Private and Confidential

Report to Council from the Board of Examiners

2004 PART III EXAMINATIONS REPORT

(STUDENT VERSION)

Institute of Actuaries of Australia

CONTENTS

SUMMARY

The 2004 Part III examinations of the Institute of Actuaries of Australia were held between 5 October and 15 October 2004. Candidates attended in Australia (Sydney, Melbourne, Brisbane, Adelaide, Canberra, and Perth) and overseas (New Zealand, Hong Kong, Singapore, Malaysia, Korea, Japan, England, USA, Taiwan, Switzerland, and Canada).

Table 1: Candidate Numbers by Part III Specialist Subject

	Subject	1999	2000	2001	2002	2003	2004
1	Investment Management	109	102	92	80	110	136
2	Life Insurance	71	82	79	86	111	118
3	General Insurance	43	55	59	73	89	91
4	Superannuation & P.S.	21	25	23	26	26	25
5	Finance	42	45	47	68	74	62
	Total	286	309	300	333	410	432

The process followed in setting the exams and determining the recommended pass list was similar to the process followed in previous years.

The number of candidates, recommended passes and resulting pass rates are as follows:

Table 2: Recommended Number of Passes by Part III Specialist Subject

	Subject	2004			2003	2002
		Sat	Passed	%		
1	Investment Management	136	39	29%	40%	36%
2	Life Insurance	118	21	18%	28%	38%
3	General Insurance	91	23	25%	37%	36%
4	Superannuation & P.S.	25	6	24%	23%	31%
5	Finance	62	22	39%	42%	31%
	Total 2004	432	111	26%	35%	35%
	2003	410	145	35%		
	2002	333	117	35%		

The Chief Examiners aim to produce a consistent standard of passing candidates rather than a consistent pass rate from year to year. This year the overall pass rate of 26% is sharply lower than the 35% rate attained in each of the previous 2 years. The pass rates in 2004 for Investment Management, Life Insurance and General Insurance are all 10 percentage points lower than in 2003, whereas the pass rates for Superannuation and Finance have remained steady compared to 2003. The range of pass rates by specialist subject this year was 18% to 39%. The range for the previous two years was 23% to 42% and 31% to 38%.

In addition to the 111 overall subject passes in 2004, there were transitional passes for each subject (candidate fails overall but is granted a pass in the first or second paper only). There were 24 transitional passes in the first paper of a subject and 11 transitional passes in the second paper of a subject.

If the recommended passes are adopted by the Council, the number of members that will be eligible to be admitted to the status of Fellow (subject to attendance at a Professionalism Course, satisfying the Practical Experience Requirement and paying any relevant exemptions) is 51. This compares with 54 in 2003.

CHAIRMAN'S REPORT

Examination Administration

The Board

The Board of Examiners oversees the Part III examination process of the Institute of Actuaries of Australia ('IAAust'). The Board of Examiners consists of the Chair and his assistants, the Chief Examiners for each subject, supported by IAAust staff.

For 2004 the Chair and his Assistants were:

Chair	Mr Trevor McMahon
Assistant Chair	Ms Bozenna Hinton
Assistant Chair	Ms Kim Cossart
Assistant Chair	Mr David Wong
Assistant Chair	Mr Wesley Caine

The Chief Examiners for 2004 were:

Investment Management	Mr Philip Pepe
Life Insurance	Mr David Ticehurst
General Insurance	Mr Philip Chappell
Superannuation & Planned Savings	Mr Phillip Everett
Finance	Mr Tim Kyng

I would like to take this opportunity to thank all of the members of the Board of Examiners and their assistants for their efforts in preparing and marking the examination papers. The management of the examination process is an extremely important function of the IAAust and it is currently being run by a small group of committed volunteers.

I would also like to thank my assistants, Bozenna, Kim, David and Wesley for their support and untiring efforts in ensuring the overview process of the Chair worked smoothly, and that the quality of the examinations and results was maintained.

Meetings of the Board

The Board met on four occasions during the year.

- The first meeting was held on 12 February. It was attended by a representative from all Subjects (Chief Examiners/Assistant examiners). The purposes of this meeting were to:
    - outline the responsibilities of Chief Examiners and the timetable for the year
    - discuss the examination process in detail
    - discuss the recommendations from the 2003 Board of Examiners' Report.
- The second meeting was held on 21 July and was attended by all Chief Examiners. The purposes of this meeting were to:
    - discuss the status of 2004 examination papers, model solutions and marking guides
    - discuss a paper prepared by Bozenna on consistent pass criteria, across all subjects
    - discuss the structure of examining teams, to handle the twice yearly examinations in 2005.
- The third meeting was held on 25 August and was attended by at least one representative from each subject, except for Finance. The purposes of this meeting were:

- discuss status of examination papers, model solutions and marking guides
- discuss the marking process, marking days, security of papers and timetable
- discuss the pass criteria to be used in all subjects.

- The final meeting was held on 24 November and was attended by all Chief Examiners. The purposes of this meeting were to:
  - review the process adopted by each Chief Examiner in finalising results
  - review the recommendations on pass lists
  - discuss the prize winners.

It is envisaged that four meetings will be held next year using similar dates to 2004.

Administration and Exam Supervision

The Board of Examiners were ably assisted by a number of IAAust staff, in particular Ms Carolyn MacLulich and Ms Michelle Aspery. Carolyn and Michelle were responsible for administering the entire process and ensuring key deadlines were met, compiling and formatting the examination papers, distributing material to candidates and to exam centres, processing results and collecting historical information for the production of this report. They did a fantastic job in 2004 and the Board of Examiners team is indebted to them both.

Carolyn and Michelle have been replaced recently by Ken Guthrie and Brett O'Neill and to everyone's credit, the transition has been smooth.

The 2004 Part III examinations in Sydney and Melbourne were again run by an external consultancy – Language and Testing Consultancy (LTC). All examinations ran smoothly and were completed without any problems. No complaints were raised by candidates in any of the other exam centres (in Australia or overseas).

The Examination Process

The examination process began officially in February 2004 with an initial meeting of Chief Examiners and some of their assistants. The Chief Examiners' assistants are listed in the individual Chief Examiners' reports.

Each subject adopts a slightly different approach to setting examination papers, marking papers and determining grades and passes. These processes have been established over time and seem to suit each subject area.

The basic framework followed by each subject is the same and all subjects contain a rigorous review process. The general framework used to set examination papers is described as follows:

- The Chief Examiners and their assistants set draft examinations.
- Draft exams and solutions were reviewed by scrutineers for coverage and fairness. The scrutineers were a mix of newly qualified actuaries and experienced actuaries.
- At least one scrutineer 'sat' the paper under exam conditions to assess the length of the paper.
- Exams were redrafted after feedback from the scrutineers.
- Draft exams, solutions and marking guides were then submitted to the BOE team for review. The draft exams and solutions were reviewed by two members of the BOE team.
- Exams, solutions and marking guides were finalised by the Chief Examiners and their assistants.
- The Chief Examiners signed off the final examination papers and solutions.
- The BOE team also provided final sign off on the examination papers and solutions.
- The 2004 Part III examinations were run on an open book basis.

The general framework used to mark examination papers, grade candidates and determine passes is described as follows:

- Two markers mark each question. Inconsistencies in marks for a candidate were discussed by the markers and resolved, before the results were forwarded to the Chief Examiner.
- Marks were scaled to allow for the fact that some questions were more difficult than others.
- Each candidate was awarded a grade for each question of A, B, C, D or E, where A was regarded as a strong pass and B an ordinary pass.
- Candidates' overall performance was determined using several metrics including total raw mark, total scaled mark, weighted average grade, weighted average rank and number of pass grades per question. The key determinant however was total scaled mark.
- Candidates were ranked based on these metrics, particularly total scaled mark.
- Candidates were divided into clear passes, clear failures and a middle group that required further consideration.
- The middle group was reviewed individually by the Chief Examiner. The pass / fail decision was made after assessing the candidate's whole exam paper, their performance in the judgement questions and how badly they performed in the questions they failed.
- The recommended passes were examined by the Chair in light of a reasonable mix of grades, average grades and total scaled mark. Overall results were also reviewed by the full Board of Examiners.
- The recommended pass mark was finalised for the subject and candidates were graded as A, B, C, D or E.

The year 2004 Part III examinations of the Institute of Actuaries of Australia were held on the following dates:

Investment Management   Tuesday, 5 October
Life Insurance   Friday, 8 October
General Insurance   Monday, 11 October
Finance   Wednesday, 13 October
Superannuation & Planned Savings   Friday, 15 October

Candidates sat the exams in 31 centres both in Australia and overseas (multiple centres in some countries).

Table 3: Candidates by Exam Centre 2004

Australia	No. of Candidates
Sydney	243
Melbourne	63
Canberra	5
Brisbane	3
Perth	1
Adelaide	2
Overseas	
Hong Kong	35
Singapore	29
United Kingdom	22
Malaysia	11
New Zealand	8
USA	3
Korea	1
Canada	1
Switzerland	1
Japan	3
Taiwan	1
Total	**432**

Exam Sittings

The number of candidates sitting the Part III exams increased by 5% over the number sitting in 2003, from 410 to 432 (465 candidates enrolled, however 33 did not present for the examination). The numbers sitting this year for Investment Management, Life Insurance and General Insurance were the highest that they have been, for the 1999-2004 period.

Table 4: Candidate Numbers by Part III Specialist Subject

	Subject	1999	2000	2001	2002	2003	2004
1	Investment Management	109	102	92	80	110	136
2	Life Insurance	71	82	79	86	111	118
3	General Insurance	43	55	59	73	89	91
4	Superannuation & P.S.	21	25	23	26	26	25
5	Finance	42	45	47	68	74	62
	Total	286	309	300	333	410	432

The mix of specialist subjects sat by candidates in 2004 followed the broad pattern of the last few years. Compared with 2003, a slightly higher percentage of total candidates sat the Investment Management and Life Insurance subjects at the expense of the Finance subject. A similar percentage sat the General Insurance subject and the Superannuation and Planned Savings subject.

The number of candidates that enrolled for a subject but did not sit the examination was high for Finance (12 from 74 enrolled did not present for the exam). As noted in 2002, and again in 2003, the high number of drop outs for Finance is assumed to be associated with the relatively low cost of the IAAust part of the course and the fact that the SIA exam is sat well before the IAAust exam (candidates performing poorly in the SIA exam may feel they are not ready for the IAAust exam). It is expected that this will change from 2005 with the revised course structure. The absentee rates were lower for the other subjects: Investment Management (6 from 142), Life Insurance (5 from 123), General Insurance (9 from 100) and Superannuation & Planned Savings (1 from 26).

Table 5: Candidate Mix by Part III Specialist Subject 2004

	Subject	1999	2000	2001	2002	2003	2004
1	Investment Management	38%	33%	31%	24%	27%	32%
2	Life Insurance	25%	27%	26%	26%	27%	27%
3	General Insurance	15%	18%	20%	22%	22%	21%
4	Superannuation & P.S.	7%	8%	8%	8%	6%	6%
5	Finance	15%	15%	16%	20%	18%	14%

Examination Papers

The structure of the examinations in 2004 was identical to that in 2003.

Investment Management	2 papers x 3 hours
Life Insurance	2 papers x 3 hours
General Insurance	2 papers x 3 hours
Superannuation & Planned Savings	2 papers x 3 hours
Finance	2 papers x 3 hours

In each subject there was a mix of questions covering three categories:

- applying bookwork to familiar and unfamiliar circumstances. This category is aimed at testing the candidates' knowledge and understanding.

- problem solving requiring simple judgement

- problem solving requiring complex judgement.

The questions aimed to cover the whole syllabus. In the case of Finance, candidates should be aware of the fact that the whole syllabus is examinable even when part of that syllabus is also taught and examined by the Securities Institute.

The standards to be achieved by candidates sitting each subject, the principles on which papers are to be set and the marking procedures are set out in the Guidelines to Examiners (an abridged copy of which can be found on the IAAust website). To ensure the examination papers had proper balance, guidance as to the proportion of marks given to each category needed to be established.

The standards of difficulty as determined by the Chief Examiners at the time they set the papers are set out below, with a comparison to prior years.

