

Aes cost of capital

Economics



International Capital Structure and the Cost of Capital Analyzing

Cost of Capital among Countries Cross Border Listing of Stocks International Asset Pricing Model (IAPM) The Financial Structure of Subsidiaries Case Analysis - AES Corporation 6 International Capital Structure and the Cost of Capital Your Logo International Capital Structure and the Cost of Capital. Firms are becoming multinational in both scopes AND in the capital structure. Fully integrated financial markets = the same cost of capital both domestically and abroad o If not, the opportunity may exist to decrease the cost of capital. The minimum rate of return an investment must generate to cover its financing cost. Firms will undertake projects if the return is expected to exceed the cost of capital

- Return = Cost of Capital: value unchanged
- Return > Cost of Capital: firm's value increases
- Return < Cost of Capital: bad investment Weighted Average Cost of Capital (K)
- When a firm has both debt and equity financing, the weighted average cost of capital: $K = (1 - \lambda)K_E + \lambda(1 - t)i$ $K = (1 - \lambda)K_L + \lambda i(1 - t)$
- $1 - \lambda$ = weight of the cost of capital that is from equity
- K_L = cost of equity capital
- λ = debt-to-total-market-value ratio (weight of the total cost of capital that is from debt)
- i = before-tax cost of debt capital (borrowing)
- t = marginal corporate income tax rate o Interest payments are tax-deductible $K = (1 - \lambda)K_L + \lambda i(1 - t)$
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deductible Example

• $K = (1-\tau)K_L + \tau(1-t)I$ o Company is financing 30% of capital by debt (τ)?

So they're financing 70% ($1-0.30$) by equity ($1-\tau$)

- Cost of equity capital is 10%
- Before-tax cost of borrowing is 6%
- Marginal corporate tax rate is 15% $K = (0.70)0.10 + 0.30(1-0.15)0.06$

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- Marginal corporate tax rate is 15% $K = (0.70)0.10 + 0.30(1-0.15)0.06$ $K = 8.53\%$. Minimizing the weighted average cost of capital(WACC)
- Lowest WACC is obtained when the optimal combination of debt and equity are used
- Increases # of profitable capital expenditures o Firm value is increased as long as the return on new projects exceeds the firm's WACC
- Internationalizing the firm's capital structure helps to decrease the cost of capital Firm's Investment Decision and the Cost of Capital
- A firm that can reduce its the cost of capital will be able to increase the profitable capital expenditures that they can invest in
- This results in increasing shareholder wealth
- We can do this by internationalizing our cost of capital Factors that affect the WACC Controllable Uncontrollable
- 1 Capital structure policy Proportion of debt and equity
- Interest rates Increase the cost of debt, may indirectly increase the cost of equity
- Investment Policy Degree of risk associated with new projects
- Tax rates Increase in corporate tax rate decreases the cost of debt

decreases WACC Economic conditions I.e. The financial crisis of 2007/2008

Calculating the firm's equity cost of capital Usually estimated using the Capital Asset Pricing Model (CAPM):

- $R_i = R_f + \beta (R_m - R_f)$
 - R_i : The expected return of security I
 - R_f : Risk-free interest rate
 - Measures the volatility of security I compared to the market portfolio
 - R_m : Market portfolio Cost of capital in segmented vs. integrated markets
 - $R_i = R_f + \beta (R_m - R_f)$
 - In segmented markets, R_m is usually proxied by the S for the United States
 - In integrated markets, R_m can be proxied using the MSCI World index
- Cost of capital in segmented vs. integrated markets... continued
- Same future cash flows are likely to be priced differently in different countries in segmented markets, why? β is measured against the domestic market portfolio R_f this differs from country to country
 - In fully integrated markets, the same future cash flows will be priced the same as β is now measured against the same world market portfolio

Analyzing Cost of Capital among Countries Your Logo Does the Cost of Capital Differ among countries? Researches suggest that although international financial markets are not segmented anymore, they are still not fully integrated? The empirical evidence is not clear-cut If the international financial markets = less than fully integrated, then there can be systematic differences To illustrate that capital markets are less than fully integrated, McCauley and Zimmer (1994) provided a direct comparison of the cost of capital among the 4 major countries: Germany, Japan, UK, and the US.

