

International Capital Structure and the Cost of Capital

Chapter 17

Cost of Capital

- The cost of capital is the minimum rate of return an investment project must generate in order to pay its financing costs.
- For a levered firm, the financing costs can be represented by the *weighted average cost of capital*.

Where $K = (1 - \lambda)K_l + \lambda(1 - t)i$

K = weighted average cost of capital

λ = debt to total market value ratio

K_l = cost of equity capital for a levered firm

t = marginal corporate income tax rate

i = pretax cost of debt

Cost of Capital Estimated Using the CAPM

- The cost of equity capital (K_e) of a firm is the expected return on the firm's stock that investors require.
- This return is frequently estimated using the Capital Asset Pricing Model (CAPM):

$$\bar{R}_i = R_f + \beta \times (\bar{R}_M - R_f)$$

Where

$$\beta_i = \frac{Cov(R_i, R_M)}{Var(R_M)}$$

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Cost of Capital in Segmented vs. Integrated Markets

- If capital markets are segmented, then investors can only invest domestically. This means that the market portfolio (M) in the CAPM formula would be the domestic portfolio instead of the world portfolio.

$$\bar{R}_i = R_f + \beta_i^{U.S.} \times (\bar{R}_M - R_f)$$

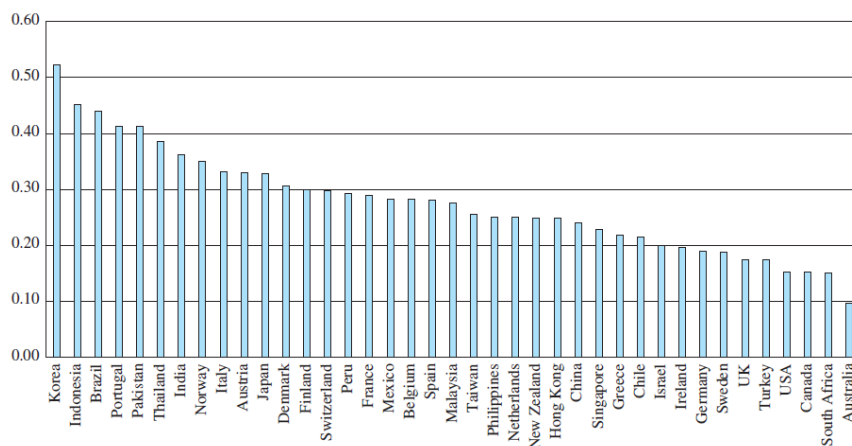
Versus

$$\bar{R}_i = R_f + \beta_i^W \times (\bar{R}_W - R_f)$$

- Clearly integration or segmentation of international financial markets has major implications for determining the cost of capital.

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EXHIBIT 17.1 Median Debt Ratios of Firms across Countries



Does the Cost of Capital Differ Among Countries?

- There do appear to be differences in the cost of capital in different countries.
- When markets are imperfect, international financing can lower the firm's cost of capital.
- One way to achieve this is to internationalize the firm's ownership structure.

EXHIBIT 17.3 (Excerpt)