Table 6: Standards of Difficulty by Part III Specialist Subject

	Subject	Knowledge & Understanding			Simple Judgement			Complex Judgement		
		2002	2003	2004	2002	2003	2004	2002	2003	2004
1	Investment Management	22%	21.5%	20%	38%	37%	40%	40%	41.5%	40%
2	Life Insurance	25%	21%	20%	39%	41.5%	40%	37%	37.5%	40%
3	General Insurance	17.5%	19.5%	20%	44%	42.5%	39%	38.5%	38%	41%
4	Superannuation	17.5%	21%	28%	45%	41.5%	38%	37.5%	37.5%	34%
5	Finance	16%	18.5%	27%	45%	40.5%	37%	38%	41%	36%
	Targets	15% - 25%			35% - 45%			35% - 45%		

Copies of the papers have not been included within this report in the interests of space. They are available from the IAAust if required.

Detailed comments on the quality of candidates' answers to the exam questions are contained in each Chief Examiner's report.

General observations on candidates' performance in each subject are as follows. These observations include my own comments.

Investment Management

Overall, this year's exam proved to be a difficult assignment for the majority of candidates, although this is not dissimilar to the experience of previous years. The coverage of the breadth of the course and questions relating to somewhat unfamiliar territory for candidates was obviously challenging.

It is also apparent that whilst all but two students attempted both papers, some may have focused more on paper 1 than paper 2. This is part of the reason for the overall pass rate in 2004 being well below that of 2003. The better candidates produced strong results across both papers and most topics.

Life Insurance

Although the exam this year was not assessed as being difficult, as evidenced by the breakdown of question difficulty, overall student performance deteriorated significantly from that in prior years.

The examiners were surprised at the poor results of candidates, particularly as it appears that Paper 1 presented greater difficulties, when the examiners, scrutineers and reviewers all felt that Paper 2 would prove more testing. Paper 1 was poorly answered and students had difficulties with this part of the course. The exam also had a practical focus and many candidates failed to demonstrate a practical understanding of various topics.

Markers noted that many candidates had poor exam technique and failed to fully answer double-barrelled questions. Other factors may have been the split of the course into the two modules and some candidates focusing on only one paper.

General Insurance

This year's paper was again designed to assess candidates' ability to apply what they had learned from the readings to practical situations. There was a somewhat greater focus this year on Unit 7, financial control and appraisal, with the final three questions on paper 2 covering different aspects of this Unit. Candidates understanding of Unit 7 was generally poor and many candidates also demonstrated a weak practical understanding of the course.

The examiners attempted to obtain an appropriate mix of questions requiring written explanation and numerical calculation. Numerical calculations formed a significant proportion of the marks in Paper 1 Question 6 and Paper 2 Question 7, and smaller proportions of Paper 1 Questions 3 and 5, and Paper 2 Questions 2 and 3.

Because of the requirement that the first paper cover Units 1 – 4 and the second paper cover Units 5 – 8, there was less focus in these papers on writing composite questions, i.e. questions covering more than one Unit of the course.

It would appear from the raw marks that candidates found this examination, and in particular Paper 2, to be more challenging than last year, although this was not the intention of the examiners. It is the view of the examiners that the overall standard of answers was lower this year than last year, and this is reflected in the scaled scores, the numbers of questions passed, and ultimately the recommended pass rates.

Candidates in general showed poor exam technique, particularly time management, not answering the question and not doing reasonableness checks on numbers calculated.

Superannuation and Planned Savings

Overall, 40% of candidates received a grading of C for the exam (last year this was 46%). This was consistent with the overall performance of students in this subject where many got the basic points but did

not go into enough detail or demonstrate they understood how the information in the course could be applied in practice.

Further, it was noted that many of the questions where students did well were those that were around traditional actuarial work for defined benefit funds (eg Paper 1 question 2 and Paper 2 Question 2). The students tended to do more poorly in questions that were related to general superannuation consulting and financial planning (eg Paper 1 Question 1 and Paper 2 Questions 1 and 6). As general superannuation consulting and support and product development for planners are becoming major areas where actuaries are working, the examiners suggest that the focus of the course in these areas should be reviewed to see if it needs to be altered.

The examiners note that the course is a new course (having been offered for two years). The course is long and is very diverse, covering topics that range from analysis of surplus for a defined benefit fund to estate and business succession planning for individuals. There is a concern that this will result in students knowing a little about a lot of topics but not being able to answer complex questions or delve into the detail of a problem. This seems to be consistent with the results over the last two years (ie large percentages of students achieving a C grade coupled with a relatively low pass rate).

Further, it was noted that the course jumps around between financial planning concepts and traditional superannuation consulting concepts within topics and may cause students confusion. It was also noted that the investment knowledge of students could improve as was shown by their performance in question 6 of Paper Two. The examiners welcome the new Part III program with a compulsory investment subject.

Finance

Overall, this year's exam proved to be of a similar standard to last year's exam and has a very similar pass rate. Next year the new finance and investment subject has 2 modules, module 2 and module 3. The content of this year's paper 2 broadly corresponds to what will be in next year's module 3.

However a lot of the material examined in this year's paper 1 is being dropped from the syllabus and will not be in next year's module 2 (or module 3). A lot of students, especially those repeating the exam, were therefore keen to pass paper 1 this year as a result. This is reflected in the results obtained (8 passing paper 1 only) and in the fact that 5 candidates sat paper 1 only.

The coverage of the breadth of the course and questions relating to somewhat unfamiliar territory for candidates was obviously challenging. That being said, the results suggest that good candidates accorded themselves tolerably well and a good spread of marks was achieved.

Results

The standards for determining whether a candidate should be granted the status of Fellow of the Institute of Actuaries of Australia are based on whether an individual demonstrates core capabilities required for an actuary practicing professionally in their specialty area(s). Candidates are required to demonstrate:

- a strong knowledge of the nature, operations, legislation and current issues of the selected practice area(s)
- a detailed knowledge and understanding of the application of actuarial concepts and skills to the chosen practice area(s)
- an ability to apply judgement to solve problems in the chosen practice area(s) which may be characterised by complexity, varying degree of clarity of definition and novel or unseen circumstances.

A candidate is not expected to demonstrate these capabilities at the level of an experienced and skilled practitioner. It is unreasonable to expect candidates to demonstrate the degree of understanding of an actuary of some year's experience. Rather, the benchmark is whether the candidate is proficient to commence practicing professionally in their specialty area(s). Provided the candidate shows a grasp of the main principles, a pass should be awarded. Conversely, a candidate who demonstrates dangerous misconceptions or misapplication of concepts or ideas is viewed more seriously than a candidate who shows a simple lack of knowledge.

The Chief Examiners in the specialist subjects place greater emphasis on the questions that require the candidate to demonstrate the ability to apply bookwork to specific situations and show judgement to solve problems. When grading borderline candidates, their ability to do well in such questions has a greater bearing on whether they pass or fail. The Chief Examiners however, are very conscious of the fact that it is unreasonable to expect candidates to demonstrate the degree of understanding of an actuary with years of experience. In addition, actuaries are expected to be able to demonstrate their skills to those outside the profession. Candidates are expected to be able to communicate clearly and will be penalised if their answers are not clearly expressed.

Candidates' results in each subject and at each level are set out in the attachments to each Chief Examiner's report. In summary the results are:

Table 7: Recommended Candidate Passes by Part III Specialist Subject

	Subject	1999	2000	2001	2002	2003	2004
1	Investment Management	51	28	30	29	44	39
2	Life Insurance	29	37	30	33	31	21
3	General Insurance	17	17	20	26	33	23
4	Superannuation & P.S.	12	11	8	8	6	6
5	Finance	16	14	18	21	31	22
	Total	125	107	106	117	145	111

Table 8A: Recommended Pass Rates by Part III Specialist Subject

	Subject	1999	2000	2001	2002	2003	2004
1	Investment Management	47%	27%	33%	36%	40%	29%
2	Life Insurance	41%	45%	38%	38%	28%	18%
3	General Insurance	40%	31%	34%	36%	37%	25%
4	Superannuation & P. S.	57%	44%	35%	31%	23%	24%
5	Finance	38%	31%	38%	31%	42%	39%
	Total	44%	35%	35%	35%	35%	26%

Table 8B: Details of Overall and Transitional Passes in 2004

	Subject	Overall Pass No.	Overall Pass Rate	Paper 1 Only No. passes	Paper 2 Only No. passes
1	Investment Management	39	29%	2	1
2	Life Insurance	21	18%	5	9
3	General Insurance	23	25%	7	0
4	Superannuation & P. S.	6	24%	0	1
5	Finance	22	39%	10	0
	Total	111	26%	24	11

Table 8B above sets out the number of overall passes for each subject (candidate has passed both papers) and the number of transitional passes for each subject (candidate fails overall but is granted a pass in the first or second paper only). The additional 35 transitional passes may be considered as improving the overall pass rate from 26% to 30%.

The overall recommended pass rate for 2004 of 26% is sharply lower than the 35% rate attained in each of the previous 4 years. The pass rates in 2004 for Investment Management, Life Insurance and General Insurance are all 10 percentage points lower than in 2003, whereas the pass rates for Superannuation and Finance have remained steady compared to 2003. Some observations on the pass rates by subject are:

- Investment Management's pass rate of 29% is back to the levels achieved in 2000-2001. The reduction in rate from 2003 is due to weaker performance from candidates and the fact that some candidates concentrated on only one paper.

- Life Insurance's pass rate has declined from 38% in 2002 and 28% in 2003 to 18% in 2004. The fall is due to candidates being poorly prepared, having poor exam technique and possibly being confused by the split of the course into the two modules. The exam also required candidates to have a practical understanding of the course and this was often lacking.

- General Insurance's pass rate also fell sharply, from 37% in 2003 to 25% in 2004. It was believed the quality of candidates was weaker this year and that poor exam technique led to more failures. Many candidates failed to carry out reasonableness checks on answers and the understanding of Unit 7 (financial control and appraisals) was poor for many students.

- Superannuation and Planned Savings' pass rate of 24% was almost identical to that in 2003. This was clearly the smallest subject, with 6 out of 25 candidates passing. Candidates did well in the defined

benefit questions but struggled in the general superannuation consulting and financial planning parts of the exam. Lack of practical knowledge also caused candidates to perform badly.

- Finance recorded a small decrease in the pass rate (42% in 2003 to 39% in 2004). It is believed the quality of candidates was similar in both years. Some candidates focused on paper 1 only.

The range of pass rates by specialist subject this year was 18% to 39%. The range for the previous two years was 23% to 42% and 31% to 38%.

The Board of Examiners discussed in detail the comparability in assessment standard between 2003 and 2004 and the general consensus was that the standard applied was the same and that differences in pass rates between 2003 and 2004 for individual subjects represented a real difference in the quality of the candidates' responses.

Further detail on the deliberations of each Chief Examiner is contained in their individual reports. I am satisfied that the processes adopted in the marking of papers and grading of papers have been fair and robust, and that every effort has been made to ensure consistency between years and between subjects.

Recommendations for 2005

Board of Examiners

As 2005 is the first time that Part III will be run in two semesters it is proposed that there be two sets of examiners. The recommended constitution for the Board of Examiners for 2005 is as follows:

Semester one:

*Chairman and Assistants**

Chairperson	Ms Bozenna Hinton
Assistant Chairperson	Mr Wesley Caine

Chief Examiners

Investments	Mr Philip Pepe
Life Insurance	Mr David Ticehurst
General Insurance	Mr Phillip Chappell
Superannuation & Planned Savings	Mr John Hancock
Investment Management (5A)	Mr Stephen Jackman
Finance (5B)	TBC (semester one)

Semester two:

*Chairman and Assistants**

Chairperson	Mr Trevor McMahon
Assistant Chairperson	Ms Kim Cossart
Assistant Chairperson	Mr David Wong

Chief Examiners

Investments	Mr Philip Pepe
Life Insurance	Mr David Ticehurst
General Insurance	Mr Phillip Chappell
Superannuation & Planned Savings	Mr John Hancock
Investment Management (5A)	Mr Stephen Jackman
Finance (5B)	Mr Brad Milson

* In each semester, the non-listed members of the BOE team will also offer minor support.

