



**UNIVERSITY EXAMINATIONS: 2013/2014**

**EXAMINATION FOR THE MASTERS OF SCIENCE (MSC) IN COMMERCE**

**MSF 506 ADVANCED THEORY OF FINANCE (EVENING)**

**DATE: APRIL, 2014**

**TIME: 3 HOURS**

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**INSTRUCTIONS: Answer Question One and Any Other Three Questions**

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**QUESTION ONE (31 MARKS)**

**Reeby Sports**

Ten years ago, in 2001, George Reeby founded a small mail-order company selling high-quality sports equipment. Since those early days Reeby Sports has grown steadily and been consistently profitable. The company has issued 2 million shares, all of which are owned by George Reeby and his five children.

For some months George has been wondering whether the time has come to take the company public. This would allow him to cash in on part of his investment and would make it easier for the firm to raise capital should it wish to expand in the future.

But how much are the shares worth? George's first instinct is to look at the firm's balance sheet, which shows that the book value of the equity is \$26.34 million, or \$13.17 per share. A share price of \$13.17 would put the stock on a P/E ratio of 6.6. That is quite a bit lower than the 13.1 P/E ratio of Reeby's larger rival, Molly Sports.

George suspects that book value is not necessarily a good guide to a share's market value.

He thinks of his daughter Jenny, who works in an investment bank. She would undoubtedly know what the shares are worth. He decides to phone her after she finishes work that evening at 9 o'clock or before she starts the next day at 6.00 a.m.

Before phoning, George jots down some basic data on the company's profitability. After recovering from its early losses, the company has earned a return that is higher than its estimated 10% cost of capital. George is fairly confident that the company could continue to grow fairly steadily for the next six to eight years. In fact he feels that the company's growth has been somewhat held back in the last few years by the demands from two of the children for the company to make large dividend payments. Perhaps, if the company went public, it could hold back on dividends and plow more money back into the business.

There are some clouds on the horizon. Competition is increasing and only that morning Molly Sports announced plans to form a mail-order division. George is worried that beyond the next six or so years it might become difficult to find worthwhile investment opportunities.

George realizes that Jenny will need to know much more about the prospects for the business before she can put a final figure on the value of Reeby Sports, but he hopes that the information is sufficient for her to give a preliminary indication of the value of the shares

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Earnings per share, \$	-2.10	-0.70	0.23	0.81	1.10	1.30	1.52	1.64	2.00	2.03
Dividend, \$	0.00	0.00	0.00	0.20	0.20	0.30	0.30	0.60	0.60	0.80
Book value per share, \$	9.80	7.70	7.00	7.61	8.51	9.51	10.73	11.77	13.17	14.40
ROE, %	-27.10	-7.1	3.0	11.6	14.5	15.3	16.0	15.3	17.0	15.4

**Required:**

1. Help Jenny to forecast dividend payments for Reeby Sports and to estimate the value of the stock. You do not need to provide a single figure. For example, you may wish to calculate two figures, one on the assumption that the opportunity for further profitable investment is reduced in year 6 and another on the assumption that it is reduced in year 8. (21 Marks)
2. How much of your estimate of the value of Reeby's stock comes from the present value of growth opportunities (10 Marks)

## QUESTION TWO (23 MARKS)

Mark Harrywitz proposes to invest in two shares, X and Y. He expects a return of 12% from X and 8% from Y. The standard deviation of returns is 8% for X and 5% for Y. The coefficient between the returns is .2.

- a) Compute the expected return and standard deviation of the following portfolios: (8 Marks)

Portfolio	Percentage in X	Percentage in Y
1	50	50
2	25	75
3	75	25

- b) Sketch the set of portfolios composed of X and Y. (5 Marks)
- c) Suppose that Mr. Harrywitz can also borrow or lend at an interest rate of 5%. Show on your sketch how this alters his opportunities. Given that he can borrow or lend, what proportions of the common stock portfolio should be invested in X and Y? (10 Marks)

## QUESTION THREE (23 MARKS)

- a) Here is a limerick:

*There once was a man named Carruthers,  
Who kept cows with miraculous udders.  
He said, "Isn't this neat?  
They give cream from one teat,  
And skim milk from each of the others!"*

What is the analogy between Mr. Carruthers's cows and firms' financing decisions? What would MM's proposition 1, suitably adapted, say about the value of Mr. Carruthers's cows?

Explain. (8 Marks)

- b) Executive Cheese has issued debt with a market value of \$100 million and has outstanding 15 million shares with a market price of \$10 a share. It now announces that it intends to issue a further \$60 million of debt and to use the proceeds to buy back common stock. Debt holders, seeing the extra risk, mark the value of the existing debt down to \$70 million.
- (i) How is the market price of the stock affected by the announcement? (3 Marks)
- (ii) How many shares can the company buy back with the \$60 million of new debt that it issues? (3 Marks)
- (iii) What is the market value of the firm (equity plus debt) after the change in capital

- structure? (3Marks)
- (iv) What is the debt ratio after the change in structure? (3 Marks)
- (v) Who (if anyone) gains or losses? (3 Marks)

#### QUESTION FOUR (23 MARKS)

The Treasury bill rate is 4%, and the expected return on the market portfolio is 12%. Using the capital asset pricing model:

- (i) What is the risk premium on the market? (5 Marks)
- (ii) What is the required return on an investment with a beta of 1.5? (5 Marks)
- (iii) If an investment with a beta of .8 offers an expected return of 9.8%, does it have a positive NPV? (7 Marks)
- (iv) If the market expects a return of 11.2% from stock X, what is its beta? (6 Marks)

#### QUESTION FIVE (23 MARKS)

A company is considering two mutually exclusive options, option A and B. The cash flows for each would be as follows;

Year		Option A'	Option B
		Ksh.	Ksh.
0	Capital outlay	10,200	35,250
1	Net cash inflow	6,000	18,000
2	Net cash inflow	5,000	15,000
3	Net cash inflow	3,000	15,000
4	Net cash inflow	8,000	20,000

The company's required return is 20%. The board of directors of your company requests you to advise what project should be undertaken.

#### Required:

Calculate for each project:

- a) The payback period (PP) (6 Marks)
- b) The net present value (NPV) (6 Marks)
- c) The profitability index (PI) (6 Marks)
- d) Should the company invest in either the two proposals and if so, which is preferable? State why? (5 Marks)

### **QUESTION SIX (23 MARKS)**

- (i) An Indian company has ordered machinery from USA. The price of \$ 500,000 is payable after six months. The current exchange rate is Rs45.75/\$. At the current exchange rate, the company would need:  $45.75 \times 500,000 = \text{Rs } 22,875,000$ . But the company anticipates depreciation of Indian rupee over time. The cost to the company in Indian rupees will increase if rupee depreciates when payment is made after six months. What should the company do? (9 Marks)
- (ii) Discuss various methods of stock valuation and their limitations (14 Marks)