



## **SECURITIES & INVESTMENT INSTITUTE DIPLOMA**

**SUMMER 2008**

### **CHIEF EXAMINER'S REPORT - INVESTMENT ANALYSIS**

#### **GENERAL COMMENTS:**

In general the performance of the candidates sitting the Investment Analysis paper was good, and very few candidates appeared unprepared for the paper. The vast majority of the candidates completed all parts of the paper within the time allocated. Where tested, useful market knowledge was demonstrated by candidates. Areas in which candidates should direct greater attention include an understanding of company free cash flows, the provision of focused investment recommendation advice on a share, an understanding of the distinction between geared and ungeared betas, basic equity valuation, an appreciation of government growth forecasts, and more detailed knowledge of industry analysis. Candidates should remind themselves of the conventions for the rounding of numbers with decimals as this is not always followed carefully. Further, a minority of candidates require practice with essay structuring and writing.

#### **SPECIFIC COMMENTS:**

##### ***SECTION A:***

Performance in section A was fairly consistent across the questions, with most candidates showing evidence of advanced preparation in their approach to the analysis of a case study company. The majority of candidates were able to describe the main activities of the case study company in part (a) succinctly. Computation of profit margins in part (b) was generally good, though occasionally candidates selected inappropriate or inconsistent figures for their margin calculations or failed to comment on them in anything more than a descriptive fashion. In part (c), only a minority of candidates demonstrated a firm grasp of the concept of free cash flow even though this is a critical concept in investment analysis. The liquidity analysis in part (d) was generally very well executed, though a minority of candidates confused liquidity with cash flow or with solvency. In part (e), most candidates performed well, though many would have increased their score here if they focused on explaining the key risks rather than merely listing them. A significant minority of candidates failed to adequately explain the company's integrated business model in part (f). Parts (g) and (h) were reasonably well attempted, though common shortcomings included a failure to produce a reasoned breakdown of revenue and profit forecasts; selecting inappropriate or inconsistent income statement figures to benchmark forecasts; not

explicitly justifying any assumptions made; and giving an investment recommendation not clearly linked to the analysis across the section and in particular the relevant financials.

***SECTION B:***

Performance in section B was in general very good, and somewhat more consistent than in recent papers. In question 2, whilst many candidates could recall how to interpret equity betas, only a minority could adequately explain the precise impact of gearing on such betas or produce a meaningful expression to show how geared and ungeared betas are related. In question 3, most candidates could define 'stagflation', though not all candidates could provide a clear explanation of the terms 'fine-tuning' or 'economies of scale'. The vast majority of candidates tackled the CAPM calculation question well in question 4. Most candidates could recall and employ a multi-period bond valuation formula in question 5. In question 6, candidates demonstrated considerable understanding of the difference between debt and equity funding in acquisitions. Disappointingly, a significant minority of candidates were unable to correctly value a share with reinvested earnings in question 7. Candidates evidenced a good understanding of the nature and valuation of warrants in question 8. Finally, in question 9, whilst candidates clearly demonstrated their understanding of the difference between GDP and GNP, few could recall current and forecast GDP growth rates for the UK economy.

***SECTION C:***

Performance in section C was mixed, though the majority of candidates tackled two essay questions well. In question 10, most candidates who tackled the question could recall the key determinants of exchange rates, though not all were clear regarding the precise nature or direction of a given relationship, particularly when it came to parity expressions. In question 11, candidates showed a clear understanding of the EMH and the core concepts of behavioural finance. Performance in question 12 was disappointing for the minority of candidates who tackled the question, with few demonstrating a clear understanding of the tools employed in industry analysis. Question 13 on the subject of private equity was reasonably well addressed by the candidates who selected it, though only a minority could illustrate their answer with clear market knowledge. Question 14 on depository receipts was not attempted by any candidates.

**SECTION A****TOTAL 40 marks**

Q1.

(a) Briefly describe the main activities of Kier Group plc in the year ending 2007.

*(3 marks)*

The main business activities of Kier Group plc are organised under its five business divisions: Construction, Support Services, Homes, Property, and Infrastructure Investment. Construction encompasses Kier Regional, which includes regional contracting, major building projects and affordable housing; and Kier Construction which involves UK civil engineering, mining and overseas operations. Support Services involves facilities management, building maintenance, M&E design and installation, plant hire and outsourced services. The Homes division is engaged in private house building. The Property division concerns commercial property development. Infrastructure Investment involves Kier's involvement in PFI projects.

(b) Calculate and comment upon the operating profit margin of Kier Group plc for the years ending 2006 and 2007 by each of its major business activities.

