

SUBJECT NO 16J

CORPORATE FINANCIAL MANAGEMENT PILOT PAPER

SUGGESTED ANSWERS

SECTION A

1. (a) According to the efficient markets hypothesis, prices in securities markets rationally reflect relevant information concerning the securities that are traded in it. They do this in different ways depending on the different versions of the hypothesis. The strong form states that all relevant information, published and unpublished, is taken into account. The semi-strong form states that prices reflect all published information. The weak form states that only past price information is reflected. The main implications for the Financial Manager are:
 - (i) Since share prices react rationally to new information, a firm's share price cannot be boosted through creative accounting practices except, perhaps, in the very short run.
 - (ii) Since the market values the firm's share in a rational way, the market price of the share can be treated as reliable; it would therefore be misleading to take decisions on the premise that a firm's share is under-valued (or over-valued). This has important implications for financial decision-making in areas like pricing of share issues and determining bid prices for mergers and acquisitions - unless the Financial Manager is in possession of inside information, (a) the timing of share issues is unimportant, and (b) the market price can be treated as a reliable benchmark for fixing the bid price for an acquisition.
 - (iii) Managers are expected to maximise shareholder wealth, one of the main mechanisms for which is increases in the share price. Market efficiency implies that if managers make decisions that are likely to increase the value of the firm, and release information on their actions, shareholders will benefit from these decisions through share price increases.
 - (iv) Given the rationality of the secondary capital market, it is reasonable to attempt to value an unquoted share by reference to the market price of a quoted share of similar type and risk.
- (b) An offer for sale refers to the situation where a company sells shares to the public. The company is advised by an issuing house, which endorses the sale. The work involved in managing the issue, such as advertising, publication of the prospectus and receiving and dealing with applications for shares from the public, is done by the issuing house, which is usually a merchant bank specialising in such work.

In a rights issue the shares are offered only to the company's existing shareholders (in proportion to their shareholdings), rather than to the general public or any outsider. The existing shareholders are given the "pre-emptive right" to buy the new shares, which are issued at a price lower than the current market price. This entitlement means that existing shareholders can avoid their ownership rights, including voting rights and earnings, being diluted. Shareholders who do not wish to take up the rights offer can sell the rights in the market. Alternatively, they can usually wait for the company to sell the new shares to which they are entitled in the market after the rights issue has taken place, and pay them any surplus over the rights price.

A tender offer involves calling for tenders from prospective subscribers, after fixing a minimum reserve price for the shares. After receiving all the offers, the company determines the price at which there are sufficient tenders for it to raise the amount required (the strike price) and issues shares at the strike price to all those who offered at least that price.

- (c) The Net Present Value of a capital investment project is the sum of the present values of all the cash flows associated with the project. Present values are calculated by discounting the future cash flows to today's values using the cost of capital – which may be the weighted average figure for the company or may be determined specifically for the project in question to reflect how it is financed or the degree of risk. A positive NPV for the project means that the project offers a surplus to the providers of capital over the return that they require (the required return being what they need to compensate them for the cost of capital and the project's risk).

Internal Rate of Return is the discount rate (cost of capital) that makes the NPV of a project equal to zero. It represents the return that the project offers on the capital invested.

NPV and IRR are both based on discounting project cash flows, but are complementary because:

NPV gives the project surplus in today's money, while IRR give the percentage annual return on capital invested.

NPV reflects the size, as well as the profitability, pound for pound, of a project. IRR reflects the return from each pound invested for each year. Thus NPV gives a measure of the total return, which provides a basis for choosing one project over another, by showing which gives the bigger surplus over the cost of capital, whereas IRR gives a way of ranking projects in order of priority, since it shows where each £ can be invested most profitably.

The NPV's of two different projects can be added together to give the NPV from a combined investment in the two. The IRR of a combined project is somewhere between the IRRs of the separate projects, but has

to be calculated from scratch using the combined cash flows of the two projects.

In order to calculate a NPV, the cost of capital needs to be known, whereas IRR is determined solely by the project cash flows.

IRR may be intuitively easier to understand for people who are not trained in accounting.

- (d) Debt may be cheaper (though high gearing has risks): equity has no tax shield, since dividends are paid out of taxed income, whereas debt interest can be relieved against tax.