Examination Dates

The dates for the examinations in 2005 are as follows:

2005

Semester 1

Module 1 – Investments - Monday 16 May am
Modules 2/3 (2a/2b) - Life Insurance - Tuesday 17 May am and pm
Modules 2/3 (3a/3b) - General Insurance - Wednesday 18 May am and pm
Modules 2/3 (4a/4b) - Superannuation & Planned Savings - Thursday 19 May am and pm
Modules 2/3 (5a/5b) – Investment Management & Finance - Friday 20 May am and pm

Semester 2

Module 1 - Investments- Monday 31 October am
Module 4 (10) – Commercial Actuarial Practice - Monday 31 October pm
Modules 2/3 (2a/2b) - Life Insurance - Tuesday 1 Nov am and pm
Modules 2/3 (3a/3b) - General Insurance - Wednesday 2 Nov am and pm
Modules 2/3 (4a/4b) - Superannuation & Planned Savings - Thursday 3 Nov am and pm
Modules 2/3 (5a/5b) - Investment Management & Finance - Friday 4Nov am and pm

Exam Solutions

The Board of Examiners agreed to release the 2004 examination papers along with the examination specimen solutions and marking guides. The 2004 examination papers have already been published on the IAAust website and it is recommended that the exam solutions and marking guides be released immediately after the release of results on 16 December 2004 or as close to this time as possible.

CHIEF EXAMINERS' REPORTS

Subject 1: Investment Management

Results Summary

142 Candidates enrolled for the 2004 Investment Management exam. Of these, 6 did not present at the exam.

It is proposed that 39 Candidates be awarded a pass, which implies a pass rate of 29%. This compares with a pass rate of 40% for the 2003 exam (2002: 36%).

In summary

	Number of candidates
Originally enrolled	142
Absent from exam	6
Presented at exam	136
Passed	39
Failed	103

The analysis by examination centre is as follows:

Centre	Presented	Passed	Pass Rate
Australian	100	33	33%
Overseas	36	6	17%
Total	136	39	29%

Transitional Arrangements

As part of the Institute's transitional arrangements for Part III examinations, the papers of the students who didn't pass the subject were examined to see if they were eligible to pass just the one paper. Accordingly, it is proposed that 2 candidates be awarded a pass for Paper 1 only and 1 candidate be awarded a pass for Paper 2 only.

Examiners

Examiners for this year were:
Chief Examiner: Philip Pepe
Assistant Examiner: Paul Carrett
Assistant Examiner: Kumaran Yogaranandan

Degree of Difficulty and Course Coverage

The degree of difficulty of questions on each paper and course coverage is summarised in the tables below:

PAPER 1

	Topic	Unit	Aims	KU	SJ	CJ	Total	Bonus
Question 1	Asset allocation	1, 2	3, 5, 6	3	2	4	**9**	
Question 2	Reverse mortgages	2, 7, 8	6c, 7a, 15, 17	4	10	10	**24**	**1.5**
Question 3	Product modification, profitability and viability	2, 7, 8	6b,c, 15, 17	2	9	7	**18**	
Question 4	Scholarship fund	2, 8	5, 6, 16c, 17	5	6	8	**19**	
Question 5	Benchmarking and tracking error	6, 7	13b,c, 14b	5	10	7	**22**	
Question 6	Historical performance and Black-Scholes	1	3a,b,c, 4b	1	2	5	**8**	
TOTAL				**20**	**39**	**41**	**100.0**	**1.5**

PAPER 2

	Topic	Unit	Aims	KU	SJ	CJ	Total	Bonus
Question 7	Alternative investments	5	12e	6	10	4	**20**	
Question 8	Stock selection	4	10e	2	6	8	**16**	
Question 9	Hedging	5	8a, 11c	0	4	16	**20**	
Question 10	Investing in equities	4, 5	11b, 10a,c, d,f	7	10	3	**20**	
Question 11	Alternative investments	5, 9	12e, 7a	5	5	5	**15**	
Question 12	Property Investment	5	12e	0	5	4	**9**	
TOTAL				**20**	**40**	**40**	**100**	

Question by Question Analysis

Paper 1, Question 1

Unit	Aim	Aim Description
2	5	Determine investment objectives for institutional investors.
2	6	Formulate an asset allocation strategy for institutional investors.
1	3	Identify the main characteristics of the major asset classes.

	Marks			
Question	**KU**	**SJ**	**CJ**	**Total**
a)	3			3
b)			4	4
c)		2		2
Total	**3**	**2**	**4**	**9**

The aim of this question was to test whether students understand asset-liability modelling.

This question was relatively well handled, with an average raw mark of 46%.

While there were some good responses that covered many of the necessary issues, there were obvious deficiencies in most responses, including the usual problem of not answering the question, eg the question clearly asked for a comment on the suitability of the current portfolio, however quite a few responses simply did not address this. Many responses simply compared the current portfolio to their notion of a "balanced" fund. Very few responses considered the underlying liability structure that the assets are designed to support. Even fewer responses considered the employer objectives (ie commercial reality!). A low number of responses considered the diversification benefits of different asset classes.

Paper 1, Question 2

Unit	Aim	Aim Description
2	6c	Determine the required features of, and relationships within, an asset liability model.
2	7a	Determine the key needs and circumstances of the client/stakeholder.
7	15	Monitor the overall risk framework.
8	17	Review the liabilities and asset/liability models.

	Marks				
Question	**KU**	**SJ**	**CJ**	**Total**	**Bonus**
a)	3			3	-
b. i)	1			1	-
b. ii)		4		4	1
c)		6	10	16	0.5
Total	**4**	**10**	**10**	**24**	**1.5**

The aim of this question was to test whether students understood the key features of a reverse mortgage product as they affect consumers and providers of the product.

From here, students should have been able to suggest how the risks of providing this product might be managed, taking into account sensitivity tests that might be conducted and key modelling results that might be illustrated.

The question was moderately handled overall, with an average raw mark of 40%. Parts a) and b.i) were well handled. In general for part b.ii) many students did not indicate which risk they thought most important and lost easy marks. Also, throughout the question many students overlooked the fairly significant risk from a bank's point of view that
in purportedly over heated property markets, an increase in interest rates not only increases the liability component of their product, but it also decreases the asset side due to a slump in property values (i.e. the product suffers on two fronts). This is especially important given that there is some likelihood of rates being increased, with the RBA particularly interested in doing this to ensure that property markets don't get out of hand.

Paper 1, Question 3

Unit	Aim	Aim Description
2	6b,c	Determine the required features of, and relationships within, an asset liability model.
7	15	Monitor the overall risk framework.
8	17	Review the liabilities and asset/liability models.

Question	Marks			
	KU	SJ	CJ	Total
a	2	5	3	10
b		4	4	8
Total	**2**	**9**	**7**	**18**

The aim of this question was to test whether students understood the broader features of a financial product and the impact of product design on profitability. In addition, this question tested students' understanding of product modification, with the associated issues of product viability and overall professional ethics.

This question was moderately handled, with an average raw mark of 39%.

A large number of students did not have a view on the proposal, just merits for and merits against (as one student characterised them). Cash flow matching and the extra risk in equities was understood by most. Many did not relate the volatility of equities to the impact on the profit of the company and hence on its share price. Thus they were not seeing the total context of the question. Many students missed the part of the question about the actuary's responsibility. Most people gave a fair description of an asset model. Expressing how to use its output was less well done.

Paper 1, Question 4

Unit	Aim	Aim Description
2	5	Determine the investment objectives.
2	6	Formulate an asset allocation strategy.
8	16c	Advise on an appropriate configuration of managers.
8	17	Consider asset-liability issues.

	Marks			
Question	**KU**	**SJ**	**CJ**	**Total**
a)	5	3		8
b)			6	6
c)		3	2	5
Total	**5**	**6**	**8**	**19**

The aim of this question was to test whether students understood asset-liability modelling as it relates to endowment funds. The question also tested students' understanding of fund manager configuration.

This question was relatively well answered, with an average raw mark of 44%.

Overall, most students could discuss theoretical considerations on investments but the practical application to the needs of this particular Fund and the Trustees was generally poorly handled. The theoretical need to match cash flow and currency was well understood. Too little consideration was given to the differences between equity and bonds. Many/most students did not properly understand the nature of the liabilities guaranteed.

Paper 1, Question 5

Unit	Aim	Aim Description
6	13b	Discuss appropriate selection criteria with respect to the choice of investment managers.
6	13c	Discuss the organisational issues in a firm and how these might impact investment performance.
7	14b	Apply basic performance attribution techniques.

	Marks			
Question	**KU**	**SJ**	**CJ**	**Total**
a)	3	3		6
b)	2	4	4	12
c. i)		2		2
c. ii)			2	2
c. iii)		1	1	2
Total	**5**	**10**	**7**	**22**

The aim of this question was to test whether students understood and could apply benchmarking of performance.

This question was poorly answered, with an average raw mark of 35%.

Part a) asked students to provide a suitable benchmark for 6 different
investment options and was the best answered part of this question. Most students were able to provide a suitable index for the options that invested in just one asset class (i.e. Citibloc, Credit Shesh and Merry Lynch). Some found providing a benchmark for the 3 portfolios that were invested across different asset classes a little more difficult, with some students providing benchmarks based on a particular style, instead of a diversified portfolio. For example, the High Growth Option did not mean that the manager's sole investments were in "growth" stocks, but rather that the option invested in a diversified portfolio that had a bias to shares and property. Half the marks for this question were for providing reasons- some students failed to provide this.

Part b) was, in general, answered poorly. Some students didn't answer the question- for example, listing the reasons why a passive manager may generate performance different to the index. Most students recognised two sources of tracking error- portfolio holdings being different to the benchmark (ie stock selection) and asset allocation being different to the option's strategic allocation (in the case of the options that invested in more than one asset class). However, most students failed to recognise that another source of tracking error is cashflow related, such as the fund itself holding excess cash, the timing of significant cashflow etc.

Part c) was answered the worst, with more than half of the candidates failing to receive a mark. Quite a few students thought that market timing was to do with trying to "pick the market", which was incorrect in the context of this question (about recent scandals in the US). Some students thought that "late trading" was executing trades late in the afternoon,
just before close of the share market.

Paper 1, Question 6

Unit	Aim	Aim Description
1	3a	Discuss the measurement of risk and return.
1	3b	Consider historical performance and the implications for projections.
1	3c	Recognise key features of past booms and busts.
1	4b	Explain the Black-Scholes approach to option pricing.

	Marks			
Question	**KU**	**SJ**	**CJ**	**Total**
Total	**1**	**2**	**5**	**8**

The aim of this question was to test whether students understood the principles of setting assumptions, the relevance of past information and the weaknesses of a Black-Scholes approach.
This question was the equal-worst handled question, with an average raw mark of 31%.

Part a), in particular, was not well answered, which was disappointing. The question may have caused confusion. The markers agreed that simulation was not the same as scenario testing, so was not a good answer to part b). Tax was mentioned by several students, but was not a particularly relevant point. Many students mentioned transaction costs -assumed to be zero in Black Scholes- in part b), which earned them a half mark.

Paper 2, Question 1

Unit	Aim	Aim Description
5	12e	Outline the features and advantages of "alternative" asset classes.

Question	Marks			
	KU	SJ	CJ	Total
a)	2	2		4
b)	4	8		12
c)			4	4
Total	**6**	**10**	**4**	**20**

The aim of this question was to test students' understanding of the issues relating to alternative investments. Ostensibly, part c might be said to fall into unit 2 (particularly, aim 6), and therefore paper 1. Essentially, though, part c is a practical extension of the points raised in the preceding two parts.

This question was poorly answered, with an average raw mark of 36%.

Large parts of the question were essentially bookwork and students missed easy marks. Quite a few people failed to answer the questions directly (i.e. provide advantages, disadvantages and features), which is surprising at this level. The question could have been worded better, in particular the distinction between the factors that you would consider when making a particular 'alternative' investment - part (a), and the factors you would consider in determining an appropriate strategic allocation to alternatives - part (c). Also in part (c) the question specifically asked to list factors different to those for traditional assets while the solutions put a lot of weight on the comparison. Overall the markers were disappointed by the responses to a question that should not have been that difficult.

