Examination Paper, Solutions and Examiner's Report

Paper:
Corporate Finance & Funding
Fast Track

October 2011

SECTION A – Answer ONE COMPULSORY question

QUESTION 1

The top executives of Wolfe plc are entitled to bonuses based upon their delivering a minimum level of earnings of 30 pence per share. As the executive remuneration contracts are shortly due for renewal, the performance of Wolfe plc over the last three years is being reviewed, and the possibility of introducing the use of a shareholder value measure such as MVA is being considered.

The company's treasury manager has recently been head-hunted from another firm in the same industry called Hawke plc, which has a much less generous remuneration scheme. He believes that the bonus terms currently being offered are excessive, because the performance of Wolfe plc does not really compare well with that of Hawke plc.

Others on Wolfe's management team do not agree, pointing out that Wolfe plc's EPS figures are significantly higher than Hawke plc's, and the MVA is more than twice the level of that achieved by Hawke plc. The treasury manager is not convinced by this reasoning, and plans to submit a comparative analysis of the performance of both companies for the year just ended, with particular emphasis on the extent to which each of the companies is delivering shareholder value.

The summarised financial accounts of the two companies for the year just ended, together with other relevant information, are presented below:

(£ millions)

Year ended 31st December	Wolfe plc			Hawke plc		
	2008	2009	2010	2008	2009	2010
INCOME STATEMENT						
Revenue (Turnover)	3150.0	3240.0	3460.0	520.0	720.0	850.0
Operating Profit	168.0	172.0	180.0	32.0	50.0	68.0
Finance costs	0.0	0.0	0.0	2.0	3.0	2.0
Profit Before Tax	168.0	172.0	180.0	30.0	47.0	66.0
Taxation	47.0	48.2	50.4	8.4	13.2	18.5
Profit for the year	121.0	123.8	129.6	21.6	33.8	47.5
Dividends	48.4	46.3	35.6	5.4	12.2	19.0
Retained Earnings	72.6	77.5	94.0	16.2	21.6	28.5
BALANCE SHEET						
Current Assets	660.0	843.5	1011.5	65.0	85.6	99.1
Non-current Assets	70.0	54.0	40.0	120.0	143.0	150.0
Total Assets	**730.0**	**897.5**	**1051.5**	**185.0**	**228.6**	**249.1**
Current Liabilities	250.0	340.0	400.0	24.0	26.0	28.0
Long Term Loans	0.0	0.0	0.0	40.0	60.0	50.0
Equity						
- Share Capital (50p shares)	200.0	200.0	200.0	100.0	100.0	100.0
- Retained Earnings/Reserves	280.0	357.5	451.5	21.0	42.6	71.1
Total liabilities & equity	**730.0**	**897.5**	**1051.5**	**185.0**	**228.6**	**249.1**

The market price of a Wolfe plc share has grown from 518 pence at the start of 2008 to 600 pence by the end of 2010. The market price of a Hawke plc share has grown from 280 pence at the start of 2008 to 500 pence by the end of 2010.

Required:

(a)   Perform the following calculations:

(i)   The EPS figures of the two companies for each of the three years.

(ii)   The Total Shareholder Return (TSR) of each company for the three- year period 2008-2010.

(iii) The MVA of each of company as at the end of 2010.

(iv) The Market to Book Ratio (MBR) of each company as at the end of 2010.

(10 marks)

(b)   Comment on your results and, in the context of the case in question, discuss whether and to what extent TSR, MVA and MBR are superior to EPS as measures of managerial performance.

(10 marks)

(Total 20 marks)

SECTION B – Answer **TWO** questions out of three

QUESTION 2

Flot Limited is an all-equity financed company with 50 million shares in issue. The company proposes to obtain a quotation on the London Stock Exchange and raise additional share capital for a net amount of £24 million after administration and issue costs through an initial public offering of ordinary shares. Administration and issue costs are expected to be 4% of the gross receipts from the offer for sale.

The amount of £24 million will be invested in new projects that are expected to increase the company's post-tax distributable earnings to £12.5 million in the first year after flotation. Flot Limited wishes to estimate the number of shares it should issue to raise the new capital of £24 million, and the price at which the shares should be issued.