Issue costs of equity are higher.

Equity issues can result in dilution of ownership, with changes in earnings and voting control.

Pricing a share issue may be difficult, particularly for an initial offer.

Success of a share issue may be less assured.

- (e) Factors that influence dividend policy in practice

- Firm's liquidity position.
- Availability of distributable profits.
- Sustainability of the rate of dividend in future – because dividend cuts convey negative signals to the market, firms avoid volatility by restricting dividend payments even when cash and distributable profits are sufficient to pay more.
- Covenants imposed by lenders may restrict dividend payments.
- Growth prospects - companies that are growing rapidly may find it necessary and desirable to plough back profits to sustain growth, rather than pay them out as dividends, while companies without such opportunities for investment may prefer to pay high dividends.
- Shareholder preferences – tax and income considerations may lead shareholders to seek capital gains rather than dividends (or vice versa).
- Dividend policies of business competitors, or of other companies in which the shareholders may invest.

- (f) EVA is calculated by deducting a capital charge (the capital employed multiplied by the company's cost of capital) and the tax charge from the operating profit. ROCE is calculated by dividing profit (usually the operating profit) by the capital employed. ROCE therefore adjusts the profit measure for the size of the business and so may offer a basis for comparing different parts of a business. EVA is an absolute measure, which shows the amount in £ by which the profit available for shareholders exceeds the cost of capital.

Both EVA and ROCE can be used to measure management performance. ROCE has an advantage in that, since it adjusts for the size of the business, it can be used to compare the performance of businesses of different sizes. This may not be a genuine advantage, since the potential profitability of different businesses may vary, so that a realistic figure for ROCE may vary between businesses. Targets for EVA similarly need to be set taking into account the differences between businesses, most importantly perhaps size.

When calculating EVA, it is possible to use different figures for cost of capital for different businesses to reflect how they are capitalised and their differing degrees of risk. It is possible to adjust target figures for ROCE for similar reasons, though a target figure for ROCE may be set for the company as a whole, which may discourage varying target figures for individual business units.

Both EVA and ROCE are popular because they do not need cash flows to be estimated as with NPV and IRR, but can be calculated using Profit and Loss and Balance Sheet figures.

EVA avoids a weakness of ROCE when used as a measure of management performance: ROCE is particularly prone to manipulation by the manager whose performance is being measured in order to give a favourable result. This can be done for example by reducing the capital employed so that the operating profit is divided by the smallest possible capital figure. One way of doing this is to defer the replacement of assets, even though this may reduce profits and can exclude new investments with positive NPVs. Manipulation is also possible with EVA, but the effect on the calculated performance measure is much less dramatic than with ROCE.

- (g) An operating lease is a short-term agreement for renting an asset; the agreement can be cancelled during the contract period, and the asset is returned to the lessor well before the end of its life.

A finance lease is a long-term non-cancellable agreement for renting an asset for virtually its full economic life. The asset is usually selected by the lessee, and is bought by the lessor for the specific purpose of leasing it out to the lessee only; the lessee is usually responsible for maintaining and insuring the asset. It is, in fact, a way of financing the acquisition of an asset without becoming its legal owner.

A hire purchase contract is another method of financing assets, which envisages that ownership will ultimately pass to the user, who therefore receives the capital allowances. In leasing, the lessor receives the capital allowances (which can be reflected in the level of lease charges).

- (h) Factoring is an arrangement whereby the administration/collection of a firm's debt portfolio is entrusted to a third party called a factor. Factoring can take several forms:

- Sales Ledger Administration – The factor takes over all of a firm's debt administration work, including issuing invoices, maintaining the sales ledger, and collecting debts. A fee is charged for this service.
- Credit Management/Insurance – The factor takes over the responsibility (and risk) of collection alone - instead of being owed a number of debts, the firm will have only one debt, owed to it by the factor. The factor's specialised credit appraisal expertise enables it to take on this risk - however, it will not take on any debts it considers doubtful.
- Finance Provision – The factor also advances a portion (usually a maximum of 80%) of the debts handled, charging interest on the amount advanced. Under finance provision arrangements, debt collection may either be taken over by the factor or remain in the hands of the firm. Many firms prefer the latter arrangement, since they do not pass control of relations with their customers to a third party.