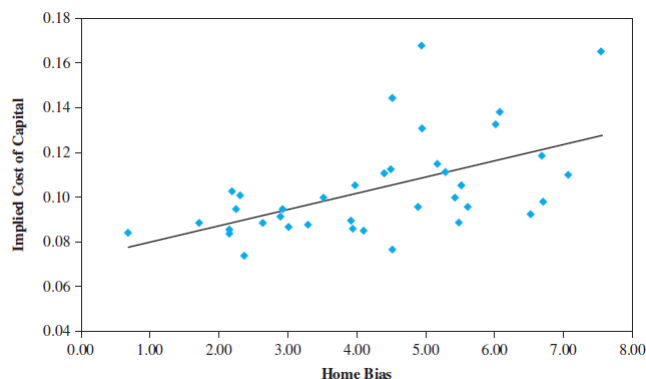
The Cost of Capital Around the World

Country	World Market-Cap Weight (%)	Domestic Funds Local (%)	Home Bias	Implied Cost of Capital
Argentina	0.16	60.46	6.02	0.133
Australia	1.70	78.91	3.96	0.087
Austria	0.15	22.91	4.91	0.096
Belgium	0.63	17.71	3.31	0.088
Brazil	0.71	100.00	4.95	0.168
Canada	2.67	28.67	2.27	0.095
Chile	0.23	55.31	5.52	0.106
China	1.84	99.40	3.99	0.106
Czech Republic	0.06	58.59	7.08	0.110
Denmark	0.37	23.69	4.11	0.085
Finland	0.55	66.20	4.43	0.111
France	4.13	55.48	2.65	0.089
Germany	3.21	29.35	2.17	0.086
Greece	0.33	91.94	5.63	0.096
Hong Kong	2.08	22.51	2.34	0.101
India	0.71	99.51	4.98	0.131
Ireland	0.26	2.51	2.20	0.103
Italy	1.96	40.76	3.03	0.087
Japan	9.29	98.50	2.36	0.074
Luxembourg	0.12	12.21	4.54	0.077
Malaysia	0.43	99.90	5.44	0.100
Mexico	0.44	77.73	5.19	0.115

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EXHIBIT 17.4

Implied Cost of Capital versus Home Bias



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Cross-Border Listings of Stocks

- Cross-border listings of stocks have become quite popular among major corporations.
- The largest contingent of foreign stocks are listed on the London Stock Exchange.
- U.S. exchanges attracted the next largest contingent of foreign stocks.

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Benefits of Cross-Border Listing

- Cross-border listings of stocks benefit a company:
 - The company can expand its potential investor base, which will lead to a higher stock price and lower cost of capital.
 - Cross-listing creates a secondary market for the company's shares, which facilitates raising new capital in foreign markets.
 - Cross-listing can enhance the liquidity of the company's stock.
 - Cross-listing enhances the visibility of the company's name and its products in foreign marketplaces.

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Costs of Cross-Border Listing

- Cross-border listings of stocks do carry costs:
 - It can be costly to meet the disclosure and listing requirements imposed by the foreign exchange and regulatory authorities.
 - Controlling insiders may find it difficult to continue to derive private benefits once the company is cross-listed on foreign exchanges.
 - Once a company's stock is traded in overseas markets, there can be volatility spillover from these markets.
 - Once a company's stock is made available to foreigners, they might acquire a controlling interest and challenge the domestic control of the company.

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Cross-Border Listing: Costs vs. Benefits

- On average, cross-border listings of stocks appears to be a profitable decision
- The benefits outweigh the costs.

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EXHIBIT 17.8 Foreign Firms Listed on the New York Stock Exchange (selected)

Country	Firms
Australia	BHP Billiton, Samson Oil & Gas, Sims Group, Westpac Banking
Brazil	Banco Bradesco, Embraer, Petrobras, Telemar, VALE
Canada	Agrium, Barrick Gold, Canadian Pacific Railways, Domtar, RBC, Thomson Reuters, Toronto Dominion Bank
Chile	Banco de Chile, LAN Airlines, Vina Concha y Toro
China	China Eastern Airlines, China Life Insurance, Huaneng Power, PetroChina, China Mobile TAL Education
Finland	Nokia Corp.,
France	Constellium, Orange, Sanofi-Aventis, Sequans Communications, Total, Vivendi
Germany	Deutsche Bank, Orion Engineered Carbons, SAP, Voxeljet
India	ICICI Bank, Infosys, Tata Motors, Wipro
Israel	Blue Square, Cellcom Israel, Mobilye, Teva Pharmaceutical
Italy	ENI, Luxottica, Nutuzzi, Telecom Italia
Japan	Canon, Honda Motor, Kyocera, Mizuho Financial, Nomura Holdings
Korea	NTT Docomo, Sony, Toyota Motor
	Korea Electric Power, Korea Telecom, Pohang Iron & Steel, SK Telecom
Mexico	Cemex, Empresas ICA, Grupo Simec Grupo Televisa
Netherlands	Aegon, AVG Technologies, Core Laboratories, Phillips Electronics, Unilever, ING
Norway	Marine Harvest, SeaDrill, Statoil
South Africa	Anglo Gold Ashanti, Gold Fields, Sasol
Spain	Banco Santander, Telefonica
Switzerland	ABB, Novartis, Tyco International, UBS
United Kingdom	Barclays, BP, BT Group, Diageo, GlaxoSmithKlein, HSBC, Lloyds, Prudential, Royal Bank of Scotland, Royal Dutch Shell

EXHIBIT 17.9 Foreign Firms Listed on the London Stock Exchange (selected)

