2.3.2 Cost of Capital in Private Equity Situations Exercise and Answer

Unit: Unit 1 – Treasury Strategy

Module: Module 2 – Risk and return

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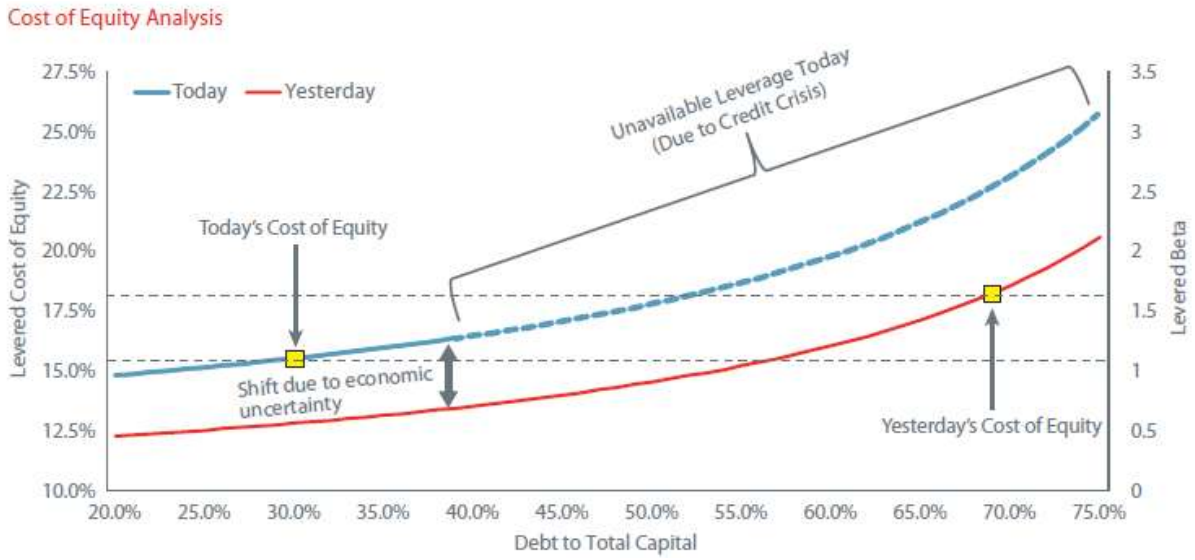
Summary: An exercise to investigate the use of inputs into the costs of capital in a practical and real context, private equity.

Keywords: private equity, cost of equity, ungeared beta, unlevered beta, CAPM, asset beta, Hamada formula

The following diagrams are taken from 2.3.1b Private equity insights – Duff & Phelps. The chart shows the cost of equity prior to the Global Financial Crisis was approximately 18.5% and in July 2009 (referred to herein as 'today') it was 15%.



Cost of Equity Analysis Assumptions

Yesterday	Today
Risk-Free Rate: 4.5%	Risk-Free Rate: 4.2%
Equity Risk Premium: 5.0%	Equity Risk Premium: 6.0%
Company Specific Premium: 2.0%	Company Specific Premium: 3.0%
Unlevered Beta: 1.0	Unlevered Beta: 1.1

Question 1

Calculate the cost of equity making whatever assumptions you deem necessary to see if you can replicate Duff & Phelps' outcomes. If your answers are different, why might this be?

Question 2

Why do you think the unlevered (un-geared) beta has risen since the Global Financial Crisis?

Answers

Answer 1

Interestingly Duff & Phelps include a Company Specific Premium which we have just added on to the CAPM cost of equity. The following tables show the relevant CAPM calculations, gearing up the asset beta using the Hamada formula. Note that we have calculated Ke for the full range of debt:equity ratios and highlighted the relevant one in yellow.

Cost of Equity (Ke) in private equity transactions (pre 2008 Global Financial Crisis)

Debt %	80%	70%	60%	50%	40%	30%	20%	10%	0%
Equity %	20%	30%	40%	50%	60%	70%	80%	90%	100%
Bu	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Tax	30%	30%	30%	30%	30%	30%	30%	30%	30%
Rf	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Rm - Rf	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Company Specific Risk Factor	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Bg	3.80	2.63	2.05	1.70	1.47	1.30	1.18	1.08	1.00
Ke	25.5%	19.7%	16.8%	15.0%	13.8%	13.0%	12.4%	11.9%	11.5%

Cost of Equity (Ke) in private equity transactions (Today - July 2009)

Debt %	80%	70%	60%	50%	40%	30%	20%	10%	0%
Equity %	20%	30%	40%	50%	60%	70%	80%	90%	100%
Bu	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Tax	28%	28%	28%	28%	28%	28%	28%	28%	28%
Rf	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Rm - Rf	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Company Specific Risk Factor	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Bg	4.27	2.95	2.29	1.89	1.63	1.44	1.30	1.19	1.10
Ke	32.8%	24.9%	20.9%	18.6%	17.0%	15.8%	15.0%	14.3%	13.8%

Some assumptions are also needed about tax rates. We used the UK headline rates. 30% before the Global Financial Crisis and 28% in 2009.

Our results are both higher than Duff & Phelps' numbers. The most likely explanation is that Duff & Phelps used a different method to gear up the asset beta, i.e. not Hamada.

Answer 2

Asset betas increased following the credit crunch as companies de-levered. Recall that the average equity beta is 1 and equity betas include the effect of leverage. Therefore if leverage is lower across the entire population, asset betas will increase.

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