Individual factoring arrangements may contain elements of all the three methods.

- (i) An equity warrant is an instrument issued by a company along with bonds, which gives the bond-holder the right (but not the obligation) to buy a particular number of shares in the company at a specified price at a future date. A convertible bond gives the holder the right (but not the obligation) to exchange the bond for a particular number of shares in the company at a specified price at a future date. Thus both these instruments are forms of call option issued by the company to investors. The essential differences are:
- In the case of bonds with warrants attached, the option is a separate tradable instrument; in the case of convertible bonds, it is embedded in the bond.
 - Exercise of warrants results in increasing equity without any change in the level of debt; conversion of convertible bonds results in an increase in equity accompanied by a simultaneous decrease in debt, resulting in a greater reduction in the gearing level.
- (j) Taking a company private avoids disadvantages of a stock market listing, including high issue costs and reporting costs, disclosure requirements and possibility of losing voting control. There is also scope for value creation due to closer management involvement, and reduction in information asymmetry between managers and shareholders. Indeed the managers are likely to be the controlling shareholders.

A large amount of debt is usually raised in order to buy out the other shareholders, resulting in the tax benefits of higher gearing. This gives managers a very strong incentive to maximise profits. Finally – and often most importantly – directors have greater freedom of action, being no longer accountable to market investors.

Drawbacks include the risks associated with high gearing, often accentuated by high interest rates on debt (since some of the debt capital is often in the form of mezzanine finance or junk bonds). A further disadvantage – though managers may not see it as such – is a reduced level of scrutiny of the executive, apart from that exercised by holders of debt instruments.

SECTION B

2. (a) Reduction of portfolio risk

Combining stocks in a portfolio results in reduction of portfolio risk. After the addition of about 15 to 20 stocks to a portfolio, the risk reduction effect begins to taper off. The degree of correlation between the returns on the different investments in the portfolio affects the amount of risk reduction. The greatest risk reduction occurs when correlation is negative. Most securities tend to be positively correlated, limiting the scope for risk reduction.

The total risk of a security held in isolation is more than that of the same security held as part of a portfolio - the risk that is removed through portfolio diversification is the security's specific risk, caused by random events affecting the company. The effects of such random events are reduced or eliminated by diversification, so specific risk is also called diversifiable risk. The technical term for this risk is unsystematic risk.

Systematic risk affects all the securities in the market, and is associated with factors such as economic conditions, political events and general market sentiment. Systematic risk is also called market risk or undiversifiable risk. Diversified investors are concerned about the systematic risk of a security - not the specific risk, which can be diversified away.

The 'market portfolio' refers to a hypothetical portfolio of all the shares in the market, weighted according to market capitalisation. This is the most efficient portfolio, containing only systematic risk - all unsystematic risk has been diversified away. Market indices like FTSE 100 and S&P 500 are taken as proxies for the market portfolio.

The beta of a share is the slope of a regression line of the historical returns on the share against the returns on the market portfolio. It therefore measures the change in the share's return that is 'explained' by change in the return on the market portfolio, and thus provides a measure of the share's systematic risk. Given the return on the market portfolio and the risk-free return, the expected return on any share can be estimated with reference to the share's beta.

(b) Measures of risk

Portfolio theory uses the standard deviation of a portfolio's return to provide a measure of the total risk of the portfolio - both systematic and unsystematic risk. CAPM uses the beta to provide a measure of the systematic risk only. Portfolio theory and CAPM would only give the same portfolio risk measure if the portfolio were so well diversified that all unsystematic risk has been eliminated.

(c) Using CAPM to assess portfolio performance

The weighted average systematic risk of each portfolio can be calculated and, using CAPM, the expected return of each portfolio can be estimated.

Portfolio 1:

$$\begin{aligned}\text{Portfolio beta} &= (1.2 \times 0.348) + (0 \times 0.272) + (0.8 \times 0.176) + (1.5 \times 0.204) \\ &= 0.8644\end{aligned}$$

$$\text{Expected return} = 5.5 + (8 \times 0.8644) \\ = 12.42\%$$

The actual return of the portfolio over the last year was:

$$(14 \times 8.7/25) + (6 \times 6.8/25) + (11 \times 4.4/25) + (15 \times 5.1/25) \\ = 11.50\%$$

Portfolio 1 has therefore under-performed.