Paper 2, Question 2

Unit	Aim	Aim Description
4	10e	Techniques used by fundamental stockpickers

Question	Marks			
	KU	SJ	CJ	Total
a)	2	2		4
b)		4	2	6
c. i)			2	2
c. ii)			4	4
Total	**2**	**6**	**8**	**16**

The aim of this question was to test whether students understood company analysis.
This question was handled reasonably well, with an average raw mark of 43%.

Students generally mixed up the structural and the other factors in the solution. Generally this part was not answered well. There was a predisposition to launching into a technical analysis of correlations, diversification, P/E ratio analysis etc, which clearly wasn't what was asked for. There seemed to be an unusual fascination with Public Liability insurance. Most students put down a few fairly obvious things, but didn't really work for marks on a question where these should have been easy to get. Most students calculated the ratios fairly well - a few were lazy and only did one or a couple of years, which doesn't give you the trend. Vast majority of students missed or ignored the last part of the question about further information.

Paper 2, Question 3

Unit	Aim	Aim Description
3	8a	Describe the principal derivative instruments, including forward contracts.
5	11c	Compare the advantages and disadvantages of hedging currency risk.

	Marks			
Question	KU	SJ	CJ	Total
a)		4		4
b)			6	6
c)			6	6
d)			4	4
Total	**0**	**4**	**16**	**20**

The aim of this question was to test whether students understood the mechanics of hedging and how this relates to world stock market indices.

This question was the equal-worst handled question, with an average raw mark of 31%. Students generally understood the concept of local, hedged and unhedged returns. They generally also understood about the MSCI, although some thought it was a bond index. Students generally identified that the unhedged AUD return in part b was influenced by the large rise in the Australian Dollar over the month although some didn't do the actual calculations. They generally floundered in part c, mostly just grasping at straws, but then it was a difficult part of the question. Again part d was not done well although many candidates identified the swinging spot risk from the large local return in the month.

Paper 2, Question 4

Unit	Aim	Aim Description
5	11b	Compare the main styles of equity investment.
4	10a,c,d,f	Demonstrate an understanding of the principles and techniques for managing an Australian equity portfolio.

	Marks			
Question	KU	SJ	CJ	Total
a	2	1		3
b	1	2		3
c	2	4	2	8
d	2	3	1	6
Total	**7**	**10**	**3**	**20**

The aim of this question was to test whether students understood how to manage a particular equity investment approach from its broader philosophy to its implementation and practical aspects.
This question was handled reasonably well, with an average raw mark 47%.

Part (a) of the question was mostly well answered. Students mostly lost marks here by describing Value style investing as buy under-valued and sell over-valued stocks with no reference to how this is achieved i.e. low PE ratios or high dividend yields. Similar comment applies to Growth style investing. Part (c) was poorly answered overall. Many students discussed analysis ratios such as PE, NTA, Dividend yield, CAPM, APT (Arbitrage Pricing Theory) as a means of valuation instead of being ratios for analysing historical performance. The question asked for methods of valuing a company's share price, hence students should aim to read the question carefully. Part (d) was moderately answered overall. Some students did not think about various sources of information, and, instead, focussed on one or two. Some students discussed in detail the use of quantitative methods in the valuation but did not discuss in detail other qualitative aspects that need to be taken into account.

Paper 2, Question 5

Unit	Aim	Aim Description
5	12e	Outline the features and advantages of alternative asset classes
9	7a	Determine the key needs and circumstances of the client/stakeholder

Question	Marks			
	KU	SJ	CJ	Total
a)	5			5
b)		5		5
c)			5	5
Total	**5**	**5**	**5**	**15**

The aim of this question was to test whether students understood the characteristics and uses of hedge funds.
This question was moderately handled, with the average raw mark being 41%.

It was felt that no answers were "exceptionally good" and that the students were quite tired and/or rushed by the time they got to this question. Only about 1/3 of the students mentioned the more important points.

Paper 2, Question 6

Unit	Aim	Aim Description
5	12e	Demonstrate an understanding of investing in private equity.

Question	Marks			
	KU	SJ	CJ	Total
		5	4	9
Total	**0**	**5**	**4**	**9**

The aim of this question was to test students' understanding of property investments.

This question was handled the best by candidates, with an average raw mark of 54%.
Weaker answers missed the obvious points. Students need to remember to always state the basics (liquidity, diversity, cost, tax, asset allocation). Often they would take time to explain less relevant points rather than the big ones. Under option 1, the points most often missed were the cost and the increased risk from development. In fact, the issue of the discount on the NewCo shares was regularly misunderstood - many didn't see it as a cost but rather as a price/valuation reduction that would provide some immediate return opportunities. Some "smart" points were the ability to use the liquidity to sell down and change the exposure and the loss of some asset diversification over the whole portfolio (as more like equity rather than property). For option 2, the point most often missed was the need to realise other assets to fund the option.

Just about all candidates managed to use a report/letter format of some sort and most recommendations were accompanied by some justification, but a few still forgot to do this. Most students forgot to state any assumptions and many students didn't get into the due diligence issues, which contained some important aspects of the question.

Philip Pepe
Chief Examiner, Investment Management 2004
November 2004

CHIEF EXAMINERS' REPORTS

Subject 2: Life Insurance

Results Summary

123 candidates enrolled for the 2004 exam. Of these, five did not present at the exam and a further two candidates did not present for Paper 2.

It is proposed that 21 candidates be awarded a pass, which implies a pass rate of 18%. This compares with:

- 31 candidates passing in 2003 (from 118 sitting the exams), representing a pass rate of 28%.
- 33 candidates passing in 2002 (from 86 sitting the exams), representing a pass rate of 38%.

In summary:

	Number of candidates
Originally enrolled	123
Absent from exam	5
Presented at exam	118
Passed	21
Failed	97

	Number of candidates Paper 1	**Number of candidates Paper 2**
Originally enrolled	123	123
Absent from exam	5	7
Presented at exam	118	116
Passed entire subject	21	21
Passed this paper only	5	9
Failed	92	86

Centre	**Presented**	**Passed**	**Pass Rate 2004**
Australia	69	18	26%
Overseas	49	3	6%
Total	118	21	18%

Examiners

Examiners for this year were:

Chief Examiner: David Ticehurst
Assistant Examiner: Mark Stewart
Assistant Examiner: Owen Wormald

Degree of Difficulty and Course Coverage

The analysis of the degree of difficulty of exam questions in the format specified by the IAAust is as follows:

Paper 1

Question	Syllabus Aims	Knowledge & Understanding	Straight-Forward Judgement	Complex Judgement	Total Marks
1	7,10,11	3	0	9	**12**
2	6	10	5	5	**20**
3	4,7,10,11	9	9	4	**22**
4	12,13	0	13	9	**22**
5	1,2,4,10	0	10	14	**24**
Total		**22**	**37**	**41**	**100**

Paper 2

Question	Syllabus Aims	Knowledge & Understanding	Straight-Forward Judgement	Complex Judgement	Total Marks
1	21,22	2	10	0	**12**
2	20,23,24	6	12	2	**20**
3	5,16,17	2	9	5	**16**
4	15,18,23,24	1	6	18	**25**
5	3,15,19	6.5	5.5	15	**27**
Total		**17.5**	**42.5**	**40**	**100**

Question by Question Analysis

Paper 1, Question 1 (12 Marks)

This question was about providing advice to a life insurance company seeking to expand its product range from risk products to investment-linked products. The company in question had also identified that its competitors sold such products from both within and outside a life insurance company structure.

In the first part of the question candidates were expected to provide a short list of products the company could consider selling. The second part of the question required candidates to provide and explain the factors the company should consider in determining which company structure should be used to sell these products.

This question was very poorly answered as indicated by the low average mark (2.6) and the low proportion of students passing. The markers felt that (a) should have been easy marks with most students getting 3 out of 4 whilst (b) should have been a good indicator of strength with 3-4 marks out of the 8 being about average and 5-6 out of 8 being a solid answer.

It was clear that many students misinterpreted the requirements in part (a) and thought they were required to list products other than investment-linked products. Many students listed products the company already sold. The markers thought that most of the misinterpretation could have been avoided if candidates had paid more attention to the two paragraphs before the question, which gave the context for the question and the direction for how it should be answered.

Approximately 40% failed to produce their answer in report format at all, with a further 8% not providing a proper report format.

Part (b) was also poorly answered with many candidates thinking they were required to discuss distribution strategies. Candidates also struggled to identify sufficient points, and those that did list factors often failed to explain how the factors could influence the choice of structure.

The examiners found it particularly disappointing that many students misinterpreted part (a). With hindsight it is easy to see the confusion the word "additional" created in the question, although it was quite clear that the candidates failed to consider the context of the question. This is the likely reason that the examiners, scrutineers or reviewers did not foresee this potential problem with this question. The markers also canvassed opinions within their own offices, with everyone spoken to interpreting the question correctly. It was interesting to note that nearly all the candidates who are recommended as a Pass did not misinterpret the question, which may indicate that their judgment level indicates that they are indeed ready to join the profession as actuaries.

Given the large proportion of students who misinterpreted this question the examiners gave some consideration to excluding this question from the exam results. However, the examiners thought this would be unfair to those students who did interpret the question correctly and, as the misinterpreted section was only worth 3 marks, it was unlikely to have caused any students to pass or fail the exam. Consequently the question was not excluded. Instead, for those students who were assessed as borderline due to the overall number of questions passed or assessed as weak, additional consideration was given in relation to the grade awarded on this question.

Paper 1, Question 2 (20 Marks)
This question was about unit pricing. Candidates were presented with a scenario where there is a strong suspicion about the integrity of the unit pricing system. Candidates were required to explain the potential consequences of unit pricing errors, outline a project plan to address the problems, the required characteristics of any system calculating unit prices and ongoing processes, checks and controls to minimise errors.

As indicated by the pass rates in the above table this question was well answered by the majority of candidates. This was not surprising given the level of "bookwork" in this question.

However, the markers were surprised that the question was not answered as well as might have been expected given that unit pricing is a topical issue at the moment and hence a question on unit pricing should not have come as a surprise.

For Part (a), a lot of candidates failed to state the obvious e.g. over/under-stated prices result in inequity between policyholders. Even those who did often didn't give any illustration of how it is inequitable. Many candidates covered only financial loss and damage to reputation in their answers.

Part (b) was very poorly answered with an average mark of around 1.5 (out of 5). This was not surprising given the requirements of this part and the level of judgement required. Candidates generally focussed on the detail of the investigation stage rather than a broader view of the full project. A lot of candidates failed to cover the payment of any compensation.

Part (c) was also poorly answered. Candidates generally noted the importance of accuracy, but not much more in the way of robustness. Very few candidates covered the points of security, documentation and the importance of integration with other systems.

Part (d) was very well answered. The markers noted a lot of identical answers for this question, most being taken straight from the textbook. Points not covered by the students (as they were not in the textbook) included comparison between unit classes and change control procedures.

Some candidates confused the answers for parts (c) and (d), with points relevant to part (d) often being included under part (c) instead. The markers did not penalise candidates in these circumstances. (This was recognised as a possibility during the scrutineering and review process, with many hours being devoted to word-smithing these parts of the question to minimise this risk.)

Generally a number of candidates displayed poor exam technique by not providing sufficient detail (e.g. why unit pricing errors are inequitable), while other candidates provided far too much detail (e.g. whole pages covering a single issue).

Paper 1, Question 3 (22 Marks)
This question covered product development and reinsurance from the perspective of a reinsurer. Candidates were expected to be able to identify what information was required from the cedant, what investigations and calculations would be required in setting terms, define a profit share arrangement (and conditions) and then assess the implications for the reinsurer of offering either coinsurance terms or risk premium terms.

The question was poorly answered as indicated by the proportion of students passing this question and a pass mark, which was below 50% of the marks available (actually. 41% of the available marks). The markers felt the majority of the students were a clear fail.

Part (a) was generally well done, although many candidates failed to cover the Whole of Life product. Part (b) was answered reasonably well. Many candidates failed to mention profit and scenario testing and no candidates covered the specific point for the Whole of Life product.

Part (c) presented the candidates with the most difficulty, with:

- very few candidates got the profit formula right omitting the change in reserves;
- extremely few candidates got any points covering the definition of profit;
- very few candidates received marks for other conditions - many left this out completely.

