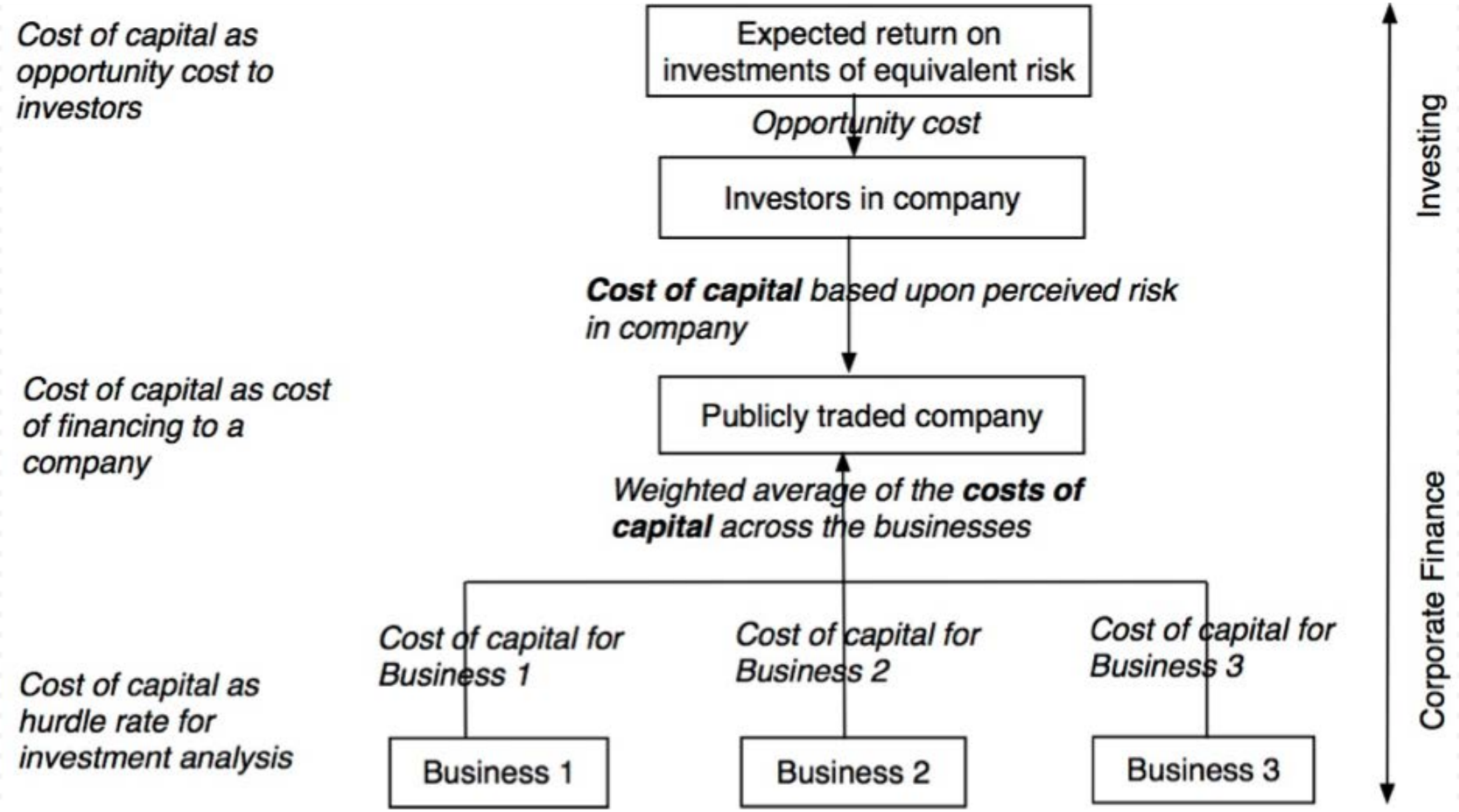
IN PRACTICE WEBCAST: ESTIMATING THE COST OF CAPITAL

Aswath Damodaran

The Cost of Capital



Step 1: Decide on currency

- Currency is a choice. You can estimate the cost of capital for any company, in any currency.
- Consistency is key: Since the cost of capital is used as a discount rate in capital budgeting and valuation, the currency chosen for estimating the cost of capital has to be consistent with the currency in which the cash flows are estimated.
- While it is generally easiest to work with the local currency, there are exceptions. (See step 2)

Aitkin Spence: Currency Choice

- Aitkin Spence is a Sri Lankan company with hotels in Sri Lanka, the Maldives, India and the Middle East.
  - It's financial statements are in Sri Lankan Rupees. We will estimate the cost of capital in Sri Lankan Rupees.
  - We could have valued the company in any other currency of our choice, but if we did so, we would have to convert the financial statements and expected growth numbers into that currency.