For the share issue to be successful the company has been advised that it should make the issue at a discount of 25% on whatever share price is estimated by means of comparison with an appropriate quoted company in the same industry having a similar level of gearing. The most appropriate quoted company for this purpose is considered to be Wik plc, which is also all-equity financed, and earned a return on equity of 20% in the year just completed.

Flot plc intended to use the last available P/E ratio of Wik plc as the appropriate multiple for estimating the value of its equity, but the company's financial advisers have suggested it would be preferable to use a more complete model for computing the expected P/E ratio of Wik plc instead of using the historical one. A more complete P/E model could be obtained by dividing both sides of the dividend growth model by the expected after-tax earnings. Wik plc is expected to continue with its policy of paying out 60% of its after-tax earnings.

The current annual effective yield on Treasury bills is approximately 2.5%, and the average market rate of return is 7.5% per annum. The beta of the market is 37.5% less than the beta of Wik plc.

Required:

(a) **On the basis of the information provided, calculate the approximate market value of Flot plc.**

(7 marks)

(b) **Explain the advantages of using a mathematical model to estimate an expected P/E ratio as the appropriate multiple for valuing a firm, instead of using the historical P/E ratio.**

(2 marks)

(c) **Using the market value you arrived at in part (a), discounted by 25 percent, calculate the approximate number of shares that Flot plc should issue to raise the required new capital, the approximate price at which they should be issued, and the new estimated P/E ratio.**

(6 marks)

(Total 15 marks)

QUESTION 3

Hash plc requires funding of USD 100 million for a period of 15 years. A consortium of banks has offered a term loan of USD 100 million, to be repaid in equal half-yearly instalments of USD 4.9 million over 15 years. The proposed documentation for the term loan includes both a margin protection clause and a loan transferability (through novation) clause.

The treasury manager of Hash plc is unhappy about the loan transferability clause and is instead considering the possibility of issuing international bonds with a face value of USD 100 each and paying an annual coupon at the rate of 4¼%. The lead managers to the prospective international bond issue have suggested that the company would be able to issue the international bonds at a yield that would be at least 25 basis points less than the effective annual rate of interest implied in the bank term loan.

Required:

(a) **Calculate the effective annual rate of interest implied in the term loan offered by the consortium of banks.**

(4 marks)

(b) **If the international bonds were issued at a yield that is 25 basis points less than the effective annual yield on the term loan, at approximately what price (in round dollars) would the bonds be issued, and approximately how many bonds would need to be issued to raise the required funds?**

(4 marks)

(c) **Explain the meaning of the margin protection clause, the rationale for its inclusion in loan documentation, and the precautions that a treasurer might take to mitigate the adverse impact of such a clause.**

(7 marks)

(Total 15 marks)

QUESTION 4

The treasurer of Misbah plc expects that delays in collecting receivables will cause a liquidity problem that is expected to last for approximately 6 months. The company wishes to raise a net amount of at least EUR 20 million of short-term funds to meet the situation, and is considering the following alternatives:

(i) A 180-day line of credit from the company's bankers at an interest rate of 5.5 % per annum, with an accompanying requirement that, for the duration of the loan, a minimum balance of 20 % of the loan amount should be maintained in the company's non-interest-bearing current account with the bank.

(ii) Factoring its accounts receivable. The factor would advance 82% of the value of Misbah's invoices, *less* the front-ended recovery of a monthly fee of 1.2% of turnover. The rest of the value of the invoices would be paid by the factor immediately on receiving the amounts from Misbah's debtors, after deducting interest charges at 7% per annum (ACT/365 basis) on the net amount of the factor's advance. On average, the debtors tend to make payment at the end of the month following the sale. Misbah's monthly sales are expected to be EUR 25 million. The use of the factor is likely to reduce Misbah's debt administration costs by EUR 300,000 per month.

Misbah plc's managing director is concerned that factoring the receivables may convey a negative signal to customers about the company's financial position. He has therefore suggested the use of confidential invoice discounting instead.

Misbah plc's founder and chairman would personally prefer that the company use Islamic finance, and has asked the treasurer whether there is any Islamic finance product that could be used to raise cash to meet a short-term financing requirement.

Misbah plc's non-executive director has suggested that other companies have found securitisation to be the most favourable route, particularly with regard to the impact on the balance sheet.

