Effective Cost of Debt

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In class I will also introduce an optimization procedure that estimates the effective cost of debt. The optimization reflects a companies current default risk standing rather than the one it had when it actually borrowed the money. Thus, if a company was *Aaa* rated, when it borrowed money, but has now slide to *Baa* rating, we use the higher default spread associated with the latter in estimating its cost of debt.

First, students will learn how to estimate the cost of debt. To determine the cost of debt they must estimate the coverage ratio. The coverage ratio is a function of several variables:

- Debt rating
- Country specific default spread
- Risk-free rate
- Reported operating income
- Reported interest expense
- Reported depreciation
- Reported debt
- Weighted average maturity of the debt,
- Reported lease expense
- Reported lease commitments[1]
- Incorporate indirect bankruptcy costs

The debt rating is itself a function of the coverage ratio thus student will have to find the fixed point of the coverage ratio function. They can use a fixed point iteration to find the fixed point. That is, given an initial estimate x_0 of the coverage ratio, and a function $f(x)$ that computes the coverage ratio given the estimate (all other arguments are implicitly included in the function), they run the iteration $x_{i+1} = f(x_i)$ until convergence.

Once they have found the fixed point for the coverage ratio, they can recover the cost of debt as:

$$\text{Estimated Default Spread} + \text{Country Default Spread} + \text{Risk Free Rate}$$

where the "Estimated Default Spread" is estimated from the coverage ratio. The "Country Default Spread" and "Risk Free Rate" are fixed inputs.

[1] In 2019, both GAAP (FASB 842) and IFRS (IAS 16) came to their senses and required companies to treat all leases as debt, creating a significant change in balance sheet debt at many companies.