Step 2: Estimate a risk free rate in the currency

- Government Bond Rate: If there is a default free entity (Aaa rated sovereign) issuing long term bonds that are traded, used the current interest rate on that long term bond.

  Risk free Rate = Government Bond Rate (of Aaa entity)

- Government Bond Rate Minus: If there is a default-possible entity issuing the bond, net out the default spread for the entity from the long term bond rate.

  Risk free Rate = Government Bond Rate – Default Spread for Government

- Differential Inflation: If you cannot find a long term government bond rate or do not trust it, start with a US dollar rate and add the differential expected inflation for the currency in question.

Riskfree Rate = US $ Risk free Rate + (Inflation Rate in Local Currency – Inflation Rate in US $)

Risk Free Rate in Sri Lankan Rupees

- To value Aitken Spence in LKR, you need a risk free rate in LKR.
  - The Sri Lankan government bond is not widely traded but the rate, according to the Sri Lankan Central Bank, is 10.58% on January 1, 2018.
  - The bond rating for Sri Lanka is B1 and the default spread for that rating is 4.62%.

Riskfree rate in LKR = 10.58% - 4.62% = 5.96%

- If you don't trust the government bond rate, here is the alternate approach:
  - Risk free rate in US dollars = 2.5%
  - Expected Inflation in the US = 2%
  - Expected inflation in Sri Lanka = 6%
  - Risk free rate in LKR = 2.5% + (6% -2%) = 6.5%

Step 3: Estimate an unlevered beta for your company (bottom up preferably)

- **The standard approach**: Run a regression of your company's stock price against a market index, and then unlever that regression beta using an average D/E ratio over the regression time period.
- **A better approach**: Estimate an unlevered or asset beta for your company, by finding the businesses that your company operates in and taking a weighted average, with the weights reflecting market values of the businesses in question.

Unlevered Beta for Aitken Spence

Business	Revenues	EV/Sales	Estimated Value	Weights	Unlevered Beta
Hotel/Gaming	රු. 20,464	3.1410	රු. 64,277	58.48%	0.8274
Shipbuilding & Marine	රු. 8,356	1.8187	රු. 15,197	13.83%	0.9691
Diversified	රු. 16,334	1.6889	රු. 27,587	25.10%	0.7580
Business & Consumer Services	රු. 1,614	1.7618	රු. 2,844	2.59%	0.8839
Company	**රු. 46,768**		**රු. 109,904**	**100.00%**	**0.8311**

Step 4: Estimate the equity risk premium for your company

- Break down the company's operations down geographically. That operational break down can be based upon revenues, earnings or production, depending on which one is the best measure of risk exposure.
- Take a weighted average of the equity risk premiums of the geographies (countries, regions).

ERP for Aitken Spence

Country	*Revenues*	*Weight*	*ERP*
Sri Lanka	31187	67.96%	10.27%
Maldives	9996	21.78%	11.42%
Other Countries	4710	10.26%	7.14%
Total	45893	100.00%	10.20%

Step 5: Estimate a cost of debt

- The cost of debt is the rate at which you can borrow money, long term, today.
  - Pre-tax cost of debt = Risk free Rate + Default Spread
- The default spread can be estimated by looking at
  - The YTM of a traded, long term bond issued by the company.
  - The bond rating for the company
  - A synthetic rating based upon the interest coverage ratio
- To get to an after-tax cost of debt, you multiply this pre-tax rate by the marginal tax rate of the country where you will be using your interest deduction:
  - After-tax cost of debt = Pre-tax cost of debt (1- Marginal Tax Rate)

Aitken Spence Cost of Debt

- Aitken Spence is not rated. To estimate a synthetic rating, I used an interest coverage ratio (adjusting interest expenses for the leases in step 7)
  - Interest coverage ratio = 5915/ 2247 = 2.53
  - Rating based on ratio = BBB
  - Default Spread based on rating = 1.27% (for company)
- To get to a pre-tax cost of debt, I also added the default spread for the country:
  - Pre-tax cost of debt = 5.96% + 1.27% + 4.62% = 11.85%
- To get to an after-tax cost, I used the marginal tax rate of 28% for Sri Lanka:
  - After-tax Cost of Debt = 11.85% (1-.28) = 8.53%

Step 6: Take stock on the interest bearing debt that the company has..

