CHARTERED INSTITUTE FOR SECURITIES & INVESTMENT

INVESTMENT ANALYSIS EXAMINER'S REPORT

DECEMBER 2010

GENERAL COMMENTS:

In general, the performance of the candidates sitting the Investment Analysis paper was very good, with only a small minority of candidates appearing unprepared for the paper. The majority of the candidates attempted all of the required questions. Useful theoretical and applied financial market knowledge was demonstrated by candidates, particularly in the essay questions. Areas in which candidates should direct greater attention include: the distinction between liquidity as a statement of financial position concept and cash flow as per the respective statement; the provision of credible assumptions when forecasting an income statement; structured and credible investment advice for the case study company; real and nominal bond rates; narrow and broad money concepts; fiscal policy in an applied setting; and the nature of alternative asset classes and their use in portfolio diversification.

SPECIFIC COMMENTS:

SECTION A:

Performance in section A was generally good, with the majority of candidates showing evidence of advanced preparation in their approach to the analysis of a case study company. Most candidates were able to describe the main activities of the company well in part (a). The vast majority of candidates analysed very well the operating profit margin of the company by its business segments in part (b). In part (c), performance was good as most candidates could demonstrate a clear understanding of the turnover measures. Performance in part (d) was poor as a number of candidates either failed to distinguish correctly between liquidity and cash flow or failed to be analytical in their approach. Part (e), concerning a discussion of the company's stakeholders, was reasonably well attempted, though a minority of candidates failed to explain the company's CSR policy in relation to each group. Part (f) was, in general, well attempted, though not all candidates clearly explained the likely impact on value of each issue identified from the Financial Review. The forecast income statement and related assumptions were well attempted in part (g), though only a minority of candidates provided adequate investment advice in relation to the company's shares in part (h).

SECTION B:

Candidate performance in section B was in general very good, though varied across the questions. Question 2 concerning deep-discount bonds was very well tackled, with most candidates understanding both the nature and merits of such instruments. In Question 3, a minority of candidates were not able to distinguish the Capital Market Line from other graphical constructs in Modern Portfolio Theory, though the majority

of candidates performed well. The vast majority of candidates were able to tackle the equity valuation problem in Question 4. In Question 5, on the subject of price indices, most candidates demonstrated knowledge of the UK inflation target, though a minority could not explain the difference between RPI and CPI. Question 6 was not well attempted by all candidates as many failed to understand the relationship between real and nominal bond rates. Question 7 was poorly attempted as many candidates could demonstrate only a vague understanding of the macroeconomic concepts of narrow and broad money. Questions 8 and 9 on the topics of international bonds and rights issues, respectively, were in general very well answered.

SECTION C:

Performance in section C was generally good, though candidates did not always demonstrate arguments grounded in core finance concepts or illustrate with real-world examples. In Question 10, candidates did not perform very well because whilst they could explain contractionary fiscal policy adequately, they could not always illustrate with specific UK policy examples. Question 11, on the comparison between the analyst's company report and the annual report, was very well attempted. Question 12 on government bond yields and the outlook for investors was, in general, well addressed, with examples of some excellent industry knowledge. Question 13 on Modern Portfolio Theory was reasonably well attempted, though more discussion on the relevance of MPT in the post-crisis period would have improved answers. Question 14 on the topic of alternative assets was not very well attempted, evidencing a lack of detailed knowledge and understanding of these instruments.

SECTION A **TOTAL 40 marks**

Q1.

(a) Briefly describe the main activities of Renishaw plc in the year ending 30 June 2010.

(2 marks)

Renishaw plc is largely a manufacturer of metrology equipment, that is, equipment for measuring, probing and calibrating. The Group's core business is its Metrology segment, whilst it is also investing in the development of its Healthcare segment which employs related technologies. The Metrology segment involves the manufacture of CMM (co-ordinate measuring machine) probes, machine tool probes, laser calibration systems, machine tools and other scientific equipment. The Healthcare segment involves the manufacture of dental scanning equipment, spectroscopy products, and MRI scanner-related products. The Group manufactures its products in UK, Ireland, India, Germany and France, and its markets are global.

(b) Calculate and comment upon the operating profit margin of Renishaw plc for the years ending 30 June 2009 and 30 June 2010 by each of its major business activities.

(4 marks)

	2009			2010		
	Revenue £'000	Profit £'000	Margin (%)	Revenue £'000	Profit £'000	Margin (%)
Metrology	152,894	10,315	*6.7%*	162,118	31,537	*19.3%*
Healthcare	18,353	(4,324)	*-23.6%*	19,489	(3,442)	*-17.7%*
Total	*171,247*	*5,991*	*3.5%*	*181,607*	*28,095*	*15.5%*

The sales of the Metrology segment grew in 2010 due to marked growth in the Far East, and in terms of products, strong growth in revenues of encoder and laser scale products. The operating profit of the segment increased markedly in terms of both scale and margin, despite significant research and development and engineering costs.

