Answers 1.4 Finance
108 BB/BE/BF/BX
02 June 2004

Procedure for objections:

Objections to the closed test have to be deposited in the mailbox of the secretary's office of the Finance department (white mailbox outside of room 1.041) before 5pm on <u>Monday 07 June 2004</u>. Only typewritten objections will be considered. Clearly state the question and version of the test you made. Use 1 page per objection. Submitting by e-mail is not possible!

Objections to the open part exam are only possible during the inspection hour. The date and location of the inspection will be announced when the final results are available.

Version A /B

1/7	True	RWJ chapter 1, lecture 1.
2/8	True	RWJ chapter 1, page 12.
3/9	False	Perpetual life. RWJ chapter 1, page 14.
4/10	False	Taxed only as personal income to the partners. RWJ chapter 1, page 12.
5/11	True	Rappaport, page 2.
6/12	True	Rappaport, page 4 and Denis page 194.
7/13	False	It helps to solve. Rappaport, page 5 and lecture 1.
8/14	True	Denis, page 195
9/15	True	RWJ chapter 1, page 5.
10/1	True	Lecture 1.
11/2	False	Perfect contracts are difficult to write. Denis, page 196.
12/3	True	Denis, page 196
13/4	False	Should be granted stock options, but in a customized form. Economist.
14/5	False	Over-stated, as stock options were not treated as expenses. Economist.
15/6	True	As they were short of cash and stock prices generally exploded, this was a cheap way to motivate managers. Task 3, Economist and lecture 1.
16/16	True	RWJ chapter 3. Separation theorem.
17/17	True	RWJ chapter 3, page 47.
18/18	True	RWJ chapter 3, page 47.
19/19	True	*4 more years* has payback slightly under 2 years, *Kerry.com* slightly over 2 years. RWJ chapter 6.

20/20 True IRR project *4 more years*:

$$-€600,000 + €270,000 / (1 + r) + €350,000 / (1 + r)^2 + €300,000 / (1 + r)^3 = 0$$
$$IRR = r = 24.30\%$$

IRR of project *Kerry.com*

$$-€1,800,000 + €1,000,000 /(1 + r) + €700,000 / (1 + r)^2 + €900,000 / (1 + r)^3 = 0$$
$$IRR = r = 21.46\%$$

Based on the IRR rule, project *4 more years* should be chosen since it has a greater IRR.

21/21 True. $NPV_{4 \text{ more years}} = -€600,000 + €270,000 / 1.15 + €350,000 / 1.15^2 + €300,000 / 1.15^3 = €96,687.76$

$NPV_{kerry.com} = -€1,800,000 + €1,000,000 / 1.15 + €700,000 / 1.15^2 + €900,000 / 1.15^3 = €190,630.39$
Since $NPV_{kerry.com} > NPV_{4 \text{ more years}}$, choose project *Kerry.com*.

22/22 False C = 14,520.15, r=.05/4=0.0125. RWJ chapter 4

$$€900,000 = C\left[\frac{1}{0.0125} - \frac{1}{0.0125(1.0125)^{120}}\right]$$

23/23	True	$(1.0125^4) - 1 = 0.050945 \Rightarrow 0.051 = 5.1\%$. RWJ chapter 4 and lecture 2
24/24	False	As a % of par value. RWJ chapter 5, page 107.
25/25	False	Not necessarily, depends on risk appetite and survival. Lecture week 4.
26/26	True	Bodie, Kane & Marcus section 2.2, page 41.

27/27 True   The bonds pays 50/1000= 5%. It is traded at par so the market interest rate is also 5%. RWJ chapter 5 and lecture week 3.

28/28 True   RWJ chapter 5 and lecture week 3.

29/29 False You receive face value at maturity. RWJ chapter 5, page 103.

30/30 False It states they are related. RWJ chapter 5 appendix and lecture 3.

31/31 False Smaller = larger. RWJ chapter 5 appendix and lecture 3.

32/32 False Earnings do not represent cash. With NPV we use cash flows. RWJ chapter 6, pp 141.

33/33 True   RWJ chapter 6, lecture week 3.

34/34 True   RWJ chapter 7.

35/45 True   RWJ chapter 6, page 159.

36/46 False Useful for projects with unequal lives. RWJ chapter 7, page 184.

37/47 True   RWJ chapter 7, page 176.

38/48 True   Bodie, Kane & Marcus Section 1.5

39/49 True   Kane & Marcus Section 1.5

40/50 False Can be exercised anytime up to expiration date. RWJ chapter 22, page 612

41/35 False Becomes less valuable. RWJ chapter 22, page 614/615.

42/36 True   RWJ chapter 22, page 613.

43/37 False Option is a right, not obligation. RWJ chapter 22, page 613.