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Method:

1. estimate the cost of debt and equity capital
 2. compute the cost of funds (weighted average cost of capital) - using capital structure in each country as the weight
 3. compute the cost of capital in real terms after adjusting for the inflation rate
- Effective Real After-Tax Cost of Debt Cost of Equity Debt - to-Equity Value Ratios Real After-Tax Cost of Funds Example - Novo Industri

- Produces industrial enzymes and healthcare products
 - the 1970s, management decided to finance planned future growth of the company by entering international capital markets
 - Danish stock market was small and illiquid - company needed to internationalize
 - Novo management felt they were facing a higher cost of capital than competitors because of the segmented nature of the Danish stock market
- Example - Novo Industri Went international by Increased transparency by presenting financial and technical statements in Danish and English
- Cross-listed on the London Stock Exchange,
 - Listed ADRs (so that US investors can invest in US dollars rather than Danish)
- The Result:

- Novo Industri's stock price increased while other Danish stocks didn't
- Implications of the example Firms operating in the small, segmented domestic capital market can gain access to new capital and lower the cost of capital by listing their stocks on large, liquid capital markets like the New York and London Stock Exchanges. Cross border listing of stocks Your Logo

Cross-Border Listings of Stocks

- Firms can potentially benefit from cross-border listings
- Why?
 - Gain access to additional sources of capital while lowering the cost of capital by increasing investor base
 - Increase in stock prices due to more demand and trading of the stock

Cross-Border Listings of Stocks

- Firms seem to prefer to list in neighboring markets
- Why?
 - Similarities in markets
 - A “home bias”

Cross-Border Listings of Stocks

- Generally,
 - Potentially expand the investor base, which leads to a higher stock price and lower cost of capital
 - lower transaction costs? improvement in quality and quantity of firm-specific information available to investors
 - Creates a secondary market for the company’s shares and facilitates raising new capital in foreign markets
 - liquidity of a company’s stock
 - Enhance

Cross-Border Listings of Stocks

- Generally,
 - Enhances the visibility of the company and its products in foreign markets
 - shares may be used as the “acquisition currency” for taking over foreign companies
 - Cross-listed May improve the company’s corporate governance and transparency

Cross-Border Listings of Stocks

May improve the company’s corporate governance and transparency”

- Once companies cross-lists their shares on foreign exchanges (NYSE, LSE), they are required to follow strong disclosure and listing requirements

- On average, foreign companies listed on U. S. exchanges are valued ~17% higher

Cross-Border Listings of Stocks

- Disadvantages
 - Meeting disclosure and listing requirements can be costly (U. S. GAAP) in overseas markets
 - Volatility
 - Foreigners may take a controlling interest in the company and challenge domestic control

International Asset Pricing Model IAPM Your Logo IAPM For understanding the effects of international cross-listings.

- assuming cross-listed assets are internationally tradable assets and internationally nontradable assets. IAPM

- CAPM: $R_i = R_f + (R_M - R_f) \beta_i$ $\beta_i = \text{Cov}(R_i, R_M) / \text{Var}(R_M)$; $R_i = R_f + [(R_M - R_f) / \text{Var}(R_M)] \text{Cov}(R_i, R_M)$ AMM risk-aversion: $Y^* = [E(r) - r_f] / (A \sigma^2)$ » AM

is a measure of aggregate risk aversion » M is aggregate market value of market portfolio =; $R_i = R_f + \text{AMM} \text{Cov}(R_i, R_M)$ IAPM

- Asset pricing mechanism under:

- Complete integration - assets are traded internationally according to world systematic risk Complete segmentation - assets are trade respected to country systematic risk. Suppose two countries: Domestic Country and Foreign Country

- IAPM Complete Segmentation

- 1 Domestic Country $E(R)$:

- Foreign Country $E(R)$: $R_g = R_f + A F F \text{Cov}(R_g, R_f)$ $R_i = R_f + A D D \text{Cov}(R_i, R_D)$ Complete Integration Both Domestic and Foreign: $R_i = R_f + A w W \text{Cov}(R_i, R_W)$

In reality, assets are priced as partially integrated world financial markets IAPM Partially Integrated World Financial Markets

- Internationally tradable assets are priced as if world financial markets were completely integrated

- Restrictions on maximum % ownership of local firms by foreigners

- Mexico and India: limited to 49%

- Two different classes of equity Chinese firms issue A shares and B shares

- Ensuring domestic control of local firms Pricing-to-market (PTM) phenomenon

- Constraint is effective in limiting desired foreign ownership eg. Korean firm's restriction on foreigners is 20% Foreigners want to buy 30%
 - Foreign and domestic investors may face different market share prices
- Asset Pricing under Foreign Ownership Restrictions
- A firm's cost of capital depends on which investors, domestic or foreign, supply capital.
 - A firm can reduce its cost of capital by internationalizing its ownership structure. An Example of Foreign Ownership Restrictions: Nestle
 - Nestle used to issue two different classes of common stock: - Bearer shares: foreigners - Registered shares: Swiss citizens - The bearer stock was more expensive. Nestle An Example of Foreign Ownership Restrictions: Nestle