Required:

(a) Evaluate whether it would be more cost-effective for Misbah plc to factor its receivables or make use the 180-day line of credit by estimating the Effective Annual Rate of each of the alternatives on an ACT/365 basis. (Measure a month as 1/12 of a year).

(8 marks)

(b) Describe the features of confidential invoice discounting that are significantly different from a factoring arrangement?

(4 marks)

(c) Identify and describe an Islamic finance product that provides the user with cash rather than real assets at the end of the transaction.

(3 marks)

(Total 15 marks)

FORMULAE

$$\text{Annuity Factor}_{r\%,n\,periods} = \frac{1}{r} \times \left[1 - \frac{1}{(1+r)^n} \right]$$

$$r_j = k_E = r_f + \beta \times (r_m - r_f)$$

$$\beta_j = \frac{\text{Covariance of security with the market}}{\text{Variance of the market}}$$

or

$$\beta_j = \text{correlation of security with the market} \times \frac{\text{standard deviation of security}}{\text{standard deviation of market}}$$

$$\beta_a = \beta_e \frac{E}{E + D(1 - T_c)} + \beta_d \frac{D(1 - T_c)}{E + D(1 - T_c)}$$

$$WACC_G = k_{EU} \times \left(1 - \frac{D \times Tc}{E + D} \right)$$

$$P_0 = \frac{d_1}{[k_E - g]}$$

CertCFF

Suggest Solutions for October 2011

QUESTION 1

a) EPS:

	Wolfe			Hawke		
	2008	**2009**	**2010**	**2008**	**2009**	**2010**
Earnings (£m)	121.0	123.8	129.6	21.6	33.8	47.5
No. of shares (m)	400.0	400.0	400.0	200.0	200.0	200.0
Earnings per share (p)	30.25p	30.95p	32.40p	10.80p	16.90p	23.75p

TSR

(£m)	Opening Market Value	2008 Dividend	2009 Dividend	2010 Dividend + 2010 Market Value
Wolfe plc	(2072.0)	48.4	46.3	2435.6

Try 10%:

$$-2072 + \frac{48.4}{1.10} + \frac{46.3}{1.10^2} + \frac{2435.6}{1.10^3} = -159.83$$

Try 5%:

$$-2072 + \frac{48.4}{1.05} + \frac{46.3}{1.05^2} + \frac{2435.6}{1.05^3} = 120.05$$

Using interpolation:

$$TSR = 5 + \left[\frac{120.05}{120.05 - (-159.83)} \times (10 - 5) \right] = 7.14\% \ (approx)$$

(£m)	Opening Market Value	2008 Dividend	2009 Dividend	2010 Dividend + 2010 Market Value
Hawke plc	(560.0)	5.4	12.2	1019.0

Try 20%:

$$-560 + \frac{5.4}{1.20} + \frac{12.2}{1.20^2} + \frac{1019.0}{1.20^3} = 42.67$$

Try 25%:

$$-560 + \frac{5.4}{1.25} + \frac{12.2}{1.25^2} + \frac{1019.0}{1.25^3} = -26.14$$

Using interpolation:

$$TSR = 20 + \left[\frac{42.67}{42.67 - (-26.14)} \times (25 - 20)\right] = 23.1\% \ (approx)$$

MVA and MBR as at 2010

	Wolfe	Hawke
Market Value of equity	6 x 400m = £2400m	5.00 x 200m = £1000m
Book Value of equity	200 + 451.5 = £651.5m	100 + 71.1 = £171.1m
MVA	£1748.5m	£828.9m
MBR	3.68	5.84

b)   Hawke's TSR is three times greater than Wolfe's, indicating that it is delivering greater shareholder value even though its EPS and MVA are much lower.

The lower MVA is only because Hawke plc is a smaller company, and the absolute MVA measure is subject to size distortion.

The MBR, which is similar to MVA, shows that Hawke has delivered greater shareholder value in relative terms.

The EPS figure is influenced by the capital investment and the number of shares in issue. Although Hawke's EPS is lower, closer examination shows that Wolfe's EPS has increased by $\sqrt{(32.40/30.25)} - 1 = 3.5\%$ per year over the period, whereas Hawke's EPS has increased by $\sqrt{(23.75/10.80)} - 1 = 48.3\%$ per year over the same period.