*(4 marks)*

Margin in relation to group and share of joint ventures:

	2006			2007		
	Revenue £m	Profit £m	Margin (%)	Revenue £m	Profit £m	Margin (%)
Construction	1,218.1	18.0	1.5%	1,411.2	21.9	1.6%
Support Services	281.3	6.8	2.4%	315.5	10.2	3.2%
Homes	277.9	41.6	15.0%	325.1	47.8	14.7%
Property	47.5	9.2	19.4%	61.3	12.1	19.7%
Infrastructure Inv.	13.5	(0.7)	(5.2%)	14.8	0.6	4.1%
Centre	-	(11.7)	-	-	(10.4)	-
<i>Total</i>	<i>1,838.3</i>	<i>63.2</i>	<i>3.4%</i>	<i>2,127.9</i>	<i>82.2</i>	<i>3.9%</i>

Margin in relation to group alone:

	2006			2007		
	Revenue £m	Profit £m	Margin (%)	Revenue £m	Profit £m	Margin (%)
Construction	1,215.5	17.2	1.4%	1,411.2	21.9	1.6%
Support Services	281.3	6.8	2.4%	315.5	10.2	3.2%
Homes	277.9	41.6	15.0%	325.1	47.4	14.6%
Property	7.5	4.2	56.0%	12.6	6.9	54.8%
Infrastructure Inv.	1.0	(2.1)	(210.0%)	1.0	(1.1)	(110.0%)
Centre	-	(11.7)	-	-	(10.4)	-
<i>Total</i>	<i>1,783.2</i>	<i>56.0</i>	<i>3.1%</i>	<i>2,065.4</i>	<i>74.9</i>	<i>3.6%</i>

Overall, operating profit has increased by 30.1% in 2007 to £82.2m, representing a significant margin improvement of 3.4% to 3.9%. Construction saw a significant growth in revenue due to strong performance in both its Regional and Construction businesses due to the development of long-term partnering arrangements and buoyant business in supermarket, schools and other public sector construction. The profit margin increased significantly here from 1.5% to 1.6%, partly due to the lower risk associated with smaller average build values. Support Services also saw significant revenue growth due to a growth in new building maintenance contract business as well as contract renewals. The margin has increased significantly from 2.4% to 3.2%, due in part to investment in new equipment such as cranes. Homes have seen a significant growth in revenue due to an increase in the sales of homes, land disposals and the acquisition of High Bourn Developments. The margin here has fallen slightly from 15.0% to 14.7% due to lower house selling prices and slowing volumes. Property saw a significant increase in revenue and a slight increase in margin, though this market is expected to see a correction in the near future. Infrastructure Investment saw a marginal increase in revenue due to new PFI deals, accompanied by a significant improvement in margin, the reason for which is not made clear in the report.

- (c) Analyse and briefly comment upon the ability of Kier Group plc to finance new investments from free cash flow in the years ending 2006 and 2007.

*(4 marks)*

Whilst there are a number of different definitions of 'free cash flow', the term generally refers to the amount available to providers of capital after meeting all legal and re-investment obligations. Enterprise free cash flow refers to the amount available to all providers of capital whereas equity free cash flow refers to only the amount available to equity (share) holders. In general reinvestment obligations includes the amount committed by the company for further capital investment projects in that year, although it may be used to refer only to the amount of capital investment required to maintain that exhausted through usage in the current year.

**Free cash flow from equity:**

	2007 £m	2006 £m
Cash inflow from operating activities	114.8	96.6
Dividends received from joint ventures	0.6	1.3
Return on investments and financing costs	6.8	5.3
Income taxes paid	(16.9)	(11.3)
<b>Free cash flow (1)</b>	<b>105.3</b>	<b>91.9</b>
Capital expenditure	(19.7)	(23.2)
<b>Free cash flow (2)</b>	<b>85.6</b>	<b>68.7</b>
Acquisitions and disposals	(34.2)	(4.7)
<b>Free cash flow (3)</b>	<b>51.4</b>	<b>64.0</b>
Equity dividends paid	(5.9)	(6.2)
<b>Free cash flow (4)</b>	<b>45.5</b>	<b>57.8</b>

In 2007 Kier Group plc had sufficient cash flow to meet its investment in fixed capital by a comfortable margin, and indeed this margin increased on 2006. This improved cash flow was due to increased cash flow from operating activities, despite increased

taxes. Kier can also easily cover its net acquisitions from cash flow in 2007, though the level of acquisitions and JV investments has increased, giving a lower free cash flow than for 2006. Equity dividends are easily covered by cash flow in both years. Overall, Kier has a very healthy cash flow situation, with record levels of cash generation in conjunction with its profit margin improvement. The Group does not need to seek significant financing at the margin, with only a small equity issue in 2007 and share repurchases over the last two years. Its 2007 year-end net cash position is £148.4m compared with £111.2 in 2006.

(d) Analyse and comment upon the changing liquidity position of Kier Group plc over the years ending 2006 and 2007.

*(5 marks)*

The liquidity position of Kier Group plc can be best analysed by computing some simple liquidity ratios: the current ratio, the quick ratio and operating cash flows to maturing obligations.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$2007: \text{Current ratio} = 958.4 / 797.6 = 1.20$$

$$2006: \text{Current ratio} = 778.1 / 674.1 = 1.15$$

This ratio measures the ability of the business to meet its maturing obligations, but concentrates on balance sheet measures i.e. how many times can the firm 'cover' its maturing obligations (current liabilities) from its current asset base (cash and 'near cash' assets). Kier can cover its current liabilities with its current assets, though the margin is not great. On the other hand, it is not investing too much in 'unproductive' current assets.