- Look for interest bearing debt on the balance sheet, both short term and long term. This will include the short term debt that is under current liabilities, long term debt in the form of bank loans and corporate bonds and capital leases.
- If you are in a hurry or do not have any additional information about the maturity of the debt, use the book value of interest bearing debt = market value of interest bearing debt.
- If you have the weighted maturity of the debt, convert the book value into market value:
  - MV of Debt = PV of Interest Expenses, annuity over life of debt + PV of Book Value of Debt, discounted back from maturity.

Interest Bearing Debt

- From the balance sheet,
  - Short term interest bearing debt = 11,671 m
  - Long term interest bearing debt = 15.975 m
  - Total Interest bearing debt = 27,645 m
- To convert to market value,
  - Average maturity of the debt = 3 years
  - Interest expenses (annual) = 1,698 m
  - Current Market Interest rate on debt = 11.85%
  - Market Value of Debt = 23,847 m

Step 7: Check for leases that are not capitalized..

- Lease commitments are debt and should be capitalized.
- To convert lease commitments to debt, discount the lease commitments at the pre-tax cost of debt to today.
- Add that value to the market value of interest bearing debt to get total debt outstanding.

Lease Debt at Aitken Spence

Year	Commitment	Present Value
1	Ó¿. 729.21	Ó¿. 651.98
2	Ó¿. 840.00	Ó¿. 671.49
3	Ó¿. 840.00	Ó¿. 600.37
4	Ó¿. 840.00	Ó¿. 536.78
5	Ó¿. 840.00	Ó¿. 479.93
6 and beyond	Ó¿. 817.84	Ó¿. 1,690.86
Debt Value of leases =		Ó¿. 4,631.41

Discounted at pre-tax cost of debt of 11.85%

4,089 m after year 5, treated as annuity of 817.84 m, each year for 5 years.

Step 8: Check for hybrids

- Convertible Debt: If you have convertible debt, try to break out the conversion option and the debt portions.
  - The simplest way to do this is to value the convertible debt, as if it were straight debt. That will give you the debt portion.
  - Subtracting put the debt portion from the market value of the convertible will give you the conversion option which is equity.
- Preferred Stock: Preferred stock, at least in the form it is issued in the US, comes with fixed dividends (making it more like debt) but those dividends are not tax deductible. Thus, it is best to keep preferred stock separate from debt and equity and make the preferred dividend yield, its cost.

Step 9: Estimate debt ratios

- Compute the market value of equity.
  - If it is a publicly traded company, it is the share price multiplied by number of shares outstanding.,
  - If it is a private company, you can apply an industry average PE to the earnings to get an estimated equity value.
- Compute debt to equity and debt to capital ratios:
  - Debt to Equity = Total Debt (from Step 7)/ Market Equity
  - Debt to capital = Total Debt (from Step 7)/ (Market Equity + Total Debt)