EPS uses accounting numbers, which are subject to distortions and manipulations – if Wolfe's executives are entitled to bonuses based on achieving a minimum EPS they may be encouraged to massage the figures and discouraged from issuing new equity for growth. The lack of growth is indicated by Wolfe's turnover, which is relatively stagnant compared to Hawke's (annual average sales growth of Wolfe between 2008 and 2010 is only 4.8% compared to 27.9% for Hawke).

TSR does not have the above problem because it measures the capital gain based on market prices rather than accounting numbers, and is not dependent

on the number of shares in issue or the size of the capital base. MVA and MBR try to capture the extra value added to the firm over and above the capital invested by the providers of finance; hence they also look at market value. However, they still use book value to compare the market value with – the validity of this figure of 'capital invested' is questionable.

EPS does not take account of the time value of money. As an internal rate of return calculation, TSR does take account of the time value of money. MVA, however, does not give any indication of the rate of return.

EPS does not take account of the level of risk at which the earnings are achieved – an increase in earnings would be value-destroying if achieved at an unacceptable level of risk. TSR by itself does not take account of risk either - when comparing the TSR of different firms, it is necessary to take account of differing levels of risk. Since both companies are in the same industry, this may not be an important factor.

However, Wolfe has a lower level of gearing which may make its earnings more volatile, therefore justifying a slightly lower TSR – however, probably not one that is lower by so much.

The time period over which the TSR is calculated can make a significant difference - a short-term TSR over a period of just three years may not be appropriate as a performance measure as it may reward short-termism.

MVA and MBR also do not indicate when and over what time period the value was created – the rate of return depends on the time period over which the value was created. Also, current management ought not to be rewarded for market value that was added before their tenure.

Measures of shareholder value creation like TSR, MVA and MBR depend on markets being efficient – if markets are inefficient the share price may not provide a true indication of intrinsic value. They also depend on the stock market being in equilibrium – stock market volatility can heavily influence these measures. Also, they cannot be used for unquoted companies.

QUESTION 2

a)   The expected earnings of Flot plc are to be multiplied by the expected P/E ratio of Wik plc. Dividing both sides of the Dividend Growth Model by the expected earnings gives the expected P/E:

$$\frac{P_0}{E_1} = \frac{D_1/(k_e - g)}{E_1} = \frac{D_1}{E_1(k_e - g)} = \frac{D_1/E_1}{k_e - g}$$

D_1/E_1 is the expected payout ratio of Wik plc, i.e. 60% or 0.60.

Wik plc's ROE is 20%, and its retention ratio is 1- 0.60 = 0.40. Therefore the growth rate 'g' is 0.20 x 0.40 = 0.08 or 8%.

The market beta is 37.5% less than the beta of Wik plc, therefore Wik plc's beta is:

1/(1-0.375) = 1.6.

Therefore Wik plc's cost of equity 'k_E' is 2.5 + (7.5 − 2.5)1.6 = 10.5%.

$$\frac{D_1/E_1}{k_e - g} = \frac{0.60}{0.105 - 0.08} = 24$$

The new investment of £24 million is expected to increase the earnings of Flot Limited to £12.5 million from the first year onwards. Using the above P/E multiple of 24, the value of Flot Limited is:

12.5 x 24 = £300 million.

b) Using a mathematical model for estimating the expected P/E ratio instead of using the historical P/E ratio has the following benefits :

- It is forward-looking rather than backward-looking.
- It explicitly takes account of risk as reflected in the cost of equity, and growth projections as reflected in the estimated growth rate, making it possible to test these assumptions.
  [Other valid points are acceptable]

c)   The valuation is on the basis of the increased earnings resulting from investment of the fresh capital of £24 million. The fresh capital of £24 million is therefore *already included* in the value of the firm, and should not again be added.

The valuation is £300 million. After the discount of 25%, this would become £225m.

The company currently has 50 million shares in issue.