$$\text{Quick ratio} = \frac{\text{Current assets - inventories}}{\text{Current liabilities}}$$

$$2007: \text{Quick ratio} = (958.4 - 460.1) / 797.6 = 0.62$$

$$2006: \text{Quick ratio} = (778.1 - 377.8) / 674.1 = 0.59$$

This ratio is another measure of liquidity, similar to the current ratio, though it excludes inventories from the numerator. The reason for this is that inventory can be difficult to convert into cash quickly in times of need and therefore should not be considered part of our definition of 'cash and near-cash'. This ratio appears fairly poor for Kier as it is less than the 'rule of thumb of 1' i.e. cash and near-cash cannot cover current liabilities. However, we know that the Group is very cash generative and therefore there are no grounds for concern here. Further, the inventories are raw materials, construction in progress and land, all of which are fairly readily marketable if Kier encountered cash difficulties.

$$\text{OCFMO} = \frac{\text{Operating cash flows}}{\text{Current liabilities}}$$

$$2007: \text{OCFMO} = 105.3 / 797.6 = 0.13$$

$$2006: \text{OCFMO} = 91.9 / 674.1 = 0.14$$

This ratio measures the ability of the business to meet its maturing obligations i.e. to what extent can the firm pay commitments falling due within the next financial period from its operating cash flows. Ultimately this is a good measure as it considers cash flows in the numerator rather than some balance sheet measure of liquid resources. At first glance this appears to be rather low for both years and deteriorates slightly in 2007, though we know that Kier is highly cash generative and also that the current liabilities in this industry are programmed and fairly predictable in terms of their timing, and thus there are no real grounds for concern.

Overall, Kier has a very steady and predictable working capital requirement and its net working capital is positive over both years: 2007: £160.8m (£958.4 - £797.6m) and 2006: £104.0m (£778.1 - £674.1m). The only issue the Group might face is if the property market stagnated and therefore inventories became difficult to convert into cash in a timely fashion.

(e) Briefly explain the nature and control of the key risks identified by Kier Group plc. Which of these risks are beyond the Group's locus of control?

*(3 marks)*

The Operating and Financial Review identifies a number of primary risks for Kier Group plc which are capable of adversely impacting on its business over the next 12 months: contract and build risk, land acquisition risk, the housing market, property development risk, investment risk, health and safety risk, and the pension scheme deficit. Contract and build risk depend on the nature of the work, the duration of the contract and its legal form. Kier tends to steer away from long-term contracts, all large tenders are board decisions, and contracts in progress are carefully controlled, managed and reviewed in terms of revenues and costs to completion. Land acquisition risk, the risk of acquiring land which is uneconomic to develop, is minimised by very thorough site evaluation, board approval before acquisition, and continuous review of forecast revenues and costs to completion. The housing market is risky given that consumer sentiment and therefore housing demand can be unpredictable. Work-in-progress is controlled to enable finished properties to be matched as closely as possible to demand. Property development risk is the risk of either acquiring the wrong property or acquiring the right property at the wrong price. Here, Kier controls this risk by only starting construction once it has either pre-sold or pre-let the development. Investment risk is the risk related to engaging in unprofitable PFI projects. This is controlled by concentrating on sectors in which it has prior expertise and being very selective. Health and safety risk is important in the construction industry given the potentially physically dangerous environment. Kier has a rigorous health and safety policy with the aim of protecting not only staff but also subcontractors and visitors. There is also a related 'risk' of not attracting the right staff or not retaining them, which presumably is addressed through a well considered

human resources strategy. The pension scheme deficit is a risk to Kier, as it is to many larger companies. There is clearly a risk that pension assets will not cover liabilities in the longer term, and short-term adjustments are required to make up any predicted deficit – clearly this can impact on short-term profitability. This risk is controlled by Kier in conjunction with the Scheme Trustees in line with pension regulations.

Of the risks identified, those which are beyond the control of the Group are: aspects of contract and build risk (where additional costs are incurred which were not identified at the outset); land acquisition and property development risk (where unforeseen problems with the land or the acquired building need to be resolved at the Group's cost); housing market risk (where the house price market might slow down or collapse in the future, leaving the company with unsold inventory); aspects of investment risk (again, where unforeseen risks enter into a PFI contract and the division of risk means that the Group is liable to cover the associated costs); and pension scheme risks (where adverse market movements can increase the size of the future deficit). Health and safety risks are generally well within Kier's local of control and adequate policy and training can mitigate these risks well.

(f) Briefly comment on Kier's *integrated business model* as detailed on page 22.  
(3 marks)

Kier Group plc produces a brief 'business model' diagram on page 22 of its Operating and Financial Review. This model would appear consistent with cash flow, liquidity and operating profitability patterns discussed earlier.

For example, Kier's Construction and Support Services divisions are clearly lower margin but generate their profits on high volumes. They are both highly cash generative. The cash from these divisions is effectively invested in working capital to support the Homes and Property divisions which in turn generate much higher margins on lower volumes. All four divisions are portrayed as contributing towards earnings growth – absolute earnings have indeed increased in all of these divisions, though relative earnings have fallen slightly in the Homes division (and look set to fall further given the current downturn in the UK housing market). All four divisions would appear to be combined in regeneration and mixed-use projects, where, for example, a large city centre development might involve housing, office and shopping construction and post-construction management. The diagram places cash at the very centre of its business model, which seems sensible for a highly cash generative company.