This outcome is surprising given the bookwork nature of this part, and the formula is generic to both group life and reinsurance. Further investigation of the textbook identified that the actual section on profit share has been removed, although it is still referred to within the text. The pass mark was lowered because of this omission.

Part (d) represented the Complex Judgement part of the question and was well answered by the candidates.

Paper 1, Question 4 (22 Marks)
This was a difficult and long question to read due to the amount of information to be presented. Students were presented with a scenario where two life companies were to be merged. Policy terms and conditions were extracted from existing Investment Account policies and candidates were asked to provide criteria for assessing the suitability of a surrender value formulae and bonus distribution. In both cases candidates were asked to comment on how these criteria related to the investment account policies of the two companies.

There were then asked to evaluate the proposed transfer arrangements relating to which product types were moving to which statutory fund and comment on a proposal from the managing director.

This question was extremely poorly answered with only three candidates passing. As an exercise, I found that lowering the suggested pass mark by 4 marks would see only an additional 5 candidates pass. This indicated that many candidates were not even close to passing this question. The markers believed that only 2 students displayed sufficient knowledge to warrant a pass on this question (the third pass was from a borderline review). The markers found no problems with the wording of the question to suggest that this was the reason for such a poor effort by the candidates.

In both parts (a) and (b) the majority of candidates managed to identify the generic considerations applicable, but were unable to successfully apply these generic considerations to the two investment account policy designs set out in the question. Hence, candidates failed to score many marks on these

parts. Furthermore, the markers reported that many candidates seemed to confuse equity with marketability/acceptability in that they viewed the harshness of the surrender penalty for X-Life as a matter of equity. Most missed the relevance of the large Achieve investment reserve to both equity and solvency considerations and some even thought that equity considerations are not relevant to non-par business.

There were a number of candidates who misinterpreted the question and provided commentary in parts (a) and (b) in the context of designing a new surrender value and crediting rate basis to replace the existing ones, once the life companies merge.

In part (c) many candidates set out the merits and issues but provided no explanation as to why part of the proposal was an issue or not. Few identified any benefits of having the Achieve and X-Life investment account business in separate statutory funds. In (d) whilst many candidates recognised the equity issues attaching to the proposal, few were able to go beyond that.

Paper 1, Question 5 (24 Marks)

In this question candidates were present with the scenario that the Anti-Discrimination legislation had revoked the exemption for life insurance but would only apply to new policies. Candidates were asked to identify changes to the underwriting process, benefit design, product range and operations of the company to reduce the impact of this change on the company. In addition candidates were asked to identify the risks associated with the changes being recommended.

Overall, the question was not very well answered, but this is not surprising given it was the last question in the paper and many candidates may have been under significant time pressure. Many candidates also displayed further poor exam technique by either not reading the background material or the question well enough (many candidates missed out on up to a third of the available marks by failing to comment on the risks associated with the changes being proposed).

For part (a) many candidates made general comments about how underwriting could be strengthened, but didn't directly address the situation specified in the question. Many candidates missed easy marks for failing to state the obvious, e.g. the proposal form would have to be changed along with the underwriting manual. There were very few candidates who were aware of indirect discrimination or who commented on the need for underwriting factors to be supported by reasonable data.

Part (b) was poorly answered with an average mark of around 3.5 (out of a possible 10). This part clearly displayed the poor exam technique of many of the candidates, with common problems including:

- not commenting on the risks associated with their recommendations as the question had requested, thereby missing out on a couple of easy marks.

- A large number of candidates did not read the question well enough to realise that the legislation change only applied to new business (i.e. existing inforce was exempt). Therefore, they failed to comment on obvious risks like widespread lapse and re-entry from the higher risk group.

- As with part (a), too many of the comments were quite general (almost certainly in some cases taken from a "checklist" of product design comments prepared in advance), and not likely to add any value in the specific context of the legislation change.

- Surprisingly and as a major concern, a number of candidates showed a lack of knowledge of the relative levels of male and female mortality and morbidity (eg by over-emphasising the importance of the accident hump, or saying that male premiums were higher than female for all risk products).

Part (c) was the easiest section, and the best answered. Many candidates missed the point about Group products but there was plenty of scope for obtaining full marks by making other comments. A number of candidates again failed to comment on any risks associated with their changes as required by the question.

A few candidates misinterpreted the question and made further comments on benefit design, rather than considering the company's overall product set.

In part (d), around 75% of the candidates were not able to score more than 2 out of a possible 5. Many candidates made sensible general comments about actions that could be undertaken by the company, but which were not strictly relevant to the situation in the question (eg cutting expenses) and were given partial credit. Not many candidates were able to identify all of the general areas referred to in the marking guide (target marketing, reinsurance and commission).

Paper 2, Question 1 (12 Marks)

This question was about divergence of reported results in the financial statements from a company's internal management reports. From a list of documents provided, candidates were expected to be identify the relevant sections to review, identify what additional information they should request (and why) and discuss the steps that could be taken to minimise this divergence in the future.

This question was not as well answered as expected. The main failing of the candidates was to relate their answer to the context of the question. This was a common failing across all questions i.e. the candidates would list points but would not discuss their relevance. Overall, the markers did not see any major problems with the question or model solutions and that it was a reasonable question to ask prospective students wanting to practice as actuaries in the life insurance industry. In broad terms the answers from students indicated a lack of knowledge of using life company financial statements in practice as well as the practical issues involved in managing monthly management and year-end reporting requirements.

In part (a) most students were able to list a number of the items they would examine from the material provided but most did not explain the specifics of what they would look for in these items. Many of the answers provided suggested that many of the students struggled to put the content of what is contained in the financial statements of a life company into a practical context.

With part (b), again, most students were able to list a number of the items that you would generally seek to request in this type of context but did not adequately answer "why" they wanted this information in the context of the question. This was illustrated by the fact that the top mark for this question was 3.5 out of 5.

Part (c) required some practical thought/ insight into how a life insurer may be able to improve the alignment of their regular management reporting with their year-end reporting. Many students answered this question too broadly effectively suggesting that the regular management reporting be aligned to year-end reporting without addressing the specific issues and ignoring the fact that most life insurers do not have the resources or reporting timetables to allow them to apply year-end methodology etc on a monthly basis.

Paper 2, Question 2 (20 Marks)

This question was about contrasting financial reporting requirements between Australia and an unnamed country in Asia. The question provided the statutory basis (including reserving methodology) and the embedded value basis for the unnamed country. Candidates were asked to describe the differences and similarities between the different methodologies. Candidates were also asked to assess how each of these measures would change, under a variety of scenarios.

Overall this question was not well answered. In particular, given the level of difficulty for first two parts of the question (KU only) it was surprising to see an average mark of approximately 1.5 (out of 6). Most candidates did not make a sufficient number of relevant points in relation to the number of marks available.

It was noted by the markers that some candidates' answers demonstrated a lack of practical experience and suggested that more examples be included in the course notes and in tutorials to help in these situations.

Part (a) was generally not answered well. Whilst candidates seemed to understand that the Asian basis was conservative, an insufficient number of them said that this resulted in new business strain. Almost no-one stated that the total profit, over the policy's lifetime, was the same for both methods. Neither did they comment on the difference in the pattern of profits arising from the two methods. This is a core learning of the course and indicates that many candidates are not yet ready to practice as an actuary. About half of the candidates commented that MoS profits were not impacted by capital usage or release.

Part (b) produced a better standard of answer. Surprisingly few students commented that both methods were realistic. Also, not many said that the reason that EV uses a risk discount rate is to allow for the business risk that the shareholder is taking (plenty of students mentioned the differences in MoS and EV discount rates, but unless they stated why the rates are different, they were not awarded a mark). Most mentioned the effects of both new business and assumption changes.

In Part (c) most students either saw the flaw, or they did not. Just a few almost got there.

Part (d) produced a number of difficulties for the candidates, with (d)(ii) proving the most difficult. Generally, students did not seem to realise the consequences of holding reserves – that if reserves are increased now (to provide for increased policy payments), a loss would be incurred, but it would prevent a further loss being made in future years as the increased reserve is used to fund the extra benefits.

It was a concern that in Part (d)(iii) a number of candidates did not realise that the statutory valuation was based on prescribed assumptions, but that MoS and EV were based on best estimate assumptions. Again this provided a good discriminator of those candidates not yet ready to practice as an actuary.

Paper 2, Question 3 (16 Marks)
This question tested the candidates' knowledge of the Solvency and Capital Adequacy standards and their application to a company experiencing strong growth.

For a predominantly "bookwork" question, the marks achieved were lower than expected. Most candidates understood the question but failed to provide sufficient detail in their answers, producing answers that were far too brief.

Part (a) was straight "bookwork" and was generally well answered. A common failing of students was to just copy out the basic part of the LIASB standard without identifying the key features.

In part (b) most candidates realised that the expense reserve and new business reserves would need extra examining but provided insufficient explanations. Few candidates acknowledged the requirement to re-examine the termination value basis. A number of students commented on the resilience reserve, however, did not make reference to the fact that the effect would be likely to be small, owing to the nature of the investment-linked liabilities.

For part (c) most candidates commented on the expense reserve, but did not go into sufficient detail on the increase. A number of candidates commented that the new business reserve would be small, but again did not detail the reasons why Very few students picked up on the investment-linked margin being higher for Solvency.

Part (d) again illustrated the poor exam technique of the candidates with a number commenting on other ways besides the use of Offset Statutory Capital (OSC) to reduce capital requirements for the stat funds (and didn't answer the question that had been asked). Most students correctly identified the use of OSC but failed to:

- discuss it in sufficient detail

- mention the maximum offsetting that can be undertaken
- explain there would be no change in the overall capital requirement (but many did recognise an increase in the management capital requirement.

In part (e) nearly all candidates identified the nature of the mismatch but failed to discuss it in sufficient detail. Approximately half the candidates correctly referred to backing the tax liability with assets invested in the same mix as those backing the units. However, very few candidates picked up on the difference between the short-term tax liability and the larger deferred tax liability.

Paper 2, Question 4 (25 Marks)

This question was primarily about embedded values and the relationship between the components of the embedded value and MoS profits. Candidates were also provided with the results from the valuation and required to estimate the impact on the embedded value and MoS profit from a change in the data used to generate the expense assumptions.

This question was well answered by the candidates, although the pass mark as a proportion of available marks was much lower than on other questions. The markers gave careful consideration to those students considered borderline between the Pass and SBS ranking. They also considered for a "Pass", the level of understanding expected from a new actuary in a practical situation.

Most candidates interpreted the question in accordance with the marking guide. However, quite a number of candidates did not read the question properly or misinterpreted what was asked.

Specific comments about the responses received from candidates included:

- A large percentage of students appeared to have left this question to be answered last, and therefore rushed their response, indicating poor time management within the exam; (although this was also said for Question 5)
- Most students exhibited a solid understanding of MoS workings;
- Most students were able to provide a good response to Part b)(ii), which was pleasing as this required some complex judgment;
- There was general confusion around the impact of tax changes on the MoS profit, with many students uncertain as to whether this change should be capitalised or respread through profit margins;
- The responses to part (c) demonstrated that many students are not familiar with providing a solution for a numerical based question. It was obvious from the responses received that there is a general lack of experience in the use of capitalisation factors;
- Very few students considered the tax implications, which was extremely disappointing given the question was somewhat leading in its reference to imputation credits available on tax paid;
- Finally, it is important that the students consider the audience. In this situation, the students were asked to respond to the CFO. Few students made a meaningful attempt to adjust their language to cater for this audience.

Paper 2, Question 5 (27 Marks)

This question required candidates to calculate the policy liability and profit of a block of business. Candidates were then required to analyse the profit into its various components. The final part of the question requested candidates to describe how they could reduce the untraced component.

Considering this question was assessed as being one of the hardest questions in the exam, it was much better answered than many of the other questions.

The markers noted that while this was a long question, they found that it was a fair question, covering a lot of ground. They also noted that candidates with some practical experience in this area should have found the question straight forward.

Many of the candidates found difficulty with the tax related components. Common errors made by the candidates included:

- candidates did not understand that the tax base was MoS profits adjusted for accumulated losses;

- many candidates forgot to gross-up the profit margin;

- many candidates calculated the after tax policy liability as 70% of the before tax policy liability.