The value of the company should be
= [Old shares (O) + New shares (N)] x Issue Price (P);
i.e.: £225m = (50m + N) x P - (1)

To raise £24m with issue costs amounting to 4% of the gross proceeds, the gross proceeds would require to be: £24m ÷ 0.96 = £25 million
Therefore 25m = N x P, or P = 25m ÷ N - (2)

Substituting equation (2) in equation (1):
225   = (50 + N) x 25/N   ∴225N = 1250 + 25N
∴ 225N – 25N = 1250   ∴ 200N = 1250
∴ N = 1250 ÷ 200 = **6.25 million shares**
Therefore P = 25 ÷ 6.25   = **400 pence**
EPS = £12.5m ÷ (50m +6.25m) shares = 22.22 pence
∴P/E ratio = 400 ÷ 22.22 = **18**

QUESTION 3

a) The discounted value of the 30 repayments of $4.9 million are equal to the loan amount of $100 million:

$4.9 \times PVAF_{r\%,30} = 100$ or $(4.9 \times PVAF_{r\%,30}) - 100 = 0$
Trying a half-yearly rate of 3%, $PVAF_{3\%,30} = 19.6004$
$(4.9 \times 19.6004) - 100 = -3.96$
Trying a half-yearly rate of 2.5%, $PVAF_{2.5\%,30} = 20.9303$
$(4.9 \times 20.9303) - 100 = 2.56$
Using interpolation:

$$\text{Half} - \text{yearly yield} = 2.5 + \left[\frac{2.56}{2.56 - (-3.96)} \times (3 - 2.5)\right] = 2.7\% \ (approx)$$

Effective annual rate of interest = $1.027^2 - 1 = 5.47\%$ *(approx)*

b) If the 4¼% bonds are issued at a yield that is 25 basis points less, the yield would be 5.22%.

$PVAF_{5.22\%,15} = 10.2270$
$(4.25 \times 10.2270) + (100 \div 1.0522^{15}) = USD\ 90$ *(approx)*
The company would need to issue $100/90 = 1.111$ million bonds

c) *Margin protection*
This clause, commonly referred to as the 'Increased Costs' clause, requires the borrower to indemnify the lender should the latter suffer any increased cost or loss as a result of a change in legal or regulatory requirements.

Rationale:
The margin over cost of funds is priced to take into account the credit risk of the borrower, but not the risk of other changes in circumstance – e.g. any change in law or regulation or its interpretation. As increased costs to the lender in maintaining or funding the loan will result in erosion of the margin, an increased costs clause is introduced in the loan agreement to pass on these extra costs to the borrower.

> *Precautions:*
> - Limit clause to changes in laws or directives occurring after the date of the facility;
> - Exclude taxes on overall income of lender;
> - Include the right to prepay the loan;
> - Require that notification of any increased costs by the lender should be made promptly within, say, 30 days of the lender becoming aware of it;
> - Require that the lender must take any possible mitigating action, such as a change of lending office;
> - Require that any changes in lender's circumstances that result in increased costs should not give rise to increased liability for the borrower;
> - Exclude costs (e.g. those arising from legislation that was known to be in the pipeline) that ought to have been anticipated and predicted and therefore already included in the margin.

QUESTION 4

a) Line of credit
Since 20% of the amount borrowed has to be kept as a compensating balance, to obtain net funding of EUR 20 million a loan of 20/(1 − 0.20) = EUR 25 million has to be obtained.

Interest paid on EUR 25 million at 5.5% p.a. for 180 days = (25 x 0.055) x 180/360 = EUR 0.6875 million.

Since the effective amount of funding obtained is only EUR 20 million, the effective cost is $[(0.6875/20) + 1]^{(365/180)} - 1 = 7.094\%$ per annum.

Factoring	EUR m
Factor's gross advance = .82 x EUR 25,000,000	20.500
Less: Monthly fee = 1.2% x EUR 25 million	0.300
Net advance	20.200
Savings in administration cost	0.300
Net increase in cash flow through factoring	20.500
Repayment of gross advance each month	20.500
Interest charges 7% on EUR 20.2m for one month	0.118
Net amount repayable each month	20.618

Monthly yield = (20.618/20.500) - 1 = 0.005756 per month.

AER = $1.005756^{12} - 1 = 7.13\%$ per annum.

The line of credit would be the cheaper alternative.

b)   A good answer would bring out the following features of confidential invoice discounting that are *different* from a factoring arrangement:

- Management of the sales and receivables ledgers remains with the borrower.
- Where the invoices have been sold by the client company, it effectively acts as the undisclosed agent for the discounter – although the mechanism of collection is usually controlled by the discounter, to whom the proceeds belong.
- Invoices are sold to the discounter on a with recourse basis, whereas most factoring arrangements are without recourse to the seller.
- Sometimes the invoices may not be sold at all, but simply offered as security for a loan facility.

c)   Tawarruq, which is also known as Reverse Murabaha or Monetization, is the Islamic finance instrument that is used to obtain cash immediately.