Portfolio 2:

$$\text{Portfolio beta} = (0.9 \times 0.280) + (0.3 \times 0.144) + (1.7 \times 0.340) + (0.1 \times 0.236) \\ = 0.8968$$

$$\text{Expected return} = 5.5 + (8 \times 0.8968) \\ = 12.67\%$$

The actual return of the portfolio over the last year was:

$$(12 \times 7/25) + (9 \times 3.6/25) + (19 \times 8.5/25) + (8 \times 5.9/25) \\ = 13.00\%$$

Therefore Portfolio 2 has over-performed.

Using CAPM, it is possible to recommend Portfolio 2, which has a positive abnormal return. However, a portfolio of only four investments cannot be said to be well diversified, so Maxima would be exposed to unsystematic risk as well. Alternative portfolios with a greater degree of diversification should be considered. The perfect market assumptions on which the CAPM is based are limitations that should also be kept in mind when drawing conclusions. Various researchers have questioned other aspects of CAPM, notably:

- Betas calculated on the basis of historical returns do not necessarily remain stable.
- CAPM oversimplifies reality by relating expected return to a single factor, i.e. the return on the market portfolio.
- Indices used as market proxies in CAPM calculations do not exactly represent the whole market.

3. (a) Revised credit policy

$$\text{ACP}_{\text{OLD}} = (0.7 \times 30) + (0.3 \times 40) = 33 \text{ days.}$$

$$\text{ACP}_{\text{NEW}} = (0.4 \times 15) + (0.4 \times 60) + (0.2 \times 70) = 44 \text{ days.}$$

$$\text{Old carrying cost} = \frac{\pounds 10,000,000 \times 33}{365} \times 0.09 = \pounds 81,370$$

$$\text{Discounts availed under new credit policy} = (0.4 \times \pounds 20,000,000) \times 0.10 = \pounds 800,000$$

$$\text{New carrying cost} = \frac{\pounds 19,200,000 \times 44}{365} \times 0.09 = \pounds 208,307$$

Bad debt loss (Old) = £10,000,000 x 0.025 = £250,000

Bad debt loss (New) = £19,200,000 x 0.05 = £960,000

	Income Under Old Credit Policy	Income Under New Credit Policy
Gross Sales	10,000,000	20,000,000
<i>Less: Discounts</i>	-	800,000
Net Sales	10,000,000	19,200,000
Variable cost of sales	8,600,000	17,200,000
PBIT	1,400,000	2,000,000
Interest cost of carrying receivables	81,370	208,307
Bad debt losses	250,000	960,000
Profit Before Tax	1,068,630	831,693
Tax at 30%	320,589	249,508
Net Income	748,041	582,185

If all the assumptions made are correct, then Terrier should not change its credit terms as proposed, since net income would be reduced by £165,856.

(b) Managerial incentives and goal congruence

Managers' salaries and other benefits are often linked to sales revenue, total assets or profits. Managers may therefore be interested in maximising sales turnover, asset growth or profits. But pursuit of these objectives will not necessarily maximise shareholder wealth. For example:

- Turnover can be increased by giving massive discounts or extending liberal trade credit, but the long-run consequences may be bad for the firm.
- Acquisition of assets without proper investment appraisal could have a negative impact on shareholder value.
- Growth in profits need not necessarily increase shareholder value if :
 - (i) it is achieved with an unacceptable increase in the level of risk, or
 - (ii) infusion of so much fresh capital is required that the equity holding is diluted and the EPS reduced.

Maximising shareholder wealth involves the combination of share price growth and dividend income, taking account of risk and the timing of returns. To achieve goal congruence between shareholders and managers, many companies have management incentive schemes based on share price performance: Share options give managers the right to purchase shares at a pre-determined price at some future date. If the actual price is higher than the pre-determined exercise price, the difference allows a manager who exercises his options to make a capital gain, and this serves as a powerful incentive to maximise the share price.