Estimate the debt ratio for Aitken Spence

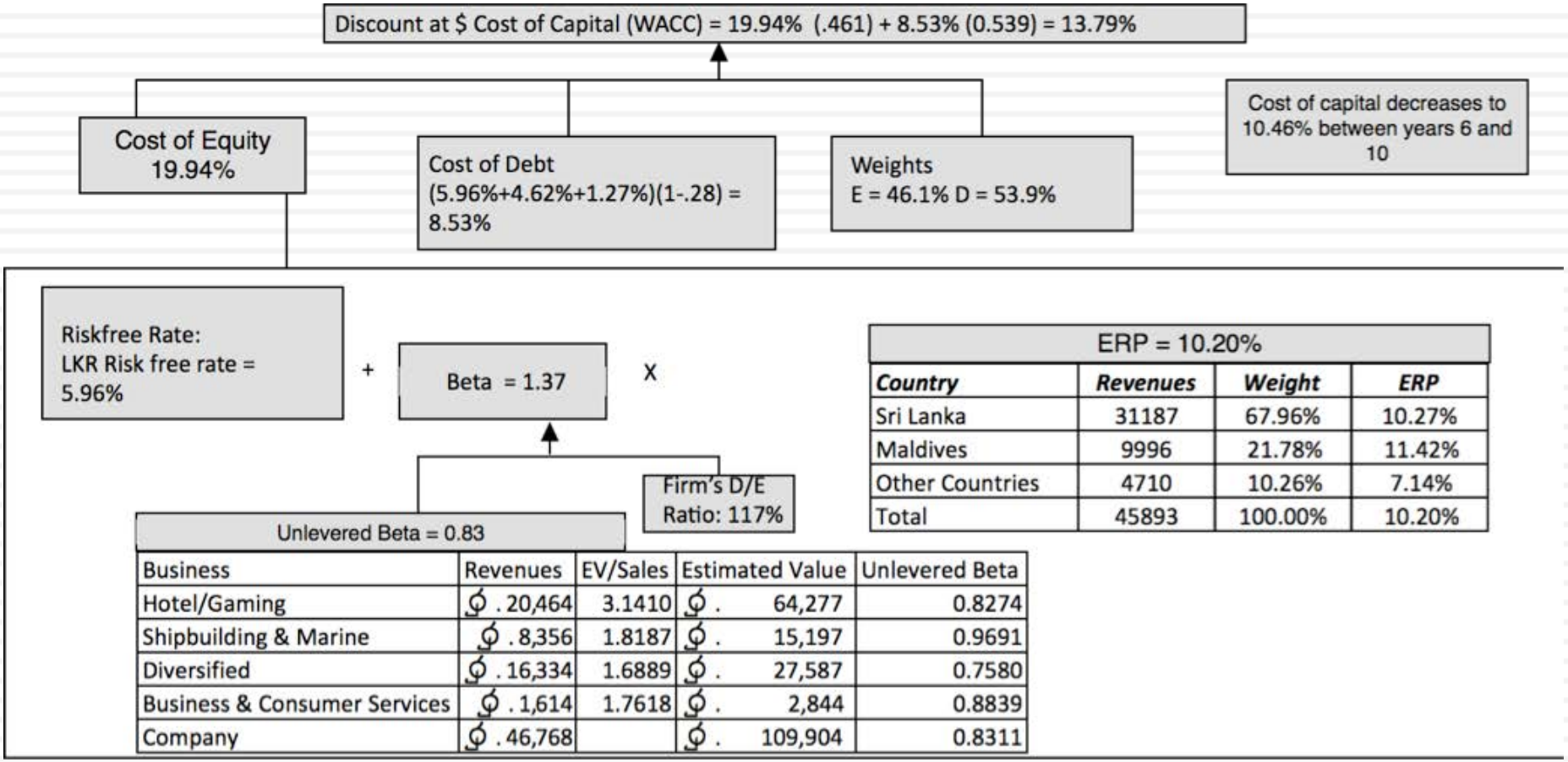
- Market Value of Equity
  - Share Price = 60
  - Number of shares = 405.70 million
  - Market Capitalization = 60 * 405.70 = 24,342 million
- Total Debt = 4,632 + 23,847= 28,479 m
- Debt Ratios
  - Debt/Equity = 28,479/24,342 = 117%
  - Debt/Capital = 28,479/(24,342+28,479) = 53.9%

Step 10: Estimate the cost of capital

- The cost of capital will be a weighted average of debt and equity with the costs of debt and equity, as inputs:
  - Cost of Capital = Cost of Equity (Equity/ (Debt + Equity)) + Pre-tax Cost of Debt (1 – tax rate) (Debt/ (Debt + Equity))
- If you are trying to estimate the cost of capital in a local currency and are concerned about the inconsistency of mixing local currency risk free rates with default spreads and ERP in US $, you should compute your cost of capital in US $ and then adjust for differential inflation:

$$\text{Local Currency Cost of Capital} = (1 + \text{US \$ Cost of Capital}) \frac{(1+\text{Inflation Rate in local currency})}{(1+\text{inflation Rate in US \$})} - 1$$

Cost of Capital for Aitken Spence



ERP = 10.20%			
Country	***Revenues***	***Weight***	***ERP***
Sri Lanka	31187	67.96%	10.27%
Maldives	9996	21.78%	11.42%
Other Countries	4710	10.26%	7.14%
Total	45893	100.00%	10.20%

Business	Revenues	EV/Sales	Estimated Value	Unlevered Beta
Hotel/Gaming	₲ . 20,464	3.1410	₲ . 64,277	0.8274
Shipbuilding & Marine	₲ . 8,356	1.8187	₲ . 15,197	0.9691
Diversified	₲ . 16,334	1.6889	₲ . 27,587	0.7580
Business & Consumer Services	₲ . 1,614	1.7618	₲ . 2,844	0.8839
Company	₲ . 46,768		₲ . 109,904	0.8311

Costs of Capital for divisions

- To estimate the cost of capital for use in an Aitkin Spence project, you would have to focus in on
  - What business the project is in
  - What country the project will be located in
  - Whether the project can carry its own debt
- You can then estimate the cost of capital for that project
  - In the currency of your choice
  - Using the unlevered beta of the business
  - The D/E and D/C ratio for the project, if it is self-standing, or the company (if it is not).
  - The ERP for the country where the project will be located
  - The cost of debt for the project, if it is self-standing, or the company (if it is not).