The sales of the Healthcare segment increased marginally in 2010, again due mainly to performance in the Far East. The operating profit performance of the segment improved somewhat, giving rise to a reduced operating loss in both scale and margin terms, partly as a result of reduced research and development expenditure. It is possible that the continuing poor profit performance is a result of branching out into a business unrelated to its core focus on Metrology.

The revenue growth evidences a relatively healthy order book, coupled with significant overall margin improvement, resulting from the previous year's cost reduction programme.

(c) Calculate and comment upon the following ratios for Renishaw plc for the years 2009 and 2010:

(i) Payables turnover.

(2 marks)

$$\text{Payables turnover} = \frac{\text{Credit purchases}}{\text{Trade payables}}$$

2010: Payables turnover = 93,832 / 10,440 = 8.99

2009: Payables turnover = 101,064 / 6,588 = 15.34

The payables turnover ratio can be employed to gauge to the efficient of the firm's credit management function. If this ratio is falling through time then the company is falling behind with its payments, and it may indicate wider liquidity problems. In the absence of data on credit purchase, analysts often substitute in the cost of goods sold, as this still provides a useful relative measure. This turnover ratio for Renishaw plc has fallen significantly, indicating on a prima facie basis that it has expanded its purchasing on credit; it is delaying payments to its creditors, or both.

(ii) Receivables turnover.

(2 marks)

$$\text{Receivables turnover} = \frac{\text{Credit sales revenue}}{\text{Trade receivables}}$$

2010: Receivables turnover = 181,607 / 45,873 = 3.96

2009: Receivables turnover = 171,247 / 24,057 = 7.12

The receivables turnover ratio can be employed to gauge the efficiency of the firm's credit management function. If this ratio is low then the firm should chase its debtors (accounts receivables) harder. In the absence of data on credit sales, analysts often substitute in total sales, as this still provides a useful relative measure. This turnover ratio for Renishaw plc has fallen significantly, largely due to the significant increase in trade receivables. This may indicate a softening of trade credit policies as a means to facilitate market expansion.

(d) Analyse and comment upon the changing liquidity position of Renishaw plc over the years ending 30th June 2009 and 30th June 2010.

(5 marks)

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

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

2010: Current ratio = 115,631 / 29,884 = 3.87

2009: Current ratio = 79,662 / 21,493 = 3.71

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). Renishaw plc can cover its current liabilities with its current assets very easily, and perhaps excessively so. The extent of coverage has increased marginally over the period. It is arguably investing too much in its working capital (and 'unproductive' current assets).

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

2010: Quick ratio = (115,631 – 30,884) / 29,884 = 2.84

2009: Quick ratio = (79,662 – 29,156) / 21,493 = 2.35

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 inventories 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 very safe as it greatly exceeds the 'rule of thumb of 1' i.e. cash and near-cash can cover current liabilities very well. The company is either excessively conservative in its liquidity management or there is another explanation, such as the granting of more generous credit terms to expand into new markets or the holding back of cash for opportunistic investment purposes. The former of these is a possibility given the revenue expansion enjoyed by the company.

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

2010: OCFMO = 24,533 / 29,884 = 0.82

2009: OCFMO = 31,454 / 21,493 = 1.46

This ratio measures the ability of the business to meet its maturing obligations ie, the extent to which the firm can 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. Renishaw has seen a dramatic deterioration in this ratio over the year, with both operating cash flows falling and current liabilities increasing. Operating cash

flows for the company decreased mainly due to a significant investment in working capital which offsets the increase in profit for the year whereas current liabilities increased largely as a result of increased trade and other payables.

Overall, Renishaw plc has seen a significant investment in working capital, though this has had a significant negative impact on cash flows. At a time of liquidity constraints faced by many manufacturing companies, this investment might be considered excessive.

(e) Identify the key stakeholders highlighted by Renishaw plc in its Corporate Social Responsibility review and explain how the company seeks to address their needs.

(2 marks)

The key stakeholders in Renishaw plc are identified as its customers, its staff, the environment and the community.
Renishaw plc addresses the needs of its *customers* by providing expert support; supplying innovative products; producing products which help its business customers to reduce energy consumption and minimise waste, and reduce production down-times. It also produces equipment which helps its client customers to produce environmentally friendly products more efficiently in the auto and wind energy sectors.
The company addresses the needs of its *staff* by maintaining an active equal opportunities policy; by maintaining low staff turnover, the payment of rewards for long service; the introduction of variable working time; and better communications with the board of directors. It also offers sponsored studentships in the UK and structured training opportunities for engineers.
In terms of the *environment*, the company has invested in both monitoring and reducing its energy consumption, water usage, emissions, and its disposal of waste materials. It is committed to carbon reduction and a far greater use of paperless commercial documentation.
The company addresses the needs of the *community* by providing educational tours of its premises, the operation of the Renishaw Charities Committee, and the support of various educational initiatives with universities and schools.
The company is a member of the FTSE4Good Index in recognition of its corporate responsibility standards.

(f) Identify and explain what you consider to be the four most important issues discussed in the Financial Review, and describe how they are likely to impact on the value of Renishaw plc.

(5 marks)

The list of issues and the respective impacts on value are given as follows. The list is not exclusive, and provided merely for the purpose of illustration.

One potential issue for the company is its ability to sustain investment in new technologies to ensure a continuous stream of patented products and methods (this is the basis for its business model). The main investment is in Metrology, but the company is also investing in the expanding Healthcare segment. It is notable that the gross expenditure on total engineering costs including research and development fell to £30.9m from an average exceeding £35 in 2008 and 2009, perhaps questioning the

company's ability to sustain its investment at desired levels, and potentially diminishing its value in relation to future cash flows.

The limited forward order visibility of the company is potentially problematic, as orders from customers involve relatively short lead times. The order book is typically only one month of sales value, requiring the company to maintain great flexibility in its production capacity and inventory levels. Such flexibility comes at a cost in terms of the ability of the company to invest in larger scale production capacity and in terms of the costs of maintaining inventories, thereby impacting negatively in terms of opportunity costs and therefore value creation.

A number of the company's key performance indicators suggest significant volatility in revenue growth, thereby impacting negatively on EPS and DPS and indicating that the company is very susceptible to changes in the global economic environment. Even within a given year, there is significant sales volatility with the first half of the year performing very badly and the second evidencing significant sales recovery. The operating risk of the company is therefore quite high which impacts negatively on its value, and therefore on analyst recommendations.

The expansion into the new Healthcare segment and into new geographical markets is a significant risk for the company, as it moves away from its core Metrology business segment. In the current turbulent world economic environment, one might argue the focusing on core activities and driving margin improvement would have a great positive impact on value for shareholders.

(g) Prepare forecasts of profit before and after tax and earnings per share for Renishaw plc for the year ended 30 June 2011. Explain the basis of your computation and of any assumptions that you have made.

(10 marks)

	2009 £'000	**2010 £'000**	**Forecast 2011 £'000**
Revenue by activity			
Metrology	152,894	162,118	***180,000***
Healthcare	18,353	19,489	***25,000***
Total	*171,247*	*181,607*	***205,000***
Operating profit			
Metrology	10,315	31,537	***36,000***
Healthcare	(4,324)	(3,442)	***(500)***
Total	*5,991*	*28,095*	***35,500***
Margins (%) by activity			
Metrology	*6.7%*	*19.3%*	***20.0%***
Healthcare	*-23.6%*	*-17.7%*	***-2.0%***
Total	*3.5%*	*15.5%*	***17.3%***

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 year ending 2010 are based on the following:
Finance income:
2010: Finance income = £5,926,000, largely the return on pension scheme assets (and low interest receivable)
2011: Return assumed to be the same as for 2010 in the absence of further actuarial information
Finance expense:
2010: Finance expenses of £5,775,000, again largely the interest on pension schemes' liabilities (and very low bank interest payable given low overdraft and no long term debt)
2011: Expenses assumed to be the same as for 2010 in the absence of further actuarial information
Share of profits of associates:
2010: Profits = £479,000 and £317,000 in 2009
2011: Profits increased on trend to give £724,000 to the nearest £'000
Taxation:
2010: Taxation of £5,745,000 on PBT of £27,057,000 = 21.2% (lower than 28% due to taxes on overseas subsidiaries)
2011: £36,375,000 x 21.2% = £7,723,000

	2010 £'000	2011 £'000
Operating profit	26,427	35,500
Finance income	5,926	5,926
Finance expenses	(5,775)	(5,775)
Share of profits of associates	479	724
Profit before taxation	27,057	36,375
Income tax expense	(5,745)	(7,723)
Profit for the year	21,312	28,652

Basic earnings per ordinary share = £28,652,000 / 72,788,543 = 39.4p

This compares favourably with a basic earnings per ordinary share of 29.3p for 2010. The weighted number of shares is computed on the 2010 basic and diluted weighted average shares - the number of shares did not change in 2009 or 2010.

(h) Advise on the desirability of investment in the shares of Renishaw 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 company and industry current and forecast financial variables such as EPS and P/E.