Surprisingly, candidates also had trouble calculating the planned profit in the year, with many candidates incorrectly applying the profit margin to the PV Carrier, or the actual claims.

Most candidates demonstrated an understanding of the broad principles in analysing profit, but most poorly applied the principles, by forgetting to allow for tax, picking up the wrong "actual" or wrong "expected". Very few candidates calculated the impact of the change in economic assumptions.

David Ticehurst

Chief Examiner – Life Insurance, 2004

CHIEF EXAMINERS' REPORTS

Subject 3: General Insurance

Results Summary

100 candidates enrolled for the 2004 exam. Of these, 9 did not present at the exam.
It is proposed that:

- 23 candidates be awarded a pass for the full subject, a pass rate of 25%. This compares with a pass rate of 37% for the 2003 exam.
- A further 7 candidates (8%) who failed the full subject, be awarded a pass for the first paper, which corresponds to Module 2 to be introduced in 2005.
- No candidates who failed the full subject, be awarded a pass for the second paper, which corresponds to Module 3 to be introduced in 2005.

In summary

	Number of candidates
Originally enrolled	100
Absent from exam	9
Presented at exam	91
Passed full subject	23
Failed full subject, passed first paper	7
Failed full subject, passed second paper	0
Failed full subject and each paper	61

The analysis by examination centre is as follows:

Centre	Presented	Passed full subject	Passed paper 1 (Mod 2)	Passed paper 2 (Mod 3)	Pass Rate (full subject)
Sydney	80	21	6	0	26%
York	11	2	1	0	18%
Total	91	23	7	0	25%

Examiners

Examiners for this year were:
Chief Examiner: Noeline Woof (up to time of exam),Philip Chappell (exam marking/write-up)
Assistant Examiner: Tim Clark
Assistant Examiner: Philip Chappell (up to time of exam)

Degree of Difficulty and Course Coverage

The following tables show the distribution of questions and marks by level of difficulty and course coverage. For clarity it should be noted that the course notes contain errors in the numbering of the course aims. Unit 5 contains aims 11 – 13 (incorrectly numbered as 9 – 11 in the course notes). Unit 6 contains aims 14 and 15 (incorrectly numbered as 15 and 16 in the course notes). Unit 7 contains aims 16 – 18 (incorrectly numbered as 17 – 19 in the course notes). The numbering that follows is the corrected numbering:

Degree of Difficulty

Paper 1

Question	Aims Addressed	Unit	Degree of Difficulty	Total Marks
1a,b,d	3	1	KU	8
1c	3	1	SJ	6
2a	7	3	KU	2
2b,c,d	8	3	CJ	9
2e	8	3	SJ	3
3a	2	1	KU	3
3b,d	9	4	SJ	7
3c	9	4	CJ	2
3e	9	4	KU	2
4a	7	3	SJ	9
4b,c	8	3	CJ	8
5a	6	2	KU	2
5b,c	6	2	SJ	7
5d,e	6	2	CJ	6
5f	5	2	CJ	4
6a	10	4	KU	3
6b,c	10	4	SJ	8
6d,e	10	4	CJ	11
Total				**100**

Paper 2

Question	Aims Addressed	Unit	Degree of Difficulty	Total Marks
1	16	6	KU	3
1	16	6	SJ	7
1	16	6	CJ	4
2a,b	12	5	KU	4
2c	13	5	SJ	4
2d,e,f	13	5	CJ	7
3a,c,e	11	5	SJ	12
3b	11	5	KU	1
3d	11	5	CJ	2
4a	14	5	KU	5
4a	14	5	SJ	5
4b	14	5	CJ	5
5a	18	7	SJ	3
5a	18	7	CJ	4
5b	18	7	CJ	6
6a	17	7	KU	3
6b,c	17	7	SJ	6
6d	19	8	KU	2
7a	17	7	KU	3
7b	17	7	CJ	14
Total				**100**

Question By Question Analysis

PAPER 1 QUESTION 1 (14 MARKS)

Question 1 was largely a bookwork question designed to test candidates' understanding of the different views of insurance results, and their ability to draw conclusions from financial results. Overall the grades were poorer than expected.

Part (a) was a reasonable discriminator between the better and poorer candidates. Part (b) was generally well answered, with most candidates scoring the 1 mark available.

Part (c) was generally poorly answered, with a top score of 3½ out of 6. Part (d), was not handled particularly well, although a number of candidates did make the two points required.

Candidates scoring a clear pass (A) showed a clear understanding of the underwriting, accident and financial year views, their inter-relationship and uses, and also scored reasonably well in parts (c) and/or (d). Candidates scoring a pass (B) showed general understanding at part (a) but were weaker on parts (c) and/or (d). Candidates scoring slightly below standard (C) generally missed some of the points in part (a) as well as parts (c) and (d). Candidates rated as weak (D) showed clear gaps in their knowledge and understanding on all of parts (a), (c) and (d).

PAPER 1 QUESTION 2 (14 MARKS)

Question 2 dealt with a matter that has received wide coverage in 2004, namely asbestos liabilities. Although 43% of candidates passed this question, the markers were disappointed with the standard of responses.

Part (a), which sought an understanding of why traditional actuarial methods were inappropriate for asbestos liabilities, was reasonably answered, although many students did not explicitly say why traditional techniques were not appropriate, or did not explicitly draw out the IBNR issues in their response.

The most discriminating parts of the question were the development of a model, the key drivers, and the additional information required (parts (b), (c) and (e). The better candidates recognised the need to split the model by disease, and also made sensible suggestions about the additional information required. However, many students did not cover part (b) in sufficient detail (particularly around how claim numbers would be modelled).

Part (c) was also often misinterpreted, and a repeat of the key assumption from (b) was given, rather than thinking about what might drive the assumptions. There was some evidence of students having copied/borrowed heavily from some external material, with some commonality of phrases (allowable, but shows that candidates may not have been thinking about their responses).

Part (d), was generally well handled.

PAPER 1 QUESTION 3 (14 MARKS)

Question 3 dealt with the correlation between a workers compensation portfolio and a public liability portfolio, and asked students to calculate the required risk margin. This question was passed by 34% of candidates.

In part (a) the risk margin is a least half of the CoV, not the standard deviation. Part (b) was generally well answered, although some candidates listed reasons rather than providing an explanation.

In part (c) most candidates selected a correlation between 15% and 50%, 20%, 25% and 30% being popular choices. The justification of chosen correlations was reasonable although many simply said they

had chosen their correlation because it was reported in the Tillinghast paper. The markers gave no credit for this explanation.

Part (d) required formulae, but many candidates gave the formula numerically rather than algebraically. Candidates were not penalised twice for a formula error, provided that the result appeared reasonable. The variance was often incorrect eg. 2 omitted, 0.5 adopted, minus instead of plus sign, CoV deducted etc.

Part (e) was generally reasonably well handled; although most candidates were reluctant to say that the normal is inappropriate as general insurance reserves cannot be negative; they qualified their response by saying it was 'unlikely' to be suitable.

PAPER 1 QUESTION 4 (17 MARKS)

Question 4 was the main outstanding claims question. Unlike the numerical questions of recent years, this question asked candidates to comment on the experience and then suggest the most appropriate method of valuation, without actually doing any calculations. The final section asked candidates what additional information they would need before setting an outstanding claims provision.

The average mark for part (a) was 3.7 out of 9. The better candidates picked up the main points, including the sudden change in experience in the year 2000. However, in general many points were missed. Candidates scored somewhat better on parts (b) and (c), but notwithstanding this, the average mark for this, the question with the highest pass rate, was only 7.5 out of 17. The better students had no trouble identifying that the PPAC method was the appropriate method to use, and why.

The comments made by some candidates indicated that they had approached the question as a generic workers compensation question, without considering that the figures related specifically to rehabilitation payments.

PAPER 1 QUESTION 5 (17 MARKS)

Parts (a) to (e) of this question were designed to test candidates' understanding of compensation schemes and their design. Part (f) of the question tested self-insurance.

The answers to this question were of a poor standard overall. Many people do not fully grasp the concept of Compulsory Third Party insurance and the parties affected.

Most candidates were able to make two valid points for part (a), but very few were able to attract full marks. Part (b) was generally misinterpreted as "what is the advantage/disadvantage of having the government as *the* insurer of the scheme" instead of "what is the advantage/disadvantage of having the government as *an* insurer in the scheme". However, the better candidates scored well on this part.

Part (c) tested candidates' ability to apply the concepts of at-fault driver to calculate the post amendment claim frequency. Only about 1/3 of candidates were successful in doing this, with many oversimplifying the calculation in the hope of attracting cheap marks.

In part (d) most candidates recognized that the claim frequency would fall and average cost of claims would likely rise, but many didn't comment on the difficulty in estimating the combined impact of these and the impact of profit etc.

Most candidates were able to talk about splitting out unidentified/unregistered vehicles in part (e) in proportion to market share, and how to manage them. However, it was clear that most had little idea of the relationship between funding and managing the claims.

Part (f) offered easy marks, but many did not cover the specific reasons for self-insurance, and did not appreciate the issue of managing only 4 expected claims per annum.

PAPER 1 QUESTION 6 (22 MARKS)

Question 6 examined premium liabilities and issues related to unexpired risk. The question was generally reasonably well answered, although the pass rate was only 35%.

Common shortcomings in part (a) were unclear explanations (eg. PL is "cost of future claim payments"), and not enough distinction between profit margins and risk margins.

Parts (b) and (c) tended to produce extreme answers, with some candidates managing to go straight to the answer with little or no working, and others not knowing where to start. A minority of candidates had some idea but became confused along the way or made minor errors.

Part (d) was the main part of the question that dealt with calculating premium liabilities. The average mark was just under half of the 8 marks available. In part (e) the markers awarded 1 mark for a reasonable discussion of the comparison with the previous calculation, "Actual versus Expected" and assumption changes.

PAPER 2 QUESTION 1 (14 MARKS)

The question was generally well answered – indeed this question had the highest pass rate of any in the exam (60%).

A few major issues separated the good from the poor students. The most crucial underwriting issue is the moral hazard of the reinsurer being exposed to business that the insurer does not care about. The design needs to minimise the moral hazard and the reinsurer needs to assess the insurer's management.

Many students missed the effect of inuring reinsurances as generally stop loss covers protect the net account after normal reinsurance protection is purchased. It is not a replacement for normal reinsurance covers. Marks were not deducted for students who assumed the protection was gross but made appropriate adjustments to the stop loss contract.

Stop loss contracts normally have deductible and limits expressed as loss ratios as this allows the exposure/volumes to change whilst maintaining the relative cover of the contract. Reinsurance pricing is not as market focussed as many students implied – particularly for stop loss contracts. Many students missed some obvious marks by not stating that the price would be the expected claims cost (which would generally be a low percentage of the premium), a relatively large profit margin due to the volatility of the expected claims cost, plus a loading for expenses.

Many students commented that a relationship was important – it is, but only for ensuring the reinsurer understands the management of the insurer. Not many students mentioned requesting any actuarial reports, but a number mentioned the availability of retrocession, which is not a valid point.

Many students appeared to have copied from the textbook general statements about reinsurance pricing which gave answers that showed they had not really considered the question. In borderline cases this lead to failure.

The correlation between the markers was 95%. Because of the absence of one maker on leave, the significant discrepancies between the two markers were reviewed by one of the examiners, who concluded that the average mark was appropriate in all cases.

PAPER 2 QUESTION 2 (15 MARKS)

The question dealt with a product that not many candidates would have come across – extended warranty for motor vehicles. This question was intended to test whether candidates could apply premium-rating principles to an unfamiliar product.

In part (a) quite a few candidates missed the very basic terms and conditions, eg. what was covered and what was excluded. In part (b), a significant number of candidates mentioned rating factors relating to the driver, eg. age and sex. It seemed that they simply regurgitated a list of motor vehicle type rating factors without really thinking about it. Credit was given for business/private use where a sensible explanation was provided.

Part (c) was straightforward premium calculation that was handled reasonably well, although many candidates did not get the inflation and discounting correct – those who inflated and discounted for only a year or two did not understand the "future" nature of the policy.