(g) Prepare forecasts of profit before and after tax and earnings per share for Kier Group plc for the year ended 30<sup>th</sup> June 2008. Explain the basis of your computation and of any assumptions that you have made.

(10 marks)

Group and share of joint ventures figures:

	2006 £m	2007 £m	Forecast 2008 £m
<b>Turnover by activity</b>			
Construction	1,218.1	1,411.2	<b>1,635.0</b>
Support Services	281.3	315.5	<b>300.0</b>
Homes	277.9	325.1	<b>255.0</b>
Property	47.5	61.3	<b>50.0</b>
Infrastructure Inv.	13.5	14.8	<b>14.0</b>
Centre	-	-	-
	<b>1,838.3</b>	<b>2,127.9</b>	<b>2,254.0</b>
<b>Operating profit</b>			
Construction	18.0	21.9	<b>26.2</b>
Support Services	6.8	10.2	<b>10.2</b>
Homes	41.6	47.8	<b>33.2</b>
Property	9.2	12.1	<b>9.9</b>
Infrastructure Inv.	(0.7)	0.6	<b>0.7</b>
Centre	(11.7)	(10.4)	<b>(10.0)</b>
	<b>63.2</b>	<b>82.2</b>	<b>70.2</b>
<b>Margins (%) by activity</b>			
Construction	1.5%	1.6%	<b>1.6%</b>
Support Services	2.4%	3.2%	<b>3.4%</b>
Homes	15.0%	14.7%	<b>13.0%</b>
Property	19.4%	19.7%	<b>19.7%</b>
Infrastructure Inv.	(5.2%)	4.1%	<b>5.0%</b>
Centre	-	-	-
<i>Total</i>	<b>3.4%</b>	<b>3.9%</b>	<b>3.1%</b>

Justification of forecasts for turnover and profit margins should be carefully presented by candidates and based upon recent trends in these variables and future potential drivers. The figures presented here are for the purposes of illustration only and do not constitute a 'model answer'.

Estimates of charges on operating profits for the 2008 are based on the following:

*Operating profit* – 91.1% of group and share of joint ventures in 2007; thus operating profit in 2008 = 91.1% x £70.2m = £64.0

*Share of joint ventures – finance costs* – as a proxy, 39.7% of share of joint ventures' operating profit in 2007; thus finance costs = 39.7% x £6.2m = £2.5m in 2008

*Share of joint ventures – tax* – 19.2% of joint ventures' operating profit in 2007; thus 19.2% of £5.9m = 19.2% x £6.2m = £1.2m in 2008

*Finance income / (cost)* - net financing costs of £0.3m in 2007, (£0.1m in 2006), long-term borrowings have remained very stable over period 2006-7, thus maintain net financing costs at £0.3m

*Income tax*

2007: Tax of £21.3m on profit of £77.6m = 27.4%

2008: £66.2m profit x 27.4% = £18.1m

*Minority interests* – 1.4% of profit for year in 2007; thus 1.4% x £48.1m = £0.7m in 2008

	2007 £m	Forecast 2008 £m
<b>Operating profit</b>	74.9	64.0
Share of joint ventures' operating profit	7.3	6.2
<b>Group and share of joint ventures</b>	82.2	70.2
Share of joint ventures – finance cost	(2.9)	(2.5)
Share of joint ventures – tax	(1.4)	(1.2)
<b>Profit from operations</b>	77.9	66.5
Finance income / (cost)	(0.3)	(0.3)
<b>Profit before tax</b>	77.6	66.2
Income tax	(21.3)	(18.1)
<b>Profit for the year</b>	56.3	48.1
Attributable to:		
Equity holders of the parent	55.5	47.4
Minority interests	0.8	0.7
	56.3	48.1

Basic earnings per ordinary share = £48.1m/ 36.1m = 133p

This does not compare favourably with a basic earnings per ordinary share of 155p for 2007. The weighted number of shares is computed on a trend basis.

- (h) Advise on the desirability of investment in the shares of Kier Group plc at the price shown on page 1 of the Information Pack. Explain the reasons behind the advice given.

*(8 marks)*

Discussion here may vary, though should provide: a summary of sales and profit forecasts linked to a discussion of current and potential future performance in key markets; a brief summary analysis of key fundamentals, including free cash flow generation; and finally, a recommendation based upon consideration of selected firm and industry current and forecast financial variables such as EPS and P/E.

**SECTION B****Total 30 marks**

2. The beta of a share is a measure of the volatility of a share's returns relative to those of the market portfolio – it is a measure of the relative systematic risk of a share. A geared (equity) beta is the beta of the shares of a geared firm whereas an ungeared (asset) beta is a beta stripped of the effect of gearing. Gearing here refers to financing at least part of the firm's operations using debt. Employing gearing greatly increases the risk to the shareholder compared to the risk associated with a firm without gearing. The difference between the geared and ungeared betas is a gauge of financial risk.

The expression which relates the two betas is as follows:

$$\beta_g = \beta_u + (\beta_u - \beta_d) \times (D/E_g)$$

Where:

$\beta_g$  = geared beta;  $\beta_u$  = ungeared beta;  $\beta_d$  = debt beta; D = market value of debt;  $E_g$  = market value of equity

(4 marks)

3. In your own words, briefly define the following economic terms:

(a) Stagflation

Stagflation is essentially the combination of low growth (a rise in inflation) and unemployment.

