BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI - K. K. BIRLA GOA CAMPUS

First Semester 2022-23, Comprehensive Examination December, 2022

Business Analysis and Valuation (ECON F355)

(Answer all questions)

Examination Date: 22nd December, 2022. Duration: 3 HOURS Max Marks: 45

A. Each question carries 1 mark. (1* 5= 5 Marks)

1. As with other multiples, other things remaining equal, firms that trade at ------ multiples of revenues are viewed as cheap relative to firms that trade at high multiples of revenues. (low/high)
2. Other things remaining equal, both EV/EBIT and EV/EBIT (1-t) will----------- as the growth rate increases and the cost of capital decreases. (Increases/decreases).
3. We would expect firms with large Net Operating Loss and thus lower effective tax rates to trade at ------------- multiples of EBITDA or EBIT. (higher/lower).
4. The price–book value ratio is an increasing function of the -------and --------------.
5. You are considering acquiring a common stock that you would like to hold for one year. You expect to receive both $1.25 in dividends and $32 from the sale of the stock at the end of the year. The maximum price you would pay for the stock today is _____ if you wanted to earn a 10% return.

B. Each question carries 4 marks. (4* 5 = 20 Marks)

1. ACM Ltd. had a loss of 38.63 DM per share in 1995, partly because of restructuring charges in aerospace and partly because of troubles (hopefully temporary) at it automotive division. The book value of equity in 1995 was 20.25 billion DM. While the return on equity in 1995 period is negative, the five-year average (1988-1993) return on equity is 10.17%. The company reported capital expenditures of 10.35 billion DM in 1995 and depreciation of 9.7 billion DM. The company has traditionally financed its investment needs with 35% debt and 65% equity. The working capital requirements are about 2.5% of revenues. The revenues in 1995 is 104 billion DM. The stock had a beta of 1.10, relative to the Frankfurt DAX. The German long bond rate is 6%. The risk premium for the German market is 4.5%. In the long term, earnings are expected to grow at the same rate as the world economy (6.5%). There are 51.30 million shares outstanding. The stock was trading for 814 DM in February 1996. Give your recommendation.

2. You are a consultant who was hired to evaluate a new product line for Markum Enterprises. The upfront investment required to launch the product line is $10 million. The product will generate free cash flow of $7, 50,000 the first year, and this free cash flow is expected to grow at a rate of 4% per year. Markum has an equity cost of capital of 11.3%, a debt cost of capital of 5%, and a tax rate of 35%. Markum maintains a debt-equity ratio of 0.40.
a) What is the NPV of the new product line (including any tax shields from leverage)?
b) How much debt will Markum initially take on as a result of launching this product line?
c) How much of the product line's value is attributable to the present value of interest tax shields?

3. The following is a description of the cost structure and betas of five firms in the food production industry:

Company	*Fixed Costs*	*Variable Costs*	*Beta*	*D/(D+E)*
CPC International	62%	38%	1.23	18.83%
Ralston Purina	47%	53%	0.81	38.32%
Quaker Oats	45%	55%	0.75	13.28%
Chiquita	50%	50%	0.88	75.35%
Kellogg's	40%	60%	0.76	5.57%

(Assume that all firms have a tax rate of 40%.)
A. Based upon just the operating leverage, which firms would you expect to have the highest and lowest betas (assuming that they are in the same business)?
B. Chiquita's beta is believed to be misleading because its financial leverage has increased dramatically since the period when the beta was estimated. If the average D/(D+E) ratio during the period of the regression (to estimate the betas) was only 30%, what would your new estimate of Chiquita's beta be?

4. Merck & Company has 1.13 billion shares traded at a market value of $32 per share, and $1.918 billion in book value of outstanding debt (with an estimated market value of $2 billion). The equity has a book value of $5.5 billion, and the stock has a beta of 1.10 and market risk premium of 5.50%. The firm paid interest expenses of $160 million in the most recent financial year, is rated AAA and paid 35% of its income as taxes. The thirty-year government bond rate is 6.25%, and AAA bonds trade at a spread of twenty basis points (0.2%) over the treasury bond rate.
A. What are the market value and book value weights on debt and equity?
B. What is the cost of equity?
C. What is the after-tax cost of debt?
D. What is the cost of capital?

5. General Motors has 710 million shares trading at $55 per share and $69 billion in debt outstanding (with a market value of $65 billion), on which it incurred an interest expense of $5 billion in the most recent year. It also has $4 billion in preferred stock outstanding, trading at par, on which it paid a dividend of $365 million. The stock has a beta of 1.10, market risk premium of 5.50% and is rated A (which commands a spread of 1.25% over the treasury bond rate of 6.25%). The company faced a corporate tax rate of 40%.
A. What is the cost of equity for GM?
B. What is the after-tax cost of debt for GM?
C. What is the cost of preferred stock?
D. What is the cost of capital

C. Each question carries 10 marks. (10* 2 = 20 Marks)

1. The following are the details of two potential merger candidates, Andrews and Barnes.

	A	B
Revenues	$5,080	$3,800
Cost of Goods Sold (w/o Depreciation)	90 %	92 %
Depreciation	$250.00	$100.00
Tax Rate	30.00%	30.00%
Beta	1.0	1.0
Debt-to-capital ratio	12%	12%
Pretax cost of debt	5%	5%
Pretax return on capital	15%	15%
Reinvestment rate	55%	55%
Length of growth period	5 years	5 years

Note that both firms have the same cost of capital and expect the same growth in the future. The risk-free rate is 3.5% and the risk premium is 4.5%. Value the combined firm and synergy based on the assumption that the combined firm is expected to have a cost of goods sold of only 88% of total revenues.

2. On January 1, 2011 the shares of Shockwave were acquired for $0.8 billion. The net debt and tangible assets acquired approx. $0.4 billion and $ 0.5 billion respectively. The purchaser identified ABC Ltd. as the generic competitors in the B2B space and would like you to fair value Shockwave's material identifiable intangible assets for certain financial reporting and tax needs. Based on the below information, value the Shockwave using Generic operating margin approach.

	Shockwave	ABC
Revenues	42,000	2,050
Operating margin (after tax)	20%	12.00%
ROC (after-tax)	30.00%	20.00%
Cost of capital (Growth and stable period)	8.10%	11%
Tax-rate	40%	40%
Reinvestment rate	50%	50%
Length of high growth period	5 years	5 years
Growth rate in steady period	6.00%	6.00%

Sales-to-capital ratio at Shockwave's current level (1.50).