SECTION B **Total 30 marks**

2. Explain what is meant by a *deep-discount bond* and why an investor might be interested in investing in such bonds.

(2 marks)

A deep-discount bond is a debt instrument which is sold at a price considerably below par value, hence 'deep-discount'. For example, a bond sold at £75 with a five year maturity after which it is repaid at par of £100 is deep discounted. The reason that such bonds are heavily discounted at sale is that they do not pay a coupon, with investors relying instead on the capital gain. An investor might be attracted by tax considerations i.e. a capital gain rather than income, depending on their tax status.

3. Explain, with the aid of a graphical illustration, the meaning of the *Capital Market Line*.

(4 marks)

The Capital Market Line (CML) helps us to consider which portfolio should be preferred by all investors, given the presence of a risk-free asset. If there was no risk-free asset, then investors would select the best portfolio from the efficient frontier in relation to their own family of indifference curves (the efficient frontier). However, with the presence of a risk-free asset, all portfolios constructed from some combination of the risk-free asset and the market portfolio will provide the best risk-return opportunities i.e. the best return for any given level of risk.

Candidates should draw a return versus risk graph, showing the risk free asset on the expected rate of return axis and a straight line resting on (tangential to) the efficient frontier. Anchoring at the risk-free rate, any other line above the CML is infeasible and below the CML is inferior in terms of its risk-return profile.

4. (a) The current risk-free rate is 3% while the anticipated annual market rate of return is 5%. Calculate the required return on shares in XYZ plc if the historic beta value is 1.1.

(2 marks)

Employing the CAPM expression:

$$r_i = r_f + \beta\,(r_m - r_f) = 0.03 + 1.1\,(0.05 - 0.03) = 0.052 = 5.2\%$$

(b) If the current price of shares in XYZ plc (above) is £4.00 and the anticipated dividend in one year is 10p per share, calculate the implied growth rate, using the Constant Growth Dividend valuation model.

(2 marks)

Employing the constant growth Dividend Valuation Model:

$$P_0 = D_1 / (r - g)$$

Rearrange to give: $g = r - (D_1 / P_0) = 0.052\% - (10/400) = 0.027 = 2.7\%$

5. (a) Explain the difference between *CPI* and *RPI*.

(2 marks)

RPI, the Retail Price Index, examines the price of a basket of goods through time. These prices are weighted to reflect the average consumption patterns of households – items on which consumers spend more money have a higher weighting. In the UK, RPI includes mortgage interest payments, council tax, house price variation, and other housing costs, as they are such an important component of current household expenditure. The series was rebased to 100 in 1987. Two variants are RPIX which excludes the impact of mortgages, and RPIY which excludes the impact of mortgages and the impact of VAT and local authority taxation.

CPI, the Consumer Price Index, is also a measure of inflation, but is based on a wider basket of goods and is used by the wider European Union. Further, it employs a geometric average and is therefore considered an improvement upon the RPI. At the moment, CPI is lower than RPI as it tends to introduce new goods earlier than RPI and therefore as the price of these tends to fall after introduction this tends to reduce the CPI.

(b) What is the current medium term inflation target for the UK economy?

(1 mark)

The UK government has set an inflation target of 2%, and the Monetary Policy Committee of the Bank of England is charged with the task of pursuing this target plus or minus 1% point. The inflation target is based upon the CPI. The current CPI inflation rate is well above this at 3.7% (as at January 2011).

6. (a) If $r_{nominal}$ is the nominal rate of interest, r_{real} is the real interest rate, and i is the inflation rate, show a mathematical formula that expresses $r_{nominal}$ as a function of r_{real} and i.

(1 mark)

$(1 + r_{nominal}) = (1 + r_{real})\ (1 + \text{inflation rate})$
Where $r_{nominal}$ = nominal rate of interest
r_{real} = real interest rate

(b) The yield on a one-year government bond with par value of £100 is 7% and inflation next year is expected to be 4%. What is the real value of the total payoff on the government bond and the real interest rate on the bond?

(2 marks)

Nominal payoff = £100 x 1.07 = £107.00

Real value of total payoff = £107 / 1.04 = £102.88

Thus real rate of interest on bond = ((£102.88-£100.00) /£100.00) x 100 = 2.88%

7. Explain the macroeconomic terms *narrow money* and *broad money*.

(4 marks)

Narrow money and broad money are both measures of money or money supply. Narrow money takes into account only balances available for transactions purposes whereas broad money also includes money held for the purposes of saving. The former reflects money in the form of very liquid assets whereas broad money might be considered money in the form of relatively illiquid assets. Both exist on a liquidity spectrum with liquid assets at one end in the form of cash and illiquid assets such as housing property and pensions at the other end. To be more precise, narrow money is termed M0 by the Bank of England, and includes cash in circulation, cash in banks, and banks' balances at the Bank. Broad money is termed M4 by the Bank, and includes the range of liquid and more illiquid assets including sight deposits, time deposits, certificates of deposit, and so on.