Part (d) asked whether a uniform earning pattern was appropriate. Most candidates disagreed and mentioned the relationship to the pattern or risk. However, candidates found part (e) to be quite difficult. The markers also gave some credit to candidates who mentioned exchange rate and inflation risk on claims costs.

The final part (f) was reasonably well handled, although many candidates simply repeated a list of insurability criteria.

PAPER 2 QUESTION 3 (15 MARKS)

This question tested candidates' understanding of one-way analyses and the advantages and application of Generalised Linear Models.

Part (a) was handled reasonably well, with most candidates picking up some of the points about grouping.

In part (b) many candidates confused the statistical term "correlation" with "interaction", while in part (c) a lot of students simply regurgitated what is in the textbook for the benefits of GLMs, without any application to the question at hand. eg. one benefit stated was the ability of GLMs to allow variance to vary with the mean. Although this is true, the question is really about the benefits of a GLM compared to a one-way analysis.

Candidates did not generally do well in part (d), which required an illustration of the dangers of using only a one-way analysis.

Part (e) dealt with the practical aspect of calculating a claim frequency from the GLM output given. Many candidates forgot to allow for the offset and obtained a ridiculously small result, with few noting that the answer could not be correct. In borderline cases this led to failure.

PAPER 2 QUESTION 4 (17 MARKS)

This question dealt with experienced based rating for a workers compensation scheme. Part (a) asked candidates to discuss five criteria for a good experience-rating model and assess a model against these. The five criteria are covered in Chapter 21 of the textbook, on pages 341 and 342; although they are not given as a list, candidates who had given this topic some thought should have been able to name the criteria. Even those who had not specifically considered this topic should have been able to name at least three – premium adequacy, a fair premium for each risk (equity) and an incentive to improve claims experience.

Part (b) asked for an assessment of a proposed revised experience-rating scheme. Most candidates assessed the proposed changes against their five criteria. However, many missed the main point, which was that the link to industry rates was broken, and that in the longer term premium adequacy could not be guaranteed. This is a fundamental flaw in the design.

PAPER 2 QUESTION 5 (13 MARKS)

This question tested candidates on the area of mergers and acquisitions. An insurer is to provide loan repayment insurance (LRI) for a building society and also inject capital. The question was generally poorly handled, with only 17 candidates passing.

In part (a), candidates were required to list the information they needed to value the LRI business to Deeppockets. Nearly everyone mentioned claim costs and some sort of exposure, but missed further points. Not everyone explained where this information would come from or how they would estimate the various components of value.

Many candidates focussed on obtaining detailed information such as loan durations and defaults by various rating factors, and economic information such as unemployment rates, without linking it to the question at hand, i.e. estimating the value of the LRI business.

In part (b), many candidates failed to realise that this was a new portfolio of business that Deeppockets was about to write. They saw the words "placing a value" in the question and started discussing appraisal value (i.e. Net assets plus value of future business), failing to realise that asset value was irrelevant because there were no existing assets. Also, not many candidates mentioned the need to project balance sheet items such as outstanding claims and premium liability provisions.

PAPER 2 QUESTION 6 (11 MARKS)

This question covered the allocation of capital and calculations of profit margins for CTP. The question was based on material in the paper by Driussi and Collings, which formed part of the course reading. Any candidate who had read and understood the paper should have been able to pass this question. However, the question was handled poorly - only 20 candidates passed.

Part (a) asked candidates what considerations need to be made in allocating capital to NSW CTP. Most candidates mentioned APRA required capital and margins above this, or overall level of risk, and some mentioned uncertainty for the line of business. Fewer candidates mentioned diversification.

In part (b) most candidates either didn't describe the methods, gave a vague description not touching on diversifiable risk, or just mentioned formulae or disadvantages. Although the examiners were looking for three ways to be described briefly, the markers also gave credit if the Capital Assets Pricing Model was fully explained and one other method was mentioned.

Marks in part(c) depended not so much on the method used, but the detail that was provided. Candidates who listed steps similar to those contained in the solution and demonstrated an understanding of the process scored well. Other candidates who provided less detail or gave vague answers with a few key words did not score as well.

Part (d) was intended to test whether candidates understood the role or reserving and pricing actuaries and their relationship to the Approved Actuary. Although a simple answer was required, some candidates wrote a lot and went off the track, discussing standards, capital sign off, ensuring solvency, only discussing one role or the other.

PAPER 2 QUESTION 7 (17 MARKS)

Dynamic Financial Analysis DFA has been part of the course now for at least a few years. However it has proved to be a difficult topic to examine. This question incorporates the results of DFA in a question relating to capital management.

Candidates found this question to be very difficult – only 9 candidates passed; 43 were rated as showing little knowledge. The markers commented that conceptually the question was a good one, but that

perhaps the question was not specific enough about the calculations that were required. Only a few candidates realised, for example, that there were four scenarios to be considered.

However, it may also be the case that candidates had assumed that this was an area that would not be examined, and had therefore not paid too much attention to it.

In part (a) the markers gave credit for additional points that were not initially mentioned in the solutions, namely that discount rate does not need to be the same for AGAAP and APRA reserving (AGAAP does not require risk free rates, although this is usually chosen by insurers). Also, some candidates noted that Tier 2 capital is limited to 100% of Tier 1 capital. Credit was given for this.

In part (b) only a few candidates adopted the approach of using the DFA results at varying levels of sufficiency to project the financial results and check whether the Board's objectives were met. A number of candidates worked backwards from the DFA results, looking up numerical outcomes and then estimating the associated probability.

It was expected that candidates would state that the Board's requirement that excess capital never be less than 100% MCR cannot be guaranteed. However, a number of candidates used the maximum loss ratio statistic as being the worst possible outcome. This is not an unreasonable indicative calculation to carry out, but it needs to be set in the correct context – worse outcomes are possible.

Notwithstanding the strong hint in the question, few candidates recognised that the increase in retention would result in an increased MCR. It was also disturbing that a number of candidates calculated the loss ratio on the earned premium net of expenses, rather than before expenses. These are both indications of a lack of understanding.

Philip Chappell

Chief Examiner – General Insurance, 2004
November 2004

CHIEF EXAMINERS' REPORTS

Subject 4: Superannuation & Planned Savings

Results Summary

26 candidates enrolled for the 2004 exam. Of these, 25 were present at the exam.

It is proposed that 6 candidates be awarded a pass, which implies a pass rate of 24%. This compares with a pass rate of 23% for the 2003 exam (2002: 31%).

In addition, it is proposed that 1 student be awarded a pass in Paper 2

In summary:

	Paper 1	Paper 2	Total
Originally enrolled	26	26	26
Absent from exam	1	1	1
Presented at exam	25	25	25
Passed	6	7	6
Failed	19	18	19

The analysis by examination centre is as follows:

Centre	Presented	Passed Overall	Pass Rate
Brisbane	22	6	27%
Overseas	3	0	0%
Total	25	6	24%

Examiners

Examiners for this year were: Chief Examiner: Phillip Everett
                            Deputy Examiner: John Hancock

Degree of Difficulty and Course Coverage

The degree of difficulty of questions on each paper and course coverage is summarised below:

Paper 1

Question	Syllabus Aims	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
Q 1	1	1	a) 6	b) 5		11
Q 2	1, 2, 5	1, 3	a) 2 b) 6	c) 6 d) 3	a) 8	25
Q 3	1, 2	1	10			10
Q 4	1, 3	1, 2		a) 4	b) 6	10
Q 5	5, 6	3		a) 3 b) 2 c) 3	c) 3 d) 1	12
Q 6	3, 4	2		b) 10	a) 10	20
Q 7	1, 5, 6	1, 3	a) 6	b) 4	b) 2	12
TOTAL			**30**	**40**	**30**	**100**

Paper 2

Question	Syllabus Aims	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
Q 1	7, 8	4		a) 5	b) 5	10
Q 2	5, 7	3, 4	a) 6 b 3)	c) 3		12
Q 3	7, 9	4,5	b) 8	a) 10	a) 3 c) 6	27
Q 4	8, 11	5,6	a) 6	a) 3 c) 5	b) 2 d) 4	20
Q 5	12, 13	6, 7		b) 4 c) 3	a) 6	13
Q 6	7,9, 10	4,5	a) 3	b) 3	a) 5 c) 7	18
TOTAL			**26**	**36**	**38**	**100**

Question by Question Analysis

Paper 1, Question 1 (11 Marks)

This question was aimed at testing student's legislative knowledge as well as their general knowledge of how retirement incomes were provided. This was considered to be a relatively simple question for a good student.

In part (a), the question posed a questionable product that in practice could not be offered. This should have been quite simple for a good student. The markers noted that no student was thorough in their knowledge of the rules surrounding borrowing under SIS.

Part (b) asked about how retirement incomes are provided in Australia. This should have been straightforward but the question was particularly badly answered. In particular it was noted by the examiners that a similar question appears in every exam in this subject. This makes the performance of the students here even more disappointing.

Paper 1, Question 2 (25 Marks)

This question asked students to perform an analysis of surplus (AOS) and demonstrate their knowledge of a fund in an unsatisfactory financial position or being technically insolvent. They were also asked to analyse employer contribution programs required in certain cases.

In part (a) there were many errors in calculation for AOS items, where wrong interest rates and starting values were used. Often just simple interest was used (also for the contribution holiday question). Many students went overboard trying to analyse the surplus and deficit relating to salary increases and investment returns on the contributions paid in. This took a lot of time and was largely immaterial.

Also, for part (b), the question asked what to do as the fund was both unsatisfactory and insolvent. Most people just talked about insolvency, presumably thinking that it was the major issue and had the stronger action required. However, there were 2 marks for stating the action required for the fund falling into an unsatisfactory financial position and therefore missed out on two relatively easy marks.

Paper 1, Question 3 (10 Marks)

This was a relatively simple question where students were asked to consider the actuarial services they would offer to a fund where the incumbent actuary was required to resign due to independence concerns. The question required candidates to recognise the special features of a sample fund and the implications

on the fund (and potentially service providers) of the merger and acquisition activity of the company sponsor.

Most candidates scored easy marks for listing the range of actuarial services that were being sought but many missed the specific issues raised by the merger and acquisition activity of the company.

Many candidates also failed to comment on the need for the new actuary to consider any conflicts of interest or independence issues even though the question stated that that was the reason the previous actuary resigned. Also, few candidates noted that the previous actuary could be contacted for more information.

Some candidates listed non-actuarial services such as member communications or actuarial services for the company for which no marks were awarded.

Paper 1, Question 4 (10 Marks)

The intention of the question was to examine student's knowledge of how to adjust defined benefits for family law splits and other similar adjustments as well as their general knowledge of what to do where there is a family law split.

Many of the answers were brief and several students didn't answer part b). The question was also misinterpreted in many cases, with students discussing other methods which could have been used to deal with the benefits eg flagging, rather than realising that the decision had been made and the issue related to options for the fund.

Some students listed advantages and disadvantages from the spouse' point of view - which was not asked for.

The alternative in part b) of adjusting the defined benefit multiple was identified by very few, if any, students.

Paper 1, Question 5 (12 Marks)

This question asked students to specify requirements for some financial planning software. This was aimed at testing their financial planning knowledge as well as how to project information for individuals as opposed to groups of individuals as typically occurs with defined benefit funds.

The markers considered that this was a question which would allow identification of candidates able to think outside the square. They noted that many candidates showed a reluctance to do so, with some not seeming to distinguish between what the various parts of the question were asking, There was a lot of repetition of the same points within and between different sections of the answer."

Many of the answers went into too much detail in relation to superannuation contributions, benefits and taxation and therefore omitted appropriate mention of non-superannuation cash flows and investments.

Paper 1, Question 6 (20 Marks)

Part (a) was aimed at testing students' knowledge of different benefit structures as well as the practicabilities of a transfer from a government provided pension environment to an accumulation environment in the private sector. Issues that were to be considered here included wider employer and industrial relations issues.

Part (a) was generally well answered, but candidates tended to have problems with clearly expressing the alternatives that they were proposing, and many candidates also tended to repeat themselves in setting out advantages and disadvantages and were not awarded marks for making the same point more than once;

There were several different interpretations of the conditions surrounding the Government fund, some candidates assumed that the fund could be wound up, others assumed that there were other Government employees in the fund and therefore the fund could not be wound up, and so on. Candidates were awarded marks if their comments were appropriate to the assumptions that they had made;

Part (b) (i) asked students to design a member education program. This was aimed at testing their understanding of the planning concepts applicable to individuals making an investment choice as well as the issues to consider in regards to applying member investment choice to a fund. Part (b) (ii) asked students to determine a default investment option for members who do not make a choice.