It is similar to the standard Murabaha structure, but with an extra leg. The standard part of the structure involves the Bank buying the commodity from a goods supplier and selling it on to its customer on a deferred payment basis. The extra step involves the customer selling on the commodity (usually back to the original goods supplier) against immediate cash payment – the customer is thus left with cash in hand and a deferred payment liability to the bank. In addition to credit risk on the customer, the bank also takes on asset risk and third party risk of the supplier of the goods reneging on the agreement.

Examiner's Report

Certificate in Corporate Finance – Fast Track and Funding October 2011

General

There were 61 scripts, of which 28 received a pass mark, giving an overall pass rate of 45.9%. The relatively poor performance was mainly due to the inability of many candidates to deal with two of the non-compulsory questions.

QUESTION 1 (Compulsory)

The compulsory question was generally well answered and had a high pass rate. Most candidates were able to correctly compute EPS and comment on its limitations. Many candidates were also able to successfully attempt the MVA and MBR calculations and comment on their usefulness. What pulled down the pass rate was the TSR calculation, which most candidates struggled with. Many candidates lacked knowledge of the calculation required.

QUESTION 2

This question was the least popular and had the lowest pass rate. It was one of the two questions responsible for the poor overall performance in this diet. The question required valuation of a firm, using a modified P/E model which is fully explained in the manual. The question also gave clear guidance, indicating that the model should be derived by dividing the dividend growth model by the expected after-tax earnings. However, most candidates struggled because the question (which closely followed the format of the example provided in the manual) did not provide any information about the amount of dividend. Candidates who were unfamiliar with the technique did not realize that, when both sides of the dividend model are divided by the expected earnings, one side will be P_0/E_1 and the other side could be written as $(D_1/E_1)/(k_e\text{-}g)$. When written in this way the numerator of the right side is the expected payout ratio (which was given in the question), and no dividend amount is required. Candidates who did not realize this struggled to complete the question. Even those who did realize it still tended to make mistakes in proceeding further with what was essentially a straightforward calculation.

Many candidates were also unable to find the correct company beta using the information provided - which simply stated that "the beta of the market is 37.5% less than the beta of Wik plc". Candidates who knew that the beta of the market must be 1 were often then unable to make the further calculation, i.e. 1/0.625 = 1.6.

Given the valuation figure arrived at by the candidate (which, in most cases, was very far off the expected answer), full marks were available for using their own valuation to correctly estimate the number of new shares required to be issued

and the approximate issue price. This is not as straightforward a calculation as it seems, because the discounted value of the firm should be set to equal the total number of shares multiplied by the share price – both of which are unknown. Few candidates were able to perform the elementary algebraic calculation required to produce an accurate answer. Many candidates made errors at the first step of estimating the gross value of share issue required to raise a net amount of £24m after issue costs amounting to 4% of the gross proceeds.

QUESTION 3

This was the most popular question, probably because more than half the marks were for narrative answers. However, the first part of the question – requiring calculation of the effective annual rate of interest on a term loan repayable in equal half-yearly instalments – was very poorly attempted by many candidates. The mistakes varied from the most basic (simply adding up the total repayments and dividing by the number of years to get the interest rate per year) to more complex but equally inappropriate answers.

Candidates were asked to use the EAR calculated in the first part to estimate the issue price of a bond issue, and the number of bonds to be issued. This part was successfully attempted by many candidates (those who made mistakes in the first part were given full credit for arriving at a correct answer given their earlier error).

Quite a few candidates were unaware of the meaning of the margin protection clause, although this is covered in detail in the manual. It was commonly mistaken for the Spens clause.

QUESTION 4

The final question had the second-lowest pass rate. Calculation of the effective annual rate on a line of credit was reasonably well attempted by some candidates – others struggled with the first step of estimating the effective loan amount if a minimum balance of 20% of the loan amount is to be maintained. The calculation of the effective cost of factoring caused the most difficulty despite the question closely following the example provided in the manual.

There was some knowledge of confidential invoice discounting, but the majority of candidates were unaware of the Islamic finance product (Tawarruq) which can be used to obtain immediate cash.