8. You are a US investor looking to invest $650,000 for one year. All other things being equal, you have the opportunity to obtain a one year UK bond (in pounds sterling) at 3.55% or a one year US bond (in dollars) at 2.75%. The spot rate is $1.6501:£1. The one year forward rate is $1.6175:£1. Which bond will you prefer to invest in and why? You should ignore transaction costs.

(5 marks)

Value of US bond	= $650,000 x 1.0275	= $667,875
Value of UK bond	= $650,000 / 1.6501	= £393,916 in exchange
	£393,916 x 1.0355	= £407,900 bond payment
	£407,900 x 1.6175	= $659,777 in exchange

Thus the investor prefers the US bond because the value of the UK bond is worth less after exchange, even though its interest rate is much higher. This is due to the expected depreciation of sterling over the 12 month period.

9. Chadwick plc proposes to make a rights issue at £4.75 of one new share for each three shares held. The money raised will enable it to invest in a new business segment. The company currently has outstanding 500,000 shares priced at £14.25 a share. Assuming that the new money is invested to earn a fair return, calculate:

(a) The total value of the company after the issue.

(2 marks)

Number of new shares = 500,000 x 1/3 = 166,667 shares

Amount of new investment = 166,667 shares x £4.75 = £791,668

Total value of company after issue = (500,000 x £14.25) + (166,667 x £4.75)
= £7,125,000 + £791,668 = £7,916,668

(b) The share price after the issue.

(2 marks)

Total number of shares after issue = 500,000 existing + 166,667 new = 666,667 shares

Share price after the issue = £7,916,668 / 666,667 shares = £11.87

(c) The intrinsic value of the right to buy one new share.

(1 mark)

Price of the right to buy one new share = £11.87 - £4.75 = £7.12

SECTION C **Total 30 marks**

10. Explain what is meant by *contractionary fiscal policy* and give examples of this policy within the context of the UK economy.

Fiscal policy is a form of macroeconomic policy which concerns any change to the structure of tax payments and/or any change to the type, level or timing of government spending. Changes in either taxation or government spending will impact on aggregate demand, that is, the level of economic activity.

Fiscal policy is said to be *expansionary* when government spending exceeds tax revenue, thereby leading to a budget deficit, and *contractionary* when tax revenue exceeds government spending, thereby leading to a budget surplus. Contractionary fiscal policy is usually associated with times of economic boom, and the related problems of inflation (capacity constraints) and a balance of payments deficit.

How does fiscal policy impact on economic activity? Keynesian economists have advocated reducing taxes and increasing government spending to stimulate aggregate demand in time of slower or negative GDP growth, with subsequent booms being used to reduce the resulting deficit (economic stabilisation). The issue with using fiscal policy to manage the economy is that fiscal expansion leads to higher interest rates which counteract to some extent the impact on aggregate demand. The transmission mechanism is that the deficit resulting is financed through government bonds, giving rise to increased interest rates which choke off economic activity (the crowding-out effect). Contractionary fiscal policy should have the opposite effect, that is, reduced aggregate demand and falling interest rates if this argument is followed.

With the incoming coalition government, and in response to the banking crisis and the emergence of the UK economy from recession, the new government is pursuing a contractionary fiscal policy and a series of austerity measures. The Comprehensive Spending Review on 20 October 2010 details such measures, some of which are discussed below. The purpose is to tackle government debt which is expected to reach £900 billion in the coming years and to cut the budget deficit which rose to £155 billion in the year 2009/10.

In terms of taxation, there was an increase in VAT from 17.5% to 20% from January 2011. This change should lead to a reduction in non-essential household expenditure, though it may, in the process, lead to an increase in tax revenue, recognising that these two effects may trade-off. National Insurance rate limits will be reduced by £2,500 for the basic rate and by £1,650 for the higher rate. A significant policy change is the recent increase in Capital Gains Tax from 18% to 28% for higher rate taxpayers. Both Insurance Premium Tax and Travel Insurance and Vehicle Insurance Tax will increase from January 2011. The generosity of tax relief on pension contributions has been dramatically restricted from April 2011. A related measure taken by the government is to tackle tax avoidance, though how this is to be accomplished in unclear. All of these measures above will have a contractionary effect, some reducing related economic activities whilst others will on balance increase tax revenues. Set against these contractionary effects are certain more generous tax measures such as the reduction in Corporation Tax from 28% to 27% from April 2011.