Part (b) (i) was reasonably answered, although almost no candidates made any comments regarding communication issues / the use of alternative media, and few candidates made points regarding how accumulation benefits work;

Part (b) (ii) was well answered, however several candidates lost marks through not actually making a recommendation on the default option.

Paper 1, Question 7 (12 Marks)

This question was considered to be a relatively straightforward question for a student who had covered the course content well.

Part (a) was aimed at testing the student's knowledge of tax on contributions and benefits. This was reasonably well answered with most students scoring more than 50% in this part. However, many students missed discussion of RBLs and their impact. Also, some students only discussed tax on contributions and ignored tax on benefits.

Part (b) (i) was aimed at testing students' knowledge of long service leave valuation. The question asked the student to write a letter to a finance director. The answers supplied were generally too brief with a number focussed on how to calculate a present value of the liability only.

Part (b) (ii) was a short part aimed at testing whether students understood the drivers for salary increases and how to apply these to determine an assumption to use in a valuation. While some students provided good answers here, there were some who did not complete the question as they appeared to run out of time and others who did not provide evidence for their choice of assumption.

The markers noted that a number of candidates appeared to run out of time as this was the last question in the paper. As a result it was suggested that the question would not be a good discriminator question.

Paper 2, Question 1 (10 Marks)

This question was aimed at testing a student's knowledge of planning strategies that could be used to fund a retirement income for a client who was to retire soon. This involved testing the knowledge of social security provisions and tax legislation as it affected the individuals in question.

Most students didn't consider enough different strategies in part (a) and focussed too narrowly.

Many students didn't distinguish between complying and allocated pensions and how RBLs applied and consequently didn't really consider the tax payable under different strategies.

In parts (b) and (c) the client asked for advice on what to do in certain cases and in part (b) for a tax effective strategy. In some cases students suggested multiple strategies or didn't specify the most tax-effective of 2 or more strategies. This is not appropriate as an individual has approached you asking for advice and should not be left to choose between strategies.

Paper 2, Question 2 (12 Marks)
This question was a relatively easy question aimed at testing students' knowledge of funding methods. The majority of candidates passed this question, although in most cases not convincingly.

Part (a) involved students describing two funding methods (Entry Age Normal and PUC) and their advantages and disadvantages. This was generally well answered, although in some cases candidates did not know how surplus was calculated under the entry age normal method. Those who did generally did not refer to the value of member contributions in the surplus calculation.

Part (b) was designed to test students' knowledge of how funding methods would work in a closed fund situation and to choose an appropriate funding method. There was a mixed performance in this part. Most candidates did not pick up on the point that investment volatility would have more of an impact on contribution rates than the funding method chosen.

Part (c) was aimed at testing the impact of a new accounting standard on the employer's accounts and how the liabilities applied here relate to those used for funding. Most candidates did not mention how superannuation is allowed for under the current standard. Few recognised that the value of liabilities on the accounting basis would generally be greater than on the funding basis.

Paper 2, Question 3 (27 Marks)

The first part of (a) was aimed at testing a student's knowledge of superannuation benefit designs and the issues around these as they apply to certain groups of employees. The second part went further in issues of how a defined benefit structure would compare to an accumulation structure and how any associated issues would be dealt with on a conversion of the benefits.

Part (b) was aimed at testing a student's knowledge of group insurance and the associated terms available. This was a relatively easy question that could be seen as straightforward bookwork for a well prepared student.

Part (c) was aimed at testing a student's knowledge of what would occur in a situation of retrenchment of a significant number of employees where the fund did not have full coverage of retrenchment benefits.

Overall this question was not as well answered as it could have been with only 36% passing. However, nearly all students achieved a C or above in this question.

Paper 2, Question 4 (20 Marks)

Part (a) of this question was aimed at testing students' knowledge of how to determine transfer values in a situation of a transfer from defined benefits to accumulation within a fund. Students were also expected to consider factors in determining future contribution rates in an accumulation arrangement for transferring defined benefit members.

Overall this part was relatively well answered. Most students did not distinguish between employer and trustee issues and answered the question with all issues lumped together. Also, students generally did not consider wider employer issues such as EBAs and contracts or surcharge implications.

Part (b) was aimed at testing students' knowledge of the FSR legislation as it applied to a web based calculator. This was not as well answered as it should have been with most students only providing brief comments on this being personal or product advice and not addressing licensing requirements.

Part (c) was aimed at testing the students' knowledge of how to determine benefits in a wind-up situation. Generally students only got part of the marks here and most repeated the requirements under SIS for a wind-up (which they would have been able to obtain from the materials they took into the exam). There was not a lot of reference to the Trust Deed, which is quite important here.

Paper 2, Question 5 (13 Marks)

This question was aimed at testing a student's knowledge around the financial position of a defined benefit fund as well as the requirements around minimum requisite benefits and the associated Funding and Solvency Certificates.

In part (a) many candidates made generic comments or described an FSC but often failed to take into account the circumstances described in the question i.e. forget to state the obvious.

In part (b) in terms of control mechanisms, Insurance/Investment changes or constraints where not mentioned in most cases.

Part (c) asked candidates of the implications of altering the minimum requisite benefit to an accumulation design. Many candidates interpreted the question from a different perspective and answers such as "change the admin system" or "re-issue the Benefit Certificate" etc where not uncommon.

Paper 2, Question 6 (18 Marks)

This question was very poorly answered, with only 2 students achieving a pass. In these cases, the passes were marginal.

Part (a) asked students to demonstrate their knowledge of member investment choice as well as the SIS requirements around a trustee setting investment strategies. Generally students were able to answer only one of these. There was also some quite interesting discussions about unit pricing errors which bore no relation to the question.

Part (b) was intended to examine whether students understood the different tax treatment of assets backing pensions and practical ways of implementing this. Generally the students answered this in terms of the administration of allocated pensions, despite the question discussing a proposed investment menu.

However, the markers acknowledged that the question for this part was not as clear as it should have been and excluded it from the marks required to pass the question. The students who correctly addressed this part were awarded a small number of bonus marks.

Part (c) was aimed at further testing the students' knowledge of how assets and liabilities should interact and the appropriate setting of an investment policy by a Trustee. The question was introduced with an overlay of winning a major client for your business. Most students obtained some marks here capturing some of the points. However, only a few produced a complete answer. There was a concern with a couple of answers here. In particular one student was prepared to accept inappropriate assets to win the business.

Phillip Everett
Chief Examiner, Superannuation & Planned Savings
November 2004

CHIEF EXAMINERS' REPORTS

Subject 5: Finance

Results Summary

74 candidates enrolled for the 2004 Finance examination.

Of these:

- 56 candidates sat for both paper 1 and paper 2
- 12 candidates did not sit for either paper 1 or paper 2
- 1 candidate sat for paper 2 only and not for paper 1
- 5 candidates sat for paper 1 only and not for paper 2

In summary

	Number of Candidates
Originally enrolled	74
Absent from both exams	12
Presented at both exams	56
Presented at paper 1 but not paper 2	5
Presented at paper 2 but not paper 1	1
Presented at paper 1	61
Presented at paper 2	57
passing both paper 1 and paper 2	22
passing paper 1 only	10
passing paper 2 only	0

The analysis by examination centre is as follows:

Centre	Presented	Passed	Pass Rate
Australia	40	19	48%
Overseas	16	3	19%
Total	56	22	39%

Examiners

The Chief Examiner for this year was Tim Kyng. Tim was assisted by Kevin Francis.

Degree of Difficulty and Course Coverage

The degree of difficulty of questions on each paper and course coverage is summarised in the tables below:

Paper 1

Question	Syllabus Aims	Units	Knowledge & Understanding (KU)	Straight-forward Judgement (SJ)	Complex Judgement (CJ)	Total Marks
Q 1a	a,b,c,d	1		10		10
Q 1b	a,b,c,d	1		1		1
Q 1c	a,b,c,d	1		4		4
Q 2a	a, b	3			4	4
Q 2b	a, b	3			2	2
Q 2c	d, f	2			6	6
Q 2d	d, f	2			3	3
Q 3a	a, b	3	2			2
Q 3b	a, b	3	3			3
Q 3c	b, d	2			7	7
Q 4a	B	6	2			2
Q 4b	E	6	4			4
Q 4c	a, d	5	4			4
Q 5a	a, b	3			4	4
Q 5b	a, b, c	6			5	5
Q 5c	b, c	7		2		2
Q 5d	b, c	7		4		4
Q 6a	2c, 3c&d	2, 3	9			9
Q 6b		3,5,7		5		5
Q 6c	c, d, e	3		4		4
Q 7a	b, c	4		2		2
Q 7b	B	4		4		4
Q 7c	3a&e, 4b	3, 4		2		2
Q 7d	3a, 4b	3, 4			5	5
Q 7e	4c	4			2	2
TOTAL			24	38	38	100

Paper 2

Question	Syllabus Aims	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
Q 1a	a	8	7			7
Q 1b	a	8	1			1
Q 1c	d, e	10	4			4
Q 1d	e	10		4		4
Q 2a	a, b	14	1			1
Q 2b	a, b	14	3			3
Q 2c	a, b	14		4		4
Q 2d	a, b	14			5	5
Q 2e	a, b	14			5	5
Q 3a	8f, 11a	8, 11		4		4
Q 3b	a	11			8	8
Q 3c	11a, 13b	11, 13		4		4
Q 4a	A,b	12	4			4
Q 4b	B,c	12			6	6
Q 4c	A,e	12			6	6
Q 5a	c	8	2			2
Q 5b	b	8		3		3
Q 5c	B,c	10		5		5
Q 5d	B,c	10		5		5
Q 5e	A,b	13			5	5
Q6a	b	11	3			3
Q6b	b	11	4			4
Q6c	b	11		4		4
Q6d	a	11		3		3
TOTAL			29	36	35	100

Question by Question Analysis

Paper 1, Question 1 (15 Marks)

This question was rated as a straightforward judgement (SJ) type of question about leasing. Similar questions have appeared many times in the past. This question was reasonably well handled and the average mark was 16.7 out of 30 or 55.8%.

Part (a) of the question was generally well answered. Students lost marks for not stating some assumptions. For example, many students assumed that tax was payable at the end of the year in which the income was earned, but they failed to state this. Part (b) was reasonably attempted, though most students only stated one method of determining whether or not the project was adding value. The solution required two reasons. The answers for Part (c) varied. Many students failed to distinguish between a finance and an operating lease. Some students stated the benefits to the financier, even though the question asked for the benefits to the lessee.

Paper 1, Question 2 (15 Marks)

This question was about executive share options, how these may align the interests of executives and shareholders and the implications of having to report share options as an expense in the financial statements. It also covered the issue of inclusion in the sharemarket index on a firm's ability to raise finance. The examiners rated this as a pure complex judgement (CJ) type question. The average mark was 12.7 out of 30 or 42.3%.

The markers commented that generally not many students did a good job of it. In part (a) and part (d) there was a tendancy to answer a different question to the one asked. In the case of part (a) several students recommended that the options be scrapped and replaced by salary, which is not what the question was asking. In Part (d) far too many students discussed the implications of listing, not the implications of being in the index. Part (b) was very poorly answered.

Paper 1, Question 3 (12 Marks)

This question covered rights issues and estimation of the value of dividend imputation credits. The examiner rated this as partly a Knowledge and Understanding (KU) type of question and partly a CJ type of question. The average mark was 13.7 out of 24 or 57.1%. Overall it was handled reasonably well by most candidates.

Part (a) was generally well answered. However, many students calculated the ex rights price correctly at 2.4545 and then mistakenly valued the right as the difference between this and the share price instead of this and the exercise price. Part (b) was also generally well answered. In part (c) very few matched the simple formula in the solution ie. $D \times (1-Tp)/(1-Tc)$, which would have demonstrated quickly an understanding of the proposed approach. Many suggested the approach was flawed because of other factