4.6.6 Interest Rate Risk Exercise

Unit: Unit 1 – Treasury Strategy

Module: Module 4 – Financial risk

Date: 1 September 2013

Summary: An exercise in modelling interest rate risk.

Keywords: financial covenants, EBITDA, dividend policy, floating interest rates, interest rate swaps, value at risk

Spoonbender SA is a European multinational chain of restaurants operating throughout the euro zone. It offers a predominantly domestic cuisine choice in each country, but combines this with selected dishes from other countries. It has the brief financial characteristics for the current year shown in the table at the end of this document. The financial covenants are tested every six months on a six month basis, as follows:

Gross debt / EBITDA	Gross debt at period end / 6 month EBITDA X 2
Interest cover	6 month EBITDA / 6 month interest

EBITDA is stable and the dividend policy is broadly to pay out all free cash flow and so it can be assumed that net debt is broadly flat over the period.

Question 1

a) Calculate the probability that the interest cover covenant will be breached after two years if Spoonbender stays with totally floating interest rates.
b) Is it possible to reduce this risk by taking out interest rate swaps?

Student Notes: It is possible to answer the question with relatively straightforward mathematics from option / VaR theory and as set out in the readings in this module. However, it might be useful to plot a graph to help understand what is going on and to put the actual mathematics into context.

Modelling the introduction of fixed rates requires some fairly basic spreadsheet skills but the principles are not difficult. A model for the interest charge under different fixed / floating ratios and a graphical presentation of the risk is given in the accompanying exercise spreadsheet.

Question 2

Now suppose that the performance of Spoonbender actually changes according to interest rates. Let us suppose that for every 0.5% rise in interest rates, the EBITDA of Spoonbender rises by 5 and for every 0.5% fall in interest rates the EBITDA drops by 5, and this happens smoothly for all changes over the interest rate range. Calculate the approximate probability that the interest cover covenant will be breached after two years if Spoonbender stays with totally floating interest rates.

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Student Notes: The procedure to follow in this case is very similar to that in Question 1 but the solution will be more difficult to find because of the increase in number of variables. It is easier in this case to use the spreadsheet and ensuing graphics. The tab in the spreadsheet titled 'Variable EBITDA cone' does this for you.

Spoonbender SA		**Current year**
		EUR m
EBIT		35
Depreciation		5
Tax rate		23%
CAPEX (% Depreciation)		125
Debt		175
Cash		25
Dividend		18
Rating		BB pos
Margin on debt		4%
Covenants		
Gross debt / EBITDA		4.50
EBITDA / Interest		4.00
3 month rates	current	1.55%
5 year swap		3.00%
Interest rate volatility	all periods	20%

Income statement	EUR m
EBIT	35.0
Interest payable	(9.7)
Interest receivable	0.4
EBT	25.7
Tax	(5.9)
Earnings	19.8

Cash Flow	
EBIT	35.0
Depreciation	5.0
Capex	(6.3)
Interest	(9.3)
Tax	(5.9)
Dividends	(18.0)
Total	0.5
Gross debt / EBITDA	4.4
EBITDA / Interest	4.3

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