Country	Firms
Australia	Ironridge Resources, Prairie Mining, Range Resources, South32
Canada	Canadian Pacific Railways, Entertainment One, Falcon Oil & Gas, Republic Goldfields, Turbo Power Systems
China	Air China, China Petroleum & Chemical, Datang Intl Power Generation, Zhejiang Expressway
Egypt	Commercial Intl Bank, Suez Cement, Telecom Egypt
France	Compagnie de St-Gobain, Multi Units France, Total
Germany	BASF, Commerzbank, SQS Software Quality Systems
India	Lloyd Electric & Engineering, Reliance Industries, State Bank of India, Tata Power
Ireland	Abbey Plc, Bank of Ireland, Cairn Homes, Ryanair Hldgs
Israel	Bank Hapoalim, Dori Media Group, Metal-Tech
Japan	ANA, Mitsubishi Electric, Ricoh, Toyota Motor
Korea	Hyundai Motor, LG Electronics, Samsung Electronics, SK Telecom
Netherlands	European Assets Trust, Kimberly Enterprises, Nord Gold
Pakistan	Lucky Cement, MCB Bank, United Bank
Poland	Bank Pekao, Polski Koncern Naftowy Orlen, Telekomunikacja Polska
Russia	Gazprom, Lukoil, Sberbank, Severstal, Rosneft
Taiwan	Acer, Evergreen Marine, Hon Hai Precision Industry
Turkey	Finansbank, Türkiye Garanti Bankası, Türkiye Petrol Rafinerileri
United States	Abbott Laboratories, Bank of America, Boeing, General Motors, General Electric, Honeywell, IBM, JPMorgan Chase, Pfizer

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Capital Asset Pricing Under Cross-Listings

Recall the definition of beta:

$$\beta_i = \frac{Cov(R_i, R_M)}{Var(R_M)}$$

We can recalibrate the CAPM formula:

$$\bar{R}_i = R_f + \beta \times (\bar{R}_M - R_f)$$

As

$$\bar{R}_i = R_f + \frac{Cov(R_i, R_M)}{Var(R_M)} \times (\bar{R}_M - R_f)$$

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Capital Asset Pricing Under Cross-Listings (continued)

$$\bar{R}_i = R_f + \frac{(\bar{R}_M - R_f)}{Var(R_M)} \times Cov(R_i, R_M)$$

We can develop a measure of aggregate risk aversion, A^M

$$A^M \times M = \frac{(\bar{R}_M - R_f)}{Var(R_M)}$$

We can restate the CAPM using A^M

$$\bar{R}_i = R_f + A^M \times M \times Cov(R_i, R_M)$$

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Capital Asset Pricing Under Cross-Listings: The International Asset Pricing Model

- This equation indicates that, given investors' aggregate risk-aversion measure, the expected rate of return on an asset increases as the asset's covariance with the market portfolio increases.
- In fully integrated capital markets, each asset will be priced according to the *world* systematic risk.

$$\bar{R}_i = R_f + A^M \times M \times Cov(R_i, R_M)$$

$$\bar{R}_i = R_f + A^W \times W \times Cov(R_i, R_W)$$

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The International Asset Pricing Model

- The International Asset Pricing Model (IAPM) above has a number of implications.
- International listing of assets in otherwise segmented markets directly integrates international capital markets by making these assets tradable.
- Firms with nontradable assets essentially get a free ride from firms with tradable assets in the sense that the former indirectly benefit from international integration in terms of a lower cost of capital.

$$\bar{R}_i = R_f + A^W \times W \times Cov(R_i, R_W)$$

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The Effect of Foreign Equity Ownership Restrictions

- While companies have incentives to internationalize their ownership structure to lower the cost of capital and increase market share, they may be concerned with the possible loss of corporate control to foreigners.
- In some countries, there are legal restrictions on the percentage of a firm that foreigners can own.
- These restrictions are imposed as a means of ensuring domestic control of local firms.

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EXHIBIT 17.11 Restrictions on Equity Ownership by Foreigners: Historical Examples

Country	Restrictions on Foreigners
Australia	10% in banks, 20% in broadcasting, and 50% in new mining ventures.
Canada	20% in broadcasting, and 25% in bank/insurance companies.
China	Foreigners are restricted to B shares; locals are eligible for A shares.
France	Limited to 20%.
India	Limited to 49%.
Indonesia	Limited to 49%.
Mexico	Limited to 49%.
Japan	Maximum of 25-50% for several major firms; acquisition of over 10% of a single firm subject to approval of the Ministry of Finance.
Korea	Limited to 20%.
Malaysia	20% in banks and 30% in natural resources.
Norway	0% in pulp, paper, and mining, 10% in banks, 20% in industrial and oil shares, and 50% in shipping companies.
Spain	0% in defense industries and mass media. Limited to 50% for other firms.
Sweden	20% of voting shares and 40% of total equity capital.
Switzerland	Foreigners can be restricted to bearer shares.
U.K.	Government retains the veto power over any foreign takeover of British firms.