(b) Fine-tuning

Fine-tuning occurs when a government attempts to counteract movements in economic activity (particularly economic growth) by employing discretionary monetary and fiscal policy.

(c) Economies of scale

Economies of scale occur when long-run average costs decrease as output rises. These are caused by indivisibility in the production process, specialisation, and the ability to access better technology (e.g. better production equipment).

(3 marks)

4. Using the Capital Asset Pricing Model (CAPM) expression, calculate the missing values ( $R_f$ ,  $R_m$ , and  $\beta$ ) in the table below:

	Expected return on share	Risk-free rate	Equity beta	Expected return on the market portfolio
Share A	12.9%	$R_f$	1.1	12.0%
Share B	13.4%	7.0%	0.8	$R_m$
Share C	11.2%	4.0%	$\beta$	10.0%

(3 marks)

Share A

$$\begin{aligned}R_i &= R_f + \beta (R_m - R_f) \\12.9 &= R_f + 1.1 (12 - R_f) \\R_f &= 3\%\end{aligned}$$

Share B

$$\begin{aligned}R_i &= R_f + \beta (R_m - R_f) \\13.4 &= 7 + 0.8 (R_m - 7) \\R_m &= 15\%\end{aligned}$$

Share C

$$\begin{aligned}R_i &= R_f + \beta (R_m - R_f) \\11.2 &= 4 + \beta (10 - 4) \\ \beta &= 1.2\end{aligned}$$

5. You purchase a £100 bond in 2008 which pays a coupon of 6% every year. If the bond matures in 2023 and similar bonds offer 4.5%, what is the value of the bond?  
(3 marks)

$$\begin{aligned}\text{Value} &= 6 [(1 / 0.045) - (1 / (0.045 (1.045^{15})))] + (100 / (1.045^{15})) \\ &= 6 [22.22 - 11.48] + 51.67 \\ &= 64.44 + 51.67 \\ &= £116.11\end{aligned}$$

6. Give three reasons why debt finance might be considered more attractive than equity finance in the funding of a company acquisition.

M&A transactions may be financed by equity or debt, though debt is generally considered the more attractive financing option because:

- i) For the buyer, there is a tax advantage to debt arising from its interest deductibility whereas there is no such tax advantage to equity;
- ii) For the buyer's shareholders, a debt financed acquisition avoids the problem of equity dilution and therefore a decline in EPS;
- iii) The target's shareholders will generally prefer cash to the buyer's shares as they may not find its risk-return profile desirable.

(4 marks)

7. Company XYZ plc is forecast to pay a dividend of £3.00 per share next year, thereby paying out 100% of its earnings. This will give its investors an expected return of 10%. However, if the company instead decided to reinvest 30% of its earnings at its current return on equity of 20%, what is the value of a share in XYZ plc before and after its reinvestment decision?

(4 marks)

No growth valuation:

$$\begin{aligned}P_0 &= \text{dividend} / \text{expected return} \\ &= 3.00 / 0.10 \\ &= £30.00\end{aligned}$$

Valuation with growth:

$$\begin{aligned}\text{Growth} &= \text{return on equity} \times (1 - \text{payout ratio}) \\ &= 0.20 \times 0.03 \\ &= 0.06 \text{ or } 6\%\end{aligned}$$

$$\begin{aligned}P_0 &= \text{dividend} / (\text{expected return} - \text{growth rate}) \\ &= 2.10 / (0.10 - 0.06) \\ &= \text{£}52.50\end{aligned}$$

8. (a) Explain what is meant by the term '*warrant*' and how it differs from a *call option*.

(2 marks)

A warrant gives the owner an option to buy a specified number of shares at a specified price within a specified time period. It differs from a call option as its life is generally longer and warrants are usually issued by the company on whose shares the instrument is actually written.

(b) The warrants of ABC plc allow the holder to buy three shares at £20 per share and they expire in 2009. The share itself is currently valued in the market at £24 per share and the warrant is priced at £12. Calculate both the intrinsic value of warrant and its time value.

(2 marks)

$$\begin{aligned}\text{Intrinsic value} &= (\text{Market price of share} - \text{exercise price of warrant}) \\ &\quad \times \text{number of shares specified in the warrant}\end{aligned}$$

$$\text{Intrinsic value} = (24 - 20) \times 3 = \text{£}12$$

The market price of the warrant of £12 is equal to its intrinsic value of £12 and therefore the speculative or time value is zero.

9. (a) What is meant by Gross Domestic Product (GDP) and how does this differ from Gross National Product (GNP)?

(2 marks)

Gross Domestic Product may be defined as the total value in money terms of all final goods and services produced in the economy over a specific period of time, usually annually or quarterly. It can be measured as the value of final output, income or expenditures in the economy on goods and services. Gross National Product, on the other hand, is defined as total income earned by domestic citizens regardless of the country in which their factor services were supplied. In this sense, GNP equals GDP plus net property income from abroad.

(b) What is the current growth rate of real GDP for the UK economy and the Government's projection of growth over the next two fiscal years?