44/38 False They are the source of financial innovations. Kane & Marcus Section 1.4

45/39 True $r=div1/p + g$. $r=(2/50) + 7\%$. $r=11\%$. RWJ chapter 5, lecture 5.

46/40 True   RWJ chapter 5, page 118.

47/41 False RWJ chapter 5, page 118.

48/42 False $g=ROE *$ retention rate, $g=0.20 * ((300-150)/300)$, $g=0.10 = 10\%$. RWJ chapter 5 and lecture 5.

49/43 False Next years capital is $(1500*1.20)-150 = 1650$
              Next years profit is $1650*0.20=330$, Lecture week 5.

50/44 True   RWJ chapter 5, pp 121.

51/58 True   RWJ chapter 9, page 232.

52/59 True   RWJ chapter 10, and lecture 5.

53/60 True   RWJ chapter 10 and lecture 5.

54/61 False Beta measures market risk. RWJ chapter 10 and lecture 5.

55/62 False Can take any value. RWJ chapter 10.

56/63 True   RWJ chapter 13-2, and lecture 5.

57/64 True $\beta P = (0.5 + 1.0 + 1.5) / 3 = 1.0$. RWJ chapter 10, page 275.

58/65 False Even in the weak form it should not be effective. RWJ chapter 13, page344-345.

59/66 False CAPM states: $R_i = R_f + \beta(R_m - R_f) = 2 + 2 \times (12 - 2) = 22\%$. RWJ ch 10.

60/51 False Relationship between beta and return. RWJ chapter 10, lecture 5.

61/52 True   RWJ chapter 10, pp 275.

62/53 True   It is their sole reason of existence. Lecture 5.

63/54 False In the fixed-income, bond market. Lecture 5..

64/55 True   Can lead to quicker adjustment of prices, efficiency up. Kimman.

65/56 False He wanted to take the company apart and sell the parts to the higher bidders. Lecture week 6.

66/57 True   Lecture week 6.

Question 1: 20 points

Question 1a: 4 points

Rappaport states that shareholders are not so much interested in current profits, but more in the present value of all future dividends of the firm. They don't want short-term goals to override long-term company goals.

Question 1b: 8 points

a.   Bonding: writing contracts which specify what managers should do in well-defined situations. In reality this is impossible to do, since you have to specify all possible situations a manager may encounter. (2 points)

b.   Monitoring: Monitor the actions of management, with the understanding that they will be judged after the fact on the extent to which they maximize shareholder wealth (2 points). Who should monitor? The shareholders? There are two drawbacks:
    i.   The average shareholder lacks industry expertise. (1 point)
    ii.   The average shareholder does not have the proper incentive to do so, since he/she holds relatively small amounts of common stock in each of many different firms.
    Potential monitors might be: supervisory board, creditors, large shareholders, and competing management teams. (1 point)

c.   Incentive alignment: Both shareholders and management should benefit from an increase in the firm's common stock value. This might be established by paying the managers in call options. The risk is that managers will focus on short term goals, resulting in suboptimal shareholder value. (2 points).   *Article Denis, section 2.2*

Question 1c: 8 points (4 points for every example that is explained)

Incentive alignment: (p32/33)
"A high proportion of the total remuneration will be awarded through performance-related remuneration, with phased delivery over the short, medium and long term. For executive directors, approximately 80% of the total expected remuneration will be performance related." So total remuneration consists for 20% out of a fixed base pay and 80% is performance related.
"All medium and long term incentives are delivered in the form of Vodafone shares and options. Executive directors are required to comply with share ownership guidelines." On page 33 we see that the chief executive should build up a shareholding in the company of four times base salary over five years. Other executive directors should build up a shareholding of three times base salary over five years. The advantage of this policy is that both managers and shareholders want maximum shareholder value on a long term basis.

Monitoring: (Corporate Governance part)
Directors and organisation: There are six executive directors and a supervisory board (seven non-executive directors) in the company's board. All non-executive directors are considered to be fully independent. They regularly meet without executives present. When considered necessary, more formal training is provided to members of the board. This means that not only executives, but also non-executives will be able to perform their duties well.
Audit committee (p54):" … to monitor compliance with statutory and listing requirements for any exchange on which the company's shares are quoted …… without management being present. "
Company's articles of Association (p53): "every director who was elected or last re-elected at or before the annual general meeting held in the third calendar year before the current year shall automatically retire." Directors are elected at the company's annual general meeting. Furthermore: "..every director appointed to the Board since the last annual general meeting shall retire.". After a specified time period managers automatically retire. Then shareholders can re-elect those managers. This system gives shareholders the power to control who is part of the board.

Bonding managers contractually:
There are no contracts that specify how management should behave. One might mention the corporate code of ethics for senior financial officers.

Question 2: 25 points

Question 2a: 5 points

Dividend yield = Annual dividends per share/Price per share
Dividend yield = 1.6929p/130p = 1.3% (5 points)
Literature: RWJ - p. 44 & p. 114

Question 2b: 12 points

Vodafone has a dividend yield of 1.3% relatively low compared to the 3.89% achieved on average by the UK companies (4 points).

The book states that dividend yields are related to the market's perception of future growth prospects for firms. On page 118 (RWJ) students can find the following statement: *"Empirical evidences suggest that firms with high growth rates are likely to pay lower dividends".* With its relatively low dividend policy the student can conclude that Vodafone has many growth opportunities (4 points).

What is the mentioned reason? A firm with many growth opportunities would rather retain earnings and invest in positive projects to create future value than pay out their earnings as dividends. This can also be found on page 118 (RWJ). (4 points)

Question 2c: 8 points

Based on question b, Vodafone appears to you as an attractive stock with many growth opportunities. On page 5 of the annual report, the Chairman states the following: *"Your company's share price has, nevertheless, outperformed its peers in the telecommunications sector and the wider FTSE Index in the past year although, in the Board's view, it does not yet properly reflect the Company's performance and its prospects. I continue to hope that it will do so in the not too distant future".* You are completely convinced by the Chairman's expectations. You know that the share price should reflect the growth opportunities of the company. This is not yet the case. So you expect that the stock will rise in the coming months. (2 points)

You could take the following position. You could buy the call option (maturity 6 months) with a strike price of GBP1.5. This option is out of the money. You are expecting a strong rise in the share price and you want to maximize your profit. If you are prepared to take on some risks and you want to pay a lower premium, you choose for the option out of the money. You could also buy the call option (maturity 6 months) with a strike price of GBP1.3. This option is at the money. You still expect that the share price will rise but you are more prudent. Being risk averse has of course some cost and you will have to pay a higher premium (6 points)

Question 3: 25 points

Question 3a: 10 points

Number of shares outstanding * price (68,155,000,000* GBP 1.30 = GBP **88,601,500,000.00**) **(3 points)**

Current liabilities + long term liabilities (GBP 5,702,000,000.00+GBP 11,331,000,000.00 = GBP **19,033,000,000.00**) **(3 points)**

Total liabilities / market cap. (GBP 19,033,000,000.00/GBP 88,601,500,000.00 = **0.2148**) **(4 points)**

RWJ chapter 13, p. 354

Debt-Equity ratio, RWJ chapter 2, p. 35

Question 3b: 5 points

Take-overs were primarily **equity financed** (paid for with shares). The logic behind this is that you can see that there is a large amount of equity relative to debt. This means that equity is most likely to have been used to pay for all the (expensive) take-overs. **(5 points)**

Question 3c: 10 points

Use of too much debt is not desirable for two reasons:

1. The interest payment **reduce free cash flows**, which commonly results in lower dividend payments. **(5 points)**

2. Shareholders have a "**residual interest**" in a company. If a company goes bankrupt, creditors (bondholders, etc) get paid first. As the debt burden increases, so does the likelihood that shareholders end up empty-handed in case of bankruptcy. (**5 points)**

RWJ chapter 1, p. 15-16

Question 4: 20 points

A) 6 Points

The answer should of course be **HIGHER**, because the price of Vodafone is much more volatile compared to the FTSE 100 index. The line representing the FTSE 100 is much more stable, while the line representing the share price of Vodafone shows a more whimsical path.

Higher = 2 point
Explanation = 4 points

B) 6 Points

CAPM: Expected stock return $(\overline{R}) = R_F + \beta \times \left(\overline{R_M - R_F}\right)$ Page 273 RWJ 6 ed.

Beta = 0.75
$(\overline{R})$ = 3.75% + 0.75 x (13.25% - 3.75%) = 10.875 ~ **10.88%**

Beta = 1.25
$(\overline{R})$ = 3.75% + 1.25 x (13.25% - 3.75%) = 15.625 ~ **15.63%**

Depending on their answer to question "A", students can either choose a Beta of 0.75 or a Beta of 1.25.

6 points for the correct calculation. Only providing a number without the calculations = 3 points.

C) 8 Points

Treynor Measure = $\dfrac{\overline{R - R_F}}{\beta}$

Treynor Measure BT = $\dfrac{16.25 - 3.75}{1.45}$ = 8.62 ~ **8.62%**

Beta = 0.75
Treynor Measure Vodafone = $\dfrac{10.88 - 3.75}{0.75}$ = 9.506 ~ **9.51%**

Beta = 1.25
Treynor Measure Vodafone = $\dfrac{15.63 - 3.75}{1.25}$ = 9.504 ~ **9.50%**

Note: the answers for Vodafone in both cases should give the same result; the small difference is due to rounding.

From this you can conclude that investing in Vodafone results in the highest return per unit of risk. The higher return BT is offset by an increase in Beta (risk-return trade-off)

Correct calculations: 6 points
Correct interpretation: 2 points