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Pricing-to-Market Phenomenon

- Suppose foreigners, if allowed, would like to buy 30 percent of a Korean firm.
- But because of ownership constraints imposed on foreigners, they can purchase at most 20 percent.
- Because this constraint is effective in limiting desired foreign ownership, foreign and domestic investors many face different market share prices.
- This dual pricing is the *pricing-to-market phenomenon*.

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Asset Pricing under Foreign Ownership Restrictions

- An interesting outcome is that the firm's cost of capital depends on which investors, domestic or foreign, supply capital.
- The implication is that a firm can reduce its cost of capital by internationalizing its ownership structure.

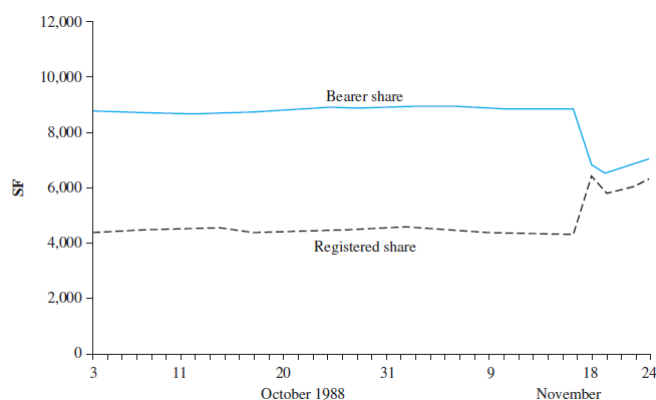
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An Example of Foreign Ownership Restrictions: Nestlé

- Nestlé used to issue two different classes of common stock: bearer shares and registered shares.
 - Foreigners were only allowed to buy bearer shares.
 - Swiss citizens could buy registered shares.
 - The bearer stock was more expensive.
- On November 18, 1988, Nestlé lifted restrictions imposed on foreigners, allowing them to hold registered shares as well as bearer shares.

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EXHIBIT 17.12 Price Spread between Bearer and Registered Shares of Nestlé



Source: *Financial Times*, November 26, 1988 p.1. Adapted with permission.

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An Example of Foreign Ownership Restrictions: Nestlé

- Following this, the price spread between the two types of shares narrowed dramatically.
 - This implies that there was a major transfer of wealth from foreign shareholders to Swiss shareholders.
 - The price of bearer shares declined about 25 percent.
 - The price of registered shares rose by about 35 percent.
- Because registered shares represented about two-thirds of the market capitalization, the total value of Nestlé increased substantially when it internationalized its ownership structure.
- Nestlé's cost of capital therefore declined.

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An Example of Foreign Ownership Restrictions: Nestlé

- Foreigners holding Nestlé bearer shares were exposed to political risk in a country that is widely viewed as a haven from such risk.
- The Nestlé episode illustrates:
 - The importance of considering market imperfections.
 - The peril of political risk.
 - The benefits to the firm of internationalizing its ownership structure.

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The Financial Structure of Subsidiaries

- There are three different approaches to determining a subsidiary's financial structure:
 - Conform to the parent company's norm.
 - Conform to the local norm of the country where the subsidiary operates.
 - Vary judiciously to capitalize on opportunities to lower taxes, reduce financing costs and risk, and take advantage of various market imperfections.
- In addition to taxes, political risk should be given due consideration in the choice of a subsidiary's financial structure.

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Summary

- International comparison of the cost of funds indicates that while the costs of funds are converging among major countries in recent years, international financial markets are less than fully integrated. This suggests that firms can increase their market values by judiciously raising capital overseas.
- When a firm is operating in a segmented capital market, it can reduce the negative effects by cross-listing its stock on foreign stock markets, thereby making the stock internationally tradable.

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Summary (continued)

- A firm can benefit from international cross-listings in terms of a lower cost of capital and a higher stock price, and access to new sources of capital.
- When a firm's stock is cross-listed on foreign exchanges in an otherwise segmented capital market, the stock will be priced according to the world systematic risk as if international capital markets were fully integrated.
- Many countries still maintain restrictions on investment by foreigners. Under an ownership constraint, foreign and domestic country investors may face different share prices, resulting in the pricing-to-market phenomenon generally raises the firm's overall cost of capital.

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