Principles of Finance

Erwan Morellec

Assignment 8

Instructions

- Assignments should be done in groups of 2 to 3 students.
- You should remain with the same group through the entire course.
- Submit on Moodle only one copy of solutions per group.
- For each assignment you can get a maximum of 100 points.
- All assignments turned in late will not be graded (zero points).

Due date

The due date is indicated on Moodle.

1. At the end of your master program you are hired by an investment bank. Your boss asks you to evaluate a firm using the DCF approach with the WACC. The historical market risk premium is 7.5%. The risk-free interest rate is 4%. The drop in EBIT is to apply to the EBIT the firm would have had without debt. If for example EBIT is 100 without debt, a firm with a leverage ratio between 40% and 45% would have an EBIT reduced by 13% that is EBIT = 87.

   Your assignment is the following.

   (a) Estimate the value of the firm if it sticks to the current capital structure. (50 points)

   (b) Determine the value-maximizing capital structure. (50 points)

   You have the following information.

Table 1: Data

	High growth	Transition	Stable growth
Length	5 years	5 years	Forever after 10 years
Tax rate	35%	35%	35%
ROC	20% ($\approx$ current level)	Declines linearly to 16%	Stable ROC of 16%
WC	10% of EBIT	10% of EBIT	10% of EBIT
Reinvestment rate	50% of after tax operating income; Depreciation is $700 and grows at the same rate as EBIT	Declines to 31.25% as ROC and growth rates drop; Reinvest. rate = g/ROC	31.25% of after tax operating profit
Growth rate in EBIT	Current EBIT =$5,840; Initial growth rate: ROC $\times$ Reinvest. rate = 20% $\times$ 0.5 = 10%	Linear decline to stable growth rate	5% based upon overall nominal econ. growth
Leverage	10%	10%	10%

Table 2: Process of rating

Leverage ratio (%)	Rating	Credit Spread*	Drop in EBIT
<5	AAA	0.35%	0.00%
5.00-10.0	AA	0.50%	0.00%
10.0-15.0	A+	0.70%	0.00%
15.0-20.0	A	0.85%	0.00%
20.0-25.0	A-	1.00%	0.00%
25.0-30.0	BBB	1.50%	5.00%
30.0-35.0	BB	2.50%	7.50%
35.0-40.0	B+	3.25%	10.00%
40.0-45.0	B	4.00%	13.00%
45.0-50.0	B-	6.00%	17.00%
50.0-55.0	CCC	8.00%	23.00%
55.0-60.0	CC	10.00%	30.00%
>60	D	20.00%	50.00%

*Risk premium on corporate debt over the risk-free rate.

Table 3: Comparable firms

Company	UST	Diageo	Trinicom
Domicile	Switzerland	Switzerland	Switzerland
Employees ('000)	37	40	137
Market cap	32,000	39,000	162,000
PE ratio	21.1×	17.7×	23.2×
Market/Book ratio	2.1	1.9	2.9
Leverage	25%	37%	19%
Equity Beta	1.18	1.37	1.26