forecast. If you can index your share of the joint venture payments to the inflation rate, you can avoid the need to compute a nominal required rate. If indexing is impractical or infeasible, then forecasted inflation needs to be factored in as follows:

$$1 + \text{nominal rate} = (1 + \text{real rate})(1 + \text{expected inflation}).$$

Last but not least is the fact that the mainland Chinese currency, the ren min bi "yuan," is officially exchanged into dollars at 5.8 yuan to the dollar (end of 1993), while the black market exchange rate is about 8 yuan to the dollar. A dollar buys roughly 33 percent more on the black market. The value of the joint venture to you and hence the rate of return on your investment will depend a great deal on whether the yuan can be converted at the official rate or the black market rate.

Government Intervention

Aside from intervening in the FX market, governments create other difficulties for valuation. For example, even though interest rates can be obtained, they may not be determined by free market forces, and may be inappropriate for use in valuations. In India, even though the government has deregulated the debt and equity markets, it still requires banks to buy government bonds at a rate unrelated to inflation, thereby distorting the real cost of borrowing in the country. The 90-day T-bill rate has been fixed at 4.6 percent per quarter (or 19.7 percent per annum) since 1974. Inflation has been running about 8 percent, averaged across the last decade, therefore the 90-day T-bill rate seems artificially high. On the other hand the 10-year T-bill rate has been around eleven percent, perhaps too low given that very recent inflation has been about 13 percent.

Clearly, the estimation of the cost of capital is not an exact science, even when yields are quoted on government securities.

SUMMARY

This chapter has covered a diverse set of issues involved in valuations outside of the U.S. You need to be aware that accounting standards differ quite a bit, but that cash is cash, and therefore it is almost always possible to estimate free cash flows. You should also be aware of cultural differences, such as interlocking ownership,

that can catch the unaware analyst off guard. The bottom line is that discounted cash flow valuation works well in developed nations around the world. In less developed countries DCF values companies as well or better than other methods, but is more an art than a science due primarily to the lack of good market data.

A careful comparison of the cost of capital across borders indicates no differences after adjusting for inflation and risk. Of course, government imposed barriers to the free flow of capital can affect the cost of capital, but when the markets are allowed to work, the cost of capital is equal across borders.