(2 marks)

GDP growth in 2007 was 3%. UK Government projected growth is as follows:  $1\frac{3}{4}$ - $2\frac{1}{4}$ % in 2008;  $2\frac{1}{4}$ - $2\frac{3}{4}$ % in 2009 (as per UK Budget Report 2008).

(c) How do the forecasts in (b) differ from the estimates of other independent forecasters?

*(1 mark)*

Candidates could discuss the forecasts of any prominent independent forecaster here. For example, the International Monetary Fund's forecasts of growth are as follows: 1.63% in 2008; 1.61% in 2009.

## SECTION C

**Total 30 marks**

10. Discuss the determinants of a country's exchange rates.

The exchange rate is the price at which the currency of one country may be exchanged for the currency of another country within the forex market. Exchange rates may be determined by a number of factors.

i) Exchange rate system

The exchange rates of a country can be fixed or floating with respect to other currencies. With fixed rates the government of the country determines what the rate of exchange should be with respect to other currencies, whereas with a floating rate system the rate is determined by the forces of supply and demand for a currency.

ii) Balance of payments

There is a direct link between the balance of payments of a country and exchange rates. A current account deficit should lead to a depreciation in a country's currency as more cash is flowing out than in for the purchase of goods and services.

iii) Inflation

Inflation rate differences between two countries should be reflected in the exchange rate between their two currencies. Quite simply, higher inflation in a country tends to lead to depreciating exchange rates of that country vis-à-vis the rest of the world.

iv) Currency speculation

Speculators can exert an important influence on exchange rates. For example, if a speculator observes a current account deficit and believes it to be only a temporary phenomenon, then she might buy the currency while it is 'cheap' and sell it later when the deficit turns to surplus and it is 'expensive' again. However, such activity also leads to increased exchange rate volatility.

v) Interest rates

There is a strong relationship between the interest rates of a country and its exchange rate. Higher interest rates relative to other countries tend to attract capital flows to take advantage of them, thereby increasing the value of that currency i.e. higher interest rates lead to currency appreciation.

vi) Macroeconomic activity

Changes in aggregate demand can lead to changes in exchange rates. If economic activity is very strong then there will be greater demand for imported goods and services, leading to currency depreciation. However, inflationary pressures may lead to an increase in interest rates which could lead to currency appreciation again.

vii) Public borrowing

If governments run large public deficits then this can be inflationary due to the spending stimulus in the economy – increased inflation leads to currency depreciation.

viii) Political factors

Under a fixed exchange rate system governments can adjust the rate for political reasons, particularly around election times. Governments or monetary bodies will also

occasionally engage in open market operations to stabilise a currency. Further, an unstable political landscape will lead to a loss of confidence in a currency.

More confident candidates may wish to discuss the relationship between exchange rates, inflation and interest rates by means of the four-way equivalence model.

11. Explain how *behavioural finance* studies have led investors to question the *Efficient Markets Hypothesis*.

The concept of market efficiency can be explained from the work of Kendall (1953) onwards. Kendall showed that stock prices followed a random walk. Candidates could demonstrate what this means with the aid of plots of subsequent day returns on shares. The three forms of efficiency should be defined and explained: Weak-Form, Semi-Strong Form and Strong Form. Weak Form Efficiency: today's market prices reflect information contained in record of past prices; prices will follow a random walk and therefore investors cannot make consistent superior profits by studying past prices. Semi-Strong Form Efficiency: market prices reflect all publicly available information and thus prices will adjust immediately to public information. Strong Form Efficiency: market prices reflect all information, both public and private, i.e. information acquired by detailed analysis of the company and economy.

Tests of the Weak Form measure the profitability of some of the trading rules used by investors who claim to find patterns in security prices. They employ statistical tests looking for patterns in day-to-day returns and find few patterns in day-to-day returns across the world. Tests of the Semi-Strong Form measure how rapidly security prices respond to different items of news (dividend announcements, takeover announcements, etc.). The stock price reaction to takeover target announcements is a good example here. Evidence from researchers such as Patell and Wolfson (1984) demonstrate the rapid speed of market adjustment. Tests of the Strong Form examine recommendations of professional security analysts and look for mutual funds or pension funds that could predictably outperform the market. There is some evidence of persistent performance here, but not once management costs are deducted. A study by Carhart (1997) of large US mutual funds found that they only beat the market 1/3 of time. Perhaps better to buy the index?

However, behavioural finance studies show us that certain anomalies do indeed exist. Behavioural finance essentially considers how various psychological traits affect how investors, analysts and portfolio managers act (behave). Interestingly, it is impossible to test for market efficiency without also implicitly testing the CAPM or other asset pricing models. Examples of anomalies include the small firm effect, January effect, Monday effect, time of the day effect, and so on. Discussion of Earnings Announcement Puzzle (see for example Chorida and Shivakumar, 2005) reveals that investors under-react to earnings announcement and become aware of the full significance only as further information arrives. Discussion of New Issue Puzzle shows that a strategy of buying stocks immediately after each initial public offering and holding for 5 years would produce an average annual return 4.1% less than the return on a portfolio of similar sized stocks. Candidates could refer to the interesting case of Siamese Twin companies - two securities with claims on exactly the same cash flows that nevertheless trade separately, and the demonstrated persistence of prices not returning to equilibrium. Other discussion examples could include bubbles,

the dot.com boom and crash, and the LTCM crash. The limits to arbitrage are important here and should be discussed by candidates - behavioural traits such as attitudes to risk and beliefs about probabilities could be discussed here.