Interestingly, the Comprehensive Spending Review focuses far more on spending cuts than on tax rises to achieve a contractionary stance, causing some debate between the coalition government and the Labour party. The aim is to reduce the *structural deficit* towards zero – this is the deficit which results from a fundamental imbalance of government spending and taxation rather than cyclical factors. Spending cuts will need to achieve target savings of between 25% and 40%, though overseas aid and the NHS will be protected to some extent. Early candidates for spending cuts have included public sector pensions, student loans, child benefit for higher wage earners, school building programmes, and reducing the number of QUANGOs.

There is some debate concerning what the impact of recent tax rises and the CSR spending cuts will be for the UK economy. Whilst the coalition government focuses on the reduction of public debt and the reduction of the deficit, the opposition focuses on the likely impact on slowing economic recovery. Indeed, many argue that the projected 2.3% growth for the UK economy will not be achievable in the face of such harsh spending cuts, risking instead further slowdown or even a double-dip recession.

11. Discuss the proposition that an *investment analyst's company report* is far more useful and objective than the *annual report* when considering investment in a company's shares.

Arguably, the investment analyst's company report is far more useful due to its more objective view on the ultimate value of the firm and the explicit investment recommendation given.

Candidates could illustrate how useful each of the following sections of the investment analyst's company report are:

- 'Tearsheet' - summarises in a very focused manner the most important information regarding an equity (very succinct);
- Company profile - provides the reader with a brief introduction to the company which is analytical rather than descriptive;
- Revenue model - examines the main drivers of current and future revenue and costs;
- Sector analysis – examines the macroeconomic and industry environment of the firm, industry profitability, and the nature of competition;
- Financial statement analysis - analysis of the detail of the current and forecast financial statements, commentary on significant current and future accounts items which are material (explains the items which impact significantly on the firm's equity value);
- Key corporate activities and events - focuses on important corporate activities such as M&As and other expansion plans;
- Company strategy - the strategy of the company (or group) is discussed, including: Is the firm growing profit margins? Is the firm going for sales growth? Is sales growth to be driven by new products/services or by new geographical markets?
- Valuation – valuation of the firm using a variety of techniques, along with a sensitivity analysis;
- Summary – summary of salient findings of the report, target vs. market price, and recommendation.

Candidates should also contrast the above with the generally more subjective components of the annual report and illustrate how they are produced for a far wider set of stakeholders:

- Statement of comprehensive income, statement of financial position, statement of cash flows – provide us with detailed accounting information on financial position and performance, as well as the sources and uses of cash – these are audited and therefore should represent a true and fair view;
- Financial highlights - summary of key performance indicators, focusing on the statement of comprehensive income;
- Chairman's statement - offers an opportunity for a Chairman to report in unquantified and unaudited terms on the performance of a company during the past financial period and on likely future developments;
- Financial review - narrative report from the directors, within the annual report, which discusses the main points concerning financial performance and financial position of the company, the potential risks facing the company, and an outlook for the company and its industry;
- Directors' report - functional report which includes information required by law, information required by the stock exchange, and information which is voluntary;
- Directors' remuneration report - variety of information detailing how directors are compensated;
- Corporate governance – discusses governance structures in the company, risk management, corporate social responsibility, and so on;
- Notes to the accounts - effectively provide far greater detail on the underlying position and performance of the company;
- Segmental financial reports – disaggregates the information contained in the conventional financial statements according to business activities and/or geographical markets.

Candidates should come to a view on the relative usefulness of the two documents to the investor. The annual report: contains much useful information but is at times subjective (apart from the audited elements); is largely descriptive in nature; has to appeal to a far wider set of stakeholders and thus lacks investor focus; contains too much information relating to accounting value and not enough relating to economic value, and so on. The analyst's report: contains only that information required to underpin investment advice; is short and focused; is entirely analytical rather than descriptive; is written with a specialist audience in mind and therefore is more technically-orientated and succinct; focuses on economic rather than accounting value; gives investment advice rather than performance measures of interest to a wide range of stakeholders.

12. Since the start of 2010 *government bond yields* in the US, UK and Germany have fallen sharply, despite a continued rise in government debt levels. What might this indicate as to the future direction of these economies, and the outlook that it implies for both bond and equity investors?

Government bonds issued by the UK government (or rather the Treasury), otherwise known as gilts, are bonds which pay the investor a fixed coupon every six months until the maturity date at which time they pay the investor their final coupon payment

as well as the repayment of the principal. The maturity of gilts can be long (15 years+), medium (7-15 years), or short (less than 7 years). Such bonds are regarded as risk free as governments tend not to default on their debt. The term gilt relates to the UK alone, and not US and German government bonds, though their characteristics and operation are identical. Such bonds are very attractive as they typically do not attract capital gains tax, though are of course subject to income tax.