Because the share price movement often depends on the vagaries of the stock market, and is therefore beyond the manager's control, alternative types of incentive are also used. Performance shares are shares in the company issued to executives on the basis of their performance in terms of various parameters such as EPS, ROE and ROCE.

The Combined Code, produced as a result of the recommendations of the Cadbury, Hampel and Greenbury Committees on corporate governance, recommends the use of audit committees and non executive directors to ensure a high standard of corporate governance. These recommendations address the issue of risk, particularly of lack of congruence between the goals of directors and shareholders. The Code also recommends arrangements for appointing and remunerating directors, designed to ensure that suitable people are appointed as directors, with appropriate incentives. The Turnbull report also dealt with risk, and recommended that companies should regularly review and report to shareholders on risk issues.

4. (a) Possible synergies

Since Smallco's business is not related to Bigco's existing operations, synergies arising out of increased market share, monopoly power, combining of production facilities, forward and backward integration, etc. are *not* likely. Nevertheless, there would be scope for spreading overhead by sharing central facilities, such as corporate headquarters, top management and information systems. There may also be scope for centralising banking arrangements to obtain finer rates on larger-scale borrowing. Another source of synergy might be more efficient management, reflected in (for example) better working capital management.

(b) Net Assets Valuation

	(£m)
Land and building	60
Plant and machinery	16
Motor vehicles	4
Goodwill	5
Stock	20.8
Debtors	16.15
Other current assets	<u>7</u>
	128.95
Less: Current liabilities	<u>22</u>

Total assets less current liabilities	106.95
Less: Bank term loan	13
Deferred taxation	5
Preference shares	<u>9</u>
Net asset value	<u>79.95</u>

Earnings valuation

[What is required is the value of Smallco to the potential acquirer – so the future earnings (i.e. including the expected value gains arising out of the merger) should be used.]

Estimated earnings, post-acquisition	=	£12m
Existing P/E ratio of Smallco Gears	=	6
∴ Value	=	£72m

(c) Share exchange

Bigco proposes to acquire Smallco by giving Smallco's shareholders one Bigco share for every two Smallco shares.

No. of shares

Bigco (pre-acquisition)	=	180m
Smallco	=	60m
Bigco shares issued in Exchange for Smallco shares	=	$60m \div 2 = 30m$
Bigco (post-acquisition)	=	210m

EPS

Bigco (pre-acquisition)	=	$£45m \div 180m = 25p$
Bigco (post-acquisition)	=	$(£45m + £12m) \div 210m = 27p$

Share price

Share price of Bigco (pre-acquisition)	=	275p
Value of Bigco (pre-acquisition)	=	£495m
Value of Smallco (Earnings basis)	=	<u>£72m</u>
Value of Bigco (post-acquisition)	=	<u>£567m</u>
No. of shares (post-acquisition)	=	210m
Therefore new share price	=	$£567m \div 210m = 270p$

The pre-acquisition shareholders of Bigco would thus suffer a loss in value of:
 $180m \times (275p - 270p) = £9m$.

The share price and EPS calculated above for the combined company give a P/E ratio of $270/27 = 10.0$, compared with Bigco's pre-acquisition P/E ratio of 11.0. If the market judged that the P/E ratio of the combined company should remain at 11.0 (reflecting expectations that the Bigco management will be able to achieve the same kind of performance with the enlarged company as before the merger), the share price would be $11 \times 27p = 297p$.

5. (a) Possible motives for foreign direct investment

- i) To establish new markets and attract new demand.
- ii) To avoid tariffs and trade restrictions.
- iii) To gain access to low-cost materials, labour or fixed assets.
- iv) To benefit from grants and subsidies offered by foreign governments.
- v) To achieve economies of scale.
- vi) If the multinational can obtain access to market sectors which are not available to its shareholders (or are only available to them at significant extra cost), it can create value gains through international diversification.
- vii) To take advantage of what is perceived to be an undervalued or overvalued foreign currency.
- viii) To exploit monopolistic or competitive advantage through internalisation of possession and control of information, technology, marketing or other commercial expertise.