The candidate might be expected to conclude that markets are very efficient, particularly in the western world, though anomalies occasionally occur. However, whether those anomalies can be traded upon to produce abnormal returns is doubtful once transactions costs are factored in and other limits to arbitrage are taken into account. However, an understanding of both the EMH and behavioural finance should equip the investor with a better understanding of the determinants and dynamics of asset prices.

12. Discuss frameworks or models appropriate for analysing the *industry* to which a company belongs.

Before discussing the frameworks for industry analysis, it is useful to determine where industry analysis belongs within the wider investment analysis approach. Analysts tend to employ either a *top-down or bottom-up approach*. The top-down approach commences with the portfolio manager determining the objectives and constraints of the fund and then allocating assets accordingly. Securities are then picked to satisfy the allocation made, with a focus on the selection of appropriate markets and currencies, and once these have been chosen then the best assets available are selected. This contrasts with the bottom-up approach which focuses primarily on stock selection first, then building of a portfolio which satisfies best the fund's objectives and constraints. The first approach subordinates share selection to the selection of appropriate industries, whereas the second approach subordinates industry selection to the identification of target shares.

A structured approach to understanding the external drivers of an industry is an essential element in any industry analysis. A useful tool here is the *PEST analysis*, which examines the political future, economic future, socio-cultural environment, and technological future for either a particular country or industry. The analyst uses this framework to identify industry drivers of a political, economic, demographic or technological nature. Depending on the industry being considered, different emphasis may be placed on each of these drivers. For example, the analysis of high-tech industries requires a detailed understanding of the impact of technological developments in an industry whereas defence sector industries require a more detailed analysis of the potential impact of the changing international political landscape.

The relationship between the *business cycle* and the industry often reveals some important industry drivers. Many companies within an economy or sector will perform well during periods of higher economic growth and relatively badly during periods of lower economic growth or contraction. The identification of leading, coincident and lagging indicators may help to identify the dynamics of economic growth during the economic cycle, and certain indicators may give advance warning of downturns or upturns for a particular industry. For example, inflation will impact differently on different industries or even different firms within an industry. An increase in inflation, for example, can impact very differently on different firms. In a positive scenario, inflation, interest rates, and profits will increase as prices increase in line with costs increasing; stock prices will remain stable as the required rate of

return increase is offset by the growth rate of earnings and dividends increasing. Conversely, in a negative scenario, inflation and interest rates will increase, but cash flows will decline as earnings fall; stock prices will fall significantly as the required rate of return increase and the growth rate of earnings falls.

The *business cycle* will also impact on *different industries* in different ways. Financial sector shares tend to excel as the economy slows, whilst consumer durables sector shares may perform particularly well as the economy emerges from a slowdown. As the economy picks up pace again, capital goods sector shares will perform well, whilst at an economic peak basic industry sector shares will excel.

Closer examination of industries reveals that they have also move in life cycles. The *industry life cycle* framework helps the analyst to understand where an industry is currently positioned in its life cycle. Industries move through five phases: *pioneering development* (start-up stage, small or negative profits and high development costs); *rapid accelerating growth* (low competition but rapidly growing demand, high margins); *mature growth* (sales growth slows and competition increases); *stabilization and market security* (longest phase, with much lower growth and industry matures); and finally *deceleration of growth and decline* (capital shifting out of industry as margins turn to losses and demand shifts away from industry). Clearly, where an industry is currently situated within its life cycle can impact significantly on its current and future profitability and therefore its potential as an investment prospect.

The analyst must engage some form of analysis which enables a detailed consideration of *industry profitability*. Porter's model analyses average industry profitability in terms of five forces. Here, intensity of competition determines the potential for creating abnormal profits by firms in an industry. Whether such profits are kept by an industry is determined by the relative bargaining power of industry firms and their suppliers. The degree of actual and potential competition is determined by rivalry among existing firms, the threat of entry of new firms, and the threat of substitute products or services. The bargaining power of firms in the industry with respect to their suppliers and customers is then analysed. The potential to earn abnormal profits is determined by the degree of potential competition. However, actual profits are determined by the industry's bargaining power with its suppliers and customers. The outcome of Porter's model is that the analyst can better understand both current and potential profitability for the industry.

*Competitive strategy analysis* enables the analyst to determine on the basis on which the component firms within the industry compete. For example, many industries are characterised by two distinct groups: *cost leaders* (where firms aim to supply at the lowest possible cost) and *differentiators* (where firms do not compete on price but instead look to differentiate on some other basis such as advertising, quality, and so on). Once the competitive strategies of firms within an industry are better understood, their ability to turn these into competitive advantage should then be considered. Only firms which possess the required core competencies, key resources, and an appropriate value chain can achieve and sustain such an advantage. Here, the various tools of business strategy can be employed to good use.

The analyst could also use economic tools such as *transactions costs economics* to better understand the mix of business activities combined within a firm or commonly

observed within an industry. The economic rationale for this mix should be carefully evaluated, particularly in terms of the ability to create value and maintain competitive advantage.