Since the start of 2010 government bond yields in the US, UK and Germany have fallen sharply, despite a continued and significant rise in government debt levels. Indeed, 10-year bond yields in all of these countries have recently fallen to below 3%, the lowest rate for decades. The fall in bond yields for such countries is interesting in that we normally would expect to see interest rates demanded by investors increasing with increasing government debt. However, this experience is in sharp contrast to the Irish government bonds which recently exceeded 5% and Greek bonds which exceeded 10% (due to their perceived far greater default risk, government debt and yield are strongly positively related).

The reasons for such current low yields in UK, the US and Germany are as follows:

- The yields are low as bond prices have risen, driving down the effective interest rate (or yield) on those bonds - this is despite the enormous rise in government debt in western economies in recent years
- Investors are looking for a safe investment at a time of great economic uncertainty (and therefore go for the 'risk-free option')
- Investors would appear to expect interest rates to remain low for some time, with a current Bank Rate of 0.5% in the UK, consistent with falling market inflation expectations (and a stronger pound)
- Pension funds and other institutional investors currently have an extremely large demand for government bonds, particularly those which are index-linked

The implications for the future direction of these economies is as follows:

- The valuation of companies and other assets is boosted as the discount rate is kept low by virtue of the low risk-free rate
- Historically low government bond yields can lead to lower pensions for those who have invested in annuities – the effect here has been marked in recent years
- Whilst rates remain low, the financing of the deficit remains cheap for the government
- Once the economies of these countries recover, bond yields will rise again

The outlook implied for bond and equity investors:

- In the short term, further quantitative easing may lead to the price of gilts increasing and yields perhaps falling yet further, particularly if these countries continue to experienced low growth
- However, investors in government bonds may lose in the medium term as inflation erodes returns (which are already moving into negative territory given the current CPI inflation)
- Yields on both government and corporate bonds are likely to rise significantly at some stage in the short to medium term, giving rise to significant capital losses to current bond investors

- In terms of yields, equities are currently very attractive relative to bonds at the moment, though the balance will shift as bond yields recover
- The gilt yield to equity yield ratio, which is currently less than one, should recover to the much higher values observed historically
- If investors continue to accept low government bond yields then this confirms the weakness of the wider economy and the poor prospects for other (competing) asset classes
- If the economies of these three countries do recover unexpectedly well then the demand for government bonds will fall, prices will fall, and yields will rise again

13. State and explain the assumptions that are used in *Modern Portfolio Theory* and discuss their relevance in the light of the recent financial crisis.

Markowitz (1952) developed the basic principles of portfolio construction and showed how an investor can reduce the standard deviation of portfolio returns by choosing stocks that do not move exactly together. He went on to work out the basic principles of portfolio construction. In brief, Modern Portfolio Theory (MPT) seeks to maximise the expected return on a portfolio for a given portfolio risk by means of selecting the proportions of financial assets carefully. MPT demonstrates, in terms of mathematics, the benefits of diversification to derive a portfolio risk which is lower than that of its component assets. This works when the prices of different asset class returns are negatively correlated (eg, bond and share prices), but also works when single asset returns (eg, of shares) are less then perfectly correlated. The theory emphasises the positive relationship between risk and returns, with risk measured as the standard deviation of returns of an asset, and portfolio returns as the weighted combination of asset returns. The MPT ultimately leads to the conclusion that the only aspect of risk which matters is systematic risk, measured by the share's beta, as company-specific risk can be diversified away (and is therefore not rewarded) – this is illustrated by the Capital Asset Pricing Model (CAPM).

We might argue that the recent financial crisis has thrown into question Modern Portfolio Theory and its implications for investment practice. Much of the criticism is related to some unrealistic assumptions and implications of the theory, certain of which are briefly given below:

- Asset correlations are fixed and remain so through time – but this ignores the fundamentals driving both future share prices and overall market performance - during a crisis asset returns can become positively correlated, that is, they all experience poor performance (and betas can vary through time)
- Returns follow a normal distribution – however, distribution tail events occur more regularly than the normal distribution might suggest (even six standard deviations away from the mean)
- Investors are rational and risk averse – but the behaviour of investors since the financial crisis has demonstrated that collectively investors have behaved far from rationally – perhaps we have been individually rational but jointly irrational (for example, engaging in herding and gambling behaviour and other behavioural finance phenomena)?