- (b) Aerith needs to buy NZ\$2,500,000 in 3 months' time.
Using a forward contract, $\text{NZ\$}2,500,000 \div 3.4106 = \text{£}733,009$

Using money market cover, the present value of NZ\$2,500,000 has to be bought now and deposited for 3 months at 7% p.a. A rate of 7% per year is equivalent to 1.75% per quarter. So the amount to be bought now is $\text{NZ\$}2,500,000 \div 1.0175 = \text{NZ\$}2,457,002$.

NZ\$2,457,002 can be bought now @ 3.4056, which will cost £721,459

Since Aerith has no surplus cash, this will have to be borrowed for 3 months at 6% p.a. A rate of 6% per year is equivalent to 1.5% per quarter. So:
 $\text{£}721,459 \times 1.015 = \text{£}732,281$

Using lead payment, NZ\$2,500,000 can be paid immediately @ 3.4056 = £734,085

This will have to be borrowed for 3 months at 6% p.a., so total cost = $\text{£}734,085 \times 1.015 = \text{£}745,096$

Money market cover is the cheapest alternative.

Another alternative would be to do nothing, and to buy NZ\$2,500,000 in three months' time at the exchange rate then prevailing. This would result in a gain if NZ\$ depreciated against sterling, but a loss if it appreciated, and would not limit the exchange risk. Since Aerith's activity is food processing and not speculation, it would be more advisable to use a hedging strategy.

6. Multitech Ltd
Incremental project cash flows (£ 000's)

	2001	2002	2003	2004	2005	2006
Revenue		803.4	827.5	852.3	877.9	
Direct costs		(309.0)	(318.3)	(327.8)	(337.7)	
Overhead		(46.4)	(47.7)	(49.2)	(50.6)	

WDA/Balancing All.	(200.0)	(150.0)	(112.5)	(84.4)	(153.1)	
Taxable income	(200.0)	298.0	349.0	390.9	336.5	
Tax(paid)/relieved		60.0	(89.4)	(104.7)	(117.3)	(101.0)
Operating cash flow		448.0	461.5	475.3	489.6	
Opportunity cost of bdg	(50.0)				39.4	
Capital expenditure	(800.0)				100.0	
Working capital	(350.0)				393.9	
Net cash flow	(1200.0)	508.0	372.1	370.6	905.6	(101.0)

On the basis of the above cash flow projections, the payback period of the project (the time that it takes for the project cash inflows to repay the initial cash outflow) is 2.86 years.

The net cash flows, together with their net present values, discounted at 13% p.a., are shown below. The net present value of the project (the sum of the present values of all the project cash flows) is £298,100.

	2001	2002	2003	2004	2005	2006
Net cash flow (£000)	(1200.0)	508.0	372.1	370.6	905.6	(101.0)
Present value factor	1.0	0.885	0.783	0.693	0.613	0.543
PV of cash flow (£000)	(1200.0)	449.6	291.4	256.8	555.1	(54.8)

Notes on cash flows

- (i) Inflation: The revenue and cost estimates are at today's prices, whereas the cost of capital incorporates the market's expectations about future inflation (market rates of return include inflation). Therefore the revenue and cost estimates are inflated.
- (ii) Overhead: Only the incremental overhead attributable to this project (£45,000 before inflation) is relevant.
- (iii) Writing Down Allowances have been calculated on a reducing balance basis. They are not cash flows, but tax payments calculated after allowances, taking account of timing, are cash flows attributable to the project.
- (iv) Capital expenditure: Capital expenditure on equipment at the start of the project and receipts from the sale of scrap at the end of the project are project cash flows.
- (v) Use of the factory building has an immediate opportunity cost of £50,000 (i.e. its market value), which should be included. The value at the end of the project, inflated for 4 years, is also relevant. The book value of the building is a historic cost that is not relevant.
- (vi) Interest on working capital: Expenditure on working capital is a project cash flow (as is the cash inflow, inflated at 3% p.a., when working capital is released at the end of the project). Therefore interest on working capital should not be included. Interest and capital payments would be shown as part of the project cash flows if

capital for the project were provided on special terms. This does not appear to be the case here, since the interest shown in the trainee accountant's calculations represents 13% p.a. – the company's cost of capital - on the £350,000 working capital figure.

- (vii) R&D expenditure: This is a sunk cost, and should be excluded from the cash flows.