In summary, there is no definitive list of models or frameworks for analysing a given industry, but any combination of models which enables the analyst to consider the following would appear essential: how industries are constituted; how component firms compete for resources and profits; where competitive advantage exists and how it is sustained; and how the industry is driven by macroeconomic, political and other factors; whether the industry is enjoying a growth phase or suffering from decline.

13. What is meant by *private equity* and what need is there for it in developed financial markets?

In recent decades there has been a dramatic growth in the private equity industry. In the US, arguably the birthplace of modern private equity markets, private equity funds now total in excess of \$300 billion. However, the growth of this market has been subject to significant cycling, associated in particular with the emergence of telecommunications, computers and IT technologies over recent decades.

Private equity firms finance entrepreneurial companies with high-risk but potentially high-rewards. Such firms may find it difficult to finance using conventional sources of funding, such as bank loans and other debt, as they are often characterised by a high proportion of intangible assets, a near-term forecast horizon of negative or volatile profits, the need for corporate restructuring, and so on. On the investor side of things, funds are raised largely from conventional funding sources such as institutional investors. The latter might be interested as they require long-run investments as part of their liability matching requirements and also may not have the in-house expertise to invest directly in this market.

Private equity organisations are needed to finance companies which conventional finance providers such as banks will not finance. New firms and firms which are restructuring are generally high-risk entities. There is a classic information asymmetry problem regarding the quality of a firm's projects vis-à-vis potential investors. The agency problem gets in the way of debt and equity investment from outside the firm. Outside equity (risk capital) investment can lead to increased firm-financed perquisites (needless expenditure) which increases the utility of the firm's manager directly whereas the costs of such action are more dispersed. Even in the case of debt financing this agency problem can lead to increased investment risk. Understanding the agency problem, outside providers of finance require a commensurately higher rate of return than internal providers of finance. Other risks might relate to the type of business raising the funds. For example, a high R&D expenditure manager may use his position to build his personal profile yet not actually focus on commercialisation of his ideas. Such risks add to the financing problem faced by certain firms. Another problem facing potential financiers of such firms is due to information asymmetry between insiders and outsiders to the firm, managers may only issue new equity when equity is overvalued. Again, understanding this, financing may be more difficult for new firms or those undergoing restructuring.

Private equity organisations, then, have been developed to tackle these information problems. They are successful in overcoming such problems due to their due diligence activities at the outset and then subsequent careful monitoring of the firm to reduce any information asymmetries. Reduced information asymmetry results in increased capital availability. Many authors see the central abilities of private equity specialists as lying in both finance and management skills such as investment screening and structuring, the use of convertibles, the monitoring and coaching of firms, and so on. Further, private equity organisations can engage with these new/restructuring firms better than other financial organisations such as banks because: private equity firms are able to take equity positions in firms whereas certain countries may prohibit such investment by banks; banks are not often well placed to charge rates commensurate with high risk due to their competitive positioning; banks are not used to dealing with low-asset-tangibility companies; and private equity organisations are able to provide proper monetary incentives to investors to engage in detailed screening and monitoring.

14. Discuss the benefits and costs of *Depository Receipts* and the factors have driven their recent growth in popularity.

Depository Receipts (DRs) allow local investors to invest in a foreign security as if it were a domestic security. A bank, with the major players being large investment banks such as the Bank of New York Mellon and Citi, acts as a depository when it buys the shares of a company in a foreign market, deposits them on account and then issues DRs to investors.

A DR can represent a single share, a fraction of a share or even many shares. DRs were developed in the US (American Depository Receipts), but have become increasingly popular elsewhere, particularly in Europe (European Depository Receipts, or the more generic International Depository receipts) and Japan.

The benefits of DRs are as follows:

- They trade like local shares;
- They are priced in the local currency;
- They conform to the settlement protocols of the local market;
- They pay dividends in the local currency;
- Investors receive annual reports and other financial communications in their local language;
- Trading in the underlying shares may be too expensive or even prohibited by local law;
- DRs allow diversification;
- Issuers get access to the larger financial markets (more investors);
- They can be used to compensate local employees of companies through stock options;
- There are three different levels of DRs: level 1 ADRs are only OTC, level 2 are listed with more strict compliance, and level 3 are offering ADRs with even stricter compliance but the ability to raise new capital.

The costs of DRs are as follows:

- They can trade away from the underlying share values and therefore price comparability with the underlying shares is not always possible;
- Issuers can incur significant GAAP reporting compliance costs – the reporting requirements depending on the type of DR, can be onerous;
- They are less attractive to some issuers given the introduction of the euro – the implicit advantages are lessened.

They have become more popular in recent years because of the benefits discussed above and because:

- World markets are becoming more volatile and any vehicle which enables the transactions costs of investors to be reduced is going to be popular;
- They provide greater visibility to companies from emerging and transition economies that want to engage not only with international customers but also international investors;
- They can be used to facilitate acquisitions in foreign markets;
- Companies from high growth economies such as India, China, parts of eastern Europe, and south America, have a huge requirement for further funding;
- The US (SEC) is in the process reducing compliance costs by not insisting on reconciliation to US GAAP.