- There are no taxes or transactions costs – however, both clearly exist and will ultimately affect the willingness or ability of investors to adjust their portfolios in the manner which MPT suggests
- Investors can lend and borrow at the risk-free rate – but only governments can borrow at this rate within a given economy/market
- Investors are price takers – however, large transactions to buy or sell a given asset will in the real world market lead to price movements
- Perfect and timely information – however, in reality all investors do not have the same access to information in a timely fashion, and phenomena such as insider trading can occur
- Investors understand the true distribution of returns for an asset – but investor expectations can of course be biased by behavioural factors such as overconfidence and heuristics
- Returns (utility) maximisation is all that matters to investors – but different investors may have different views of what they wish to achieve from their investment strategy (and may not be drive by utility maximisation alone

In a broad sense, the key failure of any mathematical model is that it uses historical data to make predictions about the future. New environments or phenomena which did not exist when the historical data were generated (e.g. the internet bubble and the sub-prime market collapse) can quickly render forecasts useless. That does not mean that investors should abandon mathematical models completely, but rather that they should: (i) be aware of the short-comings of such models; (ii) not become completely reliant on them; and (iii) remember to use common-sense and override the models when it becomes clear that some new factor is rendering the model obsolete.

If we argue that MPT should be abandoned, then we might ask what the alternatives are. We could of course opt for a simple absolute returns strategy, but this is an unrealistic strategy for longer term investment as no investor or investment manager can persistently identify higher absolute return investments. We could pursue a simple market timing strategy, but again this requires the investor to spot what the rest of the market consistently has real difficulty with i.e. when certain asset classes will rally and other will drop, to facilitate their strategies. Strategies such as tactical allocation, attempting to understand and trade upon market under- and over-reactions to cycles, is also open to great subjectivity and significant risk. Finally, we could just ‘put all of our eggs into one basket’ and try to pick one or two investment asset winners, but this entails a level of risk which most investors would not consider acceptable.

In sum, MPT is a very useful framework for looking at the relation between risk and return for a variety of asset classes. MPT does not actually advocate a slavish adherence to its mathematical concepts, though these make a fairly compelling case in terms of economic logic. Adherence to portfolio construction and management on the basis of betas alone, whilst ignoring fundamentals and shifts in the market, can produce poor returns in a volatile environment. The alternatives if we were to move away from MPT are very subjective and have been shown not to work in the longer term, except in cases of extreme luck. Most investment managers would probably agree that MPT is imperfect but that it is the best approach from a variety of alternatives. Indeed, portfolio management can be more effective if there is also room for, say, tactical allocation – a hybrid strategy can at times be preferable.

14. Describe what you understand by the term *alternative assets*, and what type of investment areas might be covered by such assets. Explain how they might contribute to, or detract from, overall portfolio performance.

Alternative assets are non-traditional investment vehicles. More precisely, alternative assets are assets other than equities (a residual claim against the cash flows of a company), fixed income securities (a mandatory claim against the company's assets by virtue of a loan to that company), or mutual funds (a managed investment fund that sells its shares to investors). Investors often look to invest in such assets in down markets for conventional assets. "Alternative assets" can encompass both exposure to non-traditional assets or to specialized investment strategies. One issue for investing in such assets is that certain alternative asset classes, such as hedge funds, are only open to wealthier investors due to the size of the initial investment (or to "accredited investors" who have a higher risk appetite).

Examples of alternative assets include: limited partnership units, hedge funds, private equity funds, mutual funds, derivatives of various types, exchange traded funds of many different types, commodities futures, real estate investments, investment in distressed securities, investment in infrastructure projects, antiques, art, collectibles, and fine wines. For example, hedge funds, or pooled investment funds, pursue absolute return strategies, by employing short-selling, derivatives, and at times significant leverage whereas mutual funds invest in certain industries such as IT or in employing certain styles such as "small capitalisation value", attempting to beat small cap indices.

Alternative assets can contribute to, or detract from, overall portfolio performance in a number of ways. They are useful, primarily, in diversifying portfolio exposure away from traditional portfolio assets such as equities and bonds. The reason they can achieve this is that such assets have low or even no correlation with conventional assets such as bonds and equities - this enables investors to reduce systematic risk. As a result they may be completely independent from normal market volatility. Investors in alternative assets are effectively employing absolute return strategies. Proponents of alternative assets argue that they can be employed to achieve a more optimal assets allocation and portfolio performance, particularly in times of poor equity market performance. One issue with such strategies is that when conventional assets are rallying, the alternative assets may well be performing poorly, which limits upside potential. However, conventional wisdom tends to suggest that an investor should not have more than 10% of his or her portfolio invested in such assets. Another is that markets for them are less liquid than for traditional assets, and they can attract much larger broker fees and complex taxation outcomes. The time taken to build value for certain alternative assets, e.g. antiques, can be many decades, and even if value appears to have appreciated greatly, the precise valuation in that event can be difficult. Finally, investment in vehicles such as hedge funds can bring with it very high management and performance fees.