Institute of Actuaries of Australia

2007 PART III EXAMINATIONS

Subject Title: **Course C1 Investments**

Date: **Monday 29th October**

Time: **9:15 am to 12:30 pm**

Time allowed: Three (3) hours plus fifteen (15) minutes of reading time

Instructions: Each new question (but not each section of a question) must be commenced in a new answer book.

Number of Questions: Five (5)

Question	Marks
1	20
2	20
3	20
4	20
5	20
Total	**100**

Candidates are required to answer <u>ALL</u> questions.

This paper has 8 pages (excluding this page and the blank back page).

INSTITUTE OF ACTUARIES OF AUSTRALIA

C1 INVESTMENTS **OCTOBER 2007 EXAMINATIONS**

Answer all 5 questions.

QUESTION 1 **(20 Marks)**

One of the highlights of the 2006/07 Federal Budget was a projected healthy budget surplus, including personal income tax cuts to be phased over the next 4 years.

The government engages in fiscal policy when it uses the budget to manage the economy. It decides on the taxes that it collects, the transfer payments it gives out, or the goods and services that it purchases. The primary economic impact of any change in the government budget is felt by particular groups—a tax cut for families with children, for example, raises the disposable income of such families. Tax relief for one sector may be seen as a transfer of wealth from another sector.

The main components of the budget surplus/deficit in previous years are summarised in the following table:

Budget Surplus/(Deficit) 1996-2006, $ billion

	Taxation Revenue[1]				Non-taxation revenue	Total Revenue	Total Expenditure	Operating surplus[2]	Cash surplus[3]
	Individual	**Companies**	**Superannuation**	**Other**	**(Indirect)**				
Fiscal year to:									
Jun-1996	60	18	2	36	5	122	132	-10	-5
Jun-1997	66	19	3	38	5	131	136	-5	3
Jun-1998	71	19	3	39	5	137	136	1	16
Jun-1999	77	21	4	40	5	146	141	6	13
Jun-2000	83	24	4	41	17	170	160	10	22
Jun-2001	77	35	5	35	14	166	165	2	11
Jun-2002	86	27	4	32	21	171	174	-4	2
Jun-2003	91	34	5	33	20	184	182	1	7
Jun-2004	99	36	6	34	18	193	190	3	8
Jun-2005	109	43	6	35	18	211	208	3	12
Jun-2006	114	49	7	36	19	226	210	16	14

Notes

1 Excludes GST (which is treated as a State tax).

2 Accounted for on a cash basis up to June 1999, and on an accruals basis thereafter.

3 The cash basis for surplus includes the net impact of equity sales (eg Telstra) and is that reported in the financial press.

You are a business commentator, and have been asked to give broad views of the impact of the government's fiscal policy for investing in Australia.

(a) Suggest reasons for the growth of the budget operating surplus over recent years. (2 marks)

(b) Discuss briefly the impact of a budget surplus for:

- Economic activity (i.e. GDP)
- Inflation
- Interest rates
- corporate earnings (4 marks)

(c) Discuss the effectiveness of using fiscal policy to stabilise economic activity. (2 marks)

(d) Discuss how fiscal policy with a budget operating surplus can impact investment returns for each of the main asset classes of equity, debt and direct (i.e. unlisted) property, and identify what other factors are relevant for these returns. (6 marks)

(e) The 'cash surplus' shown in the table above has been accounted for in the year that revenue and expenditure are paid, and includes net receipts from capital transactions (such as sales of government owned enterprises). On the other hand, the 'operating surplus' has been assessed on an accruals basis from 2000 onwards, without allowing for capital transactions. Briefly discuss the relative merits of these two current methods for the purpose of assessing the budget's investment impact. (2 marks)

(f) As part of the 2006/07 Federal Budget, the Government included the following initiatives:

- Taxation of superannuation arrangements to be simplified, with no taxation of benefits for members after age 60.

- The Budget surplus to be transferred to the Future Fund, to finance the superannuation liabilities in respect of the government's own employees.

List the possible implications of these initiatives for Australian investment markets. (4 marks)

QUESTION 2 **(20 Marks)**

An active international fund manager employs various techniques for adding value to its debt portfolios. Curiously, its Australian and international bond portfolios are managed by different teams in different locations, and the techniques applied differ as follows:

Contribution to performance %

Performance Factor/Technique	**Australian Bonds**	**International Bonds**
Duration	35	45
Yield Curve	10	5
Sector Selection - Govt bonds, semi-Govt bonds, corporate etc.	-	5
Issue Selection and credit analysis	20	5
Arbitrage and spread anomaly using forwards, swaps etc.	35	-
Country Allocation	-	35
Currency Exposure	-	5
Technical Analysis	-	-
TOTAL	100	100

You are a management consultant engaged by the fund manager to review its strategic and operational structure.

(a) For each of the performance factors mentioned in the table above, describe briefly:

- How the fund manager can add value using techniques based on that factor;
- The information needed to add value; and
- The expertise required of the fund manager to add value.

(8 marks)

(b) Consider the relative contributions of the performance factors listed in the table above for the two bond portfolios. What qualitative features of the two bond markets would explain the differences between these portfolios in the relative contributions of these factors? Are the differences justified?

(4 marks)

(c) Techniques for the four performance factors used for the Australian bond portfolio are presently implemented by the Australian team alone. However the manager has a decision as to whether an alternative centralised global approach should be taken for some of these techniques, involving input from both teams. Which of these approaches is preferable for each factor, and why? (4 marks)

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(d) In comparing the relative performance of Australian and International bonds:

- What are the merits of adopting a hedged benchmark for international bonds (i.e. a benchmark where currency risks are hedged)?
- Would you expect benchmark returns for Australian and international bonds (with currency hedged) to be different? Why?
- Would you expect excess returns (i.e. returns relative to benchmark) for *actively* managed Australian and International bond portfolios to be different? Why? (4 marks)

QUESTION 3 **(20 marks)**

You are an adviser to a prudential regulator for a developed economy, involved in setting capital requirements for financial institutions. These requirements are directed towards ensuring the solvency of financial institutions with an acceptable likelihood.

The difficulty you face is that financial institutions differ widely in the nature of their activities, investment policies and liabilities. Some activities may be segregated in subsidiaries. Some liabilities may take the form of implicit guarantees. This makes it difficult to set requirements that are applicable to all institutions.

(a) Discuss what characteristics of liabilities held by a financial institution are *critical* to assessing the capital required under a given asset strategy. (6 marks)

(b) For each of the main types of asset, namely equity, debt and direct (i.e. unlisted) property, discuss briefly the characteristics of the asset model which are *critical* for assessing solvency for any particular type of liability.

[You could consider, amongst other things, the following aspects:

- The dynamics of the asset model
- The degree of sensitivity of the model to current conditions
- The interrelationships of the asset classes
- The relationships with liability characteristics.] (8 marks)

(c) Outline how you would apply the asset model to assessing capital requirements. (4 marks)

(d) Discuss whether there should be any restrictions on how the required capital, as assessed in (c), should be invested. (2 marks)

QUESTION 4: **(20 marks)**

Sustainable Investing (SI) is usually defined as:

"…an approach that recognises the *financial* implications of economic activity over a *broader* range and *longer* timeframe than traditional approaches for equity investment."

This is a very broad definition, and encompasses a variety of specific approaches based on social, environmental, or corporate governance factors. Current examples are: (avoidance of) carbon emissions; bioethical standards; and employment relations. However the emphasis is on the *financial* implications, meaning that the SI approach is concerned exclusively with investment returns generated by these factors.

In practice SI may be implemented by the use of positive (or negative) 'screens' that include (or exclude) stocks according to specified SI criteria. It may also be implemented on a 'best of breed' approach, where index sector weights are respected, but the stocks best fitting the criteria in each sector are selected.

(a) Suggest possible theoretical justifications for the SI approach, and what differentiates it from traditional approaches. (4 marks)

(b) Is it valid to view SI as a management style? Why? How does it differ from the traditional value and growth styles for equity investment? Which of the traditional approaches does SI (as described above) most closely resemble? (6 marks)

(c) The empirical evidence for the relative performance of SI against traditional approaches is generally inconclusive. Suggest reasons why this may be so, and discuss the possible difficulties in assessing SI performance. (5 marks)

(d) What information would you seek for selection of managers that is specific to SI, and what special risk controls would you impose in SI mandates? (3 marks)

(e) What issues would you consider in incorporating SI into an overall portfolio approach? (2 marks)

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QUESTION 5 **(20 marks)**

You are the CFO of a widely diversified financial group that has banking, insurance and investment arms. You are considering the adoption of Basel II type risk measures for the management of the group's financial risks across all its business units.

Basel II is a framework of international protocols developed for banking supervision. It covers risk measurement and capital, banking regulation and disclosure. Your main interest is in the framework to be adopted for risk measurement, which identifies three relevant types of financial risk:

- Credit risk is that faced by the group on the non-payment or default on debt advanced to customers. The 'standard' approach for risk measurement is based on external assessment of borrowers (eg AAA, AA+) by credit rating agencies (e.g. S&P, Moodys).

- Operational Risk is that "…resulting from inadequate or failed internal processes, people and systems, or from external events". The 'standard' approach for risk measurement is to adopt a set percentage of revenue, depending on the type of activity involved, eg corporate or retail banking, broking, investment management.

- Market Risk is that due to the performance of the assets held to cover liabilities, in particular the mismatch between them. Under Basel II, the standard approach for risk measurement is based on *Value-at-Risk* (VaR).

The measurement of all three risk types can be standard, depending on the type of business activity in question, or tailored to the specific structure and experience of the organisation.

(a) Compare the significance of each of the three risk types for the group's three business segments. (3 marks)

(b) Discuss whether credit risk assessment could be undertaken by the standard approach as described above, or be specifically designed for each of the group's business segments. (6 marks)

(c) Suggest a broad approach to measuring operational risk that can take account of the organisational structure of the group. What features of the administration would you consider relevant in this respect? (3 marks)

(d) The VaR measure of market risk for a business segment is defined as:

"..the maximum loss, measured at market value, that can be expected with a given likelihood over a given period."

Discuss the suitability of this risk measure for management purposes, compared with other risk measures, such as factor exposure (the sensitivity of the economic value of the business to a particular risk factor). You might consider the following issues:

- The possible range of risk factors
- The ability to quantify risks
- The timeframe for risk measurement
- Interactions between risk factors (8 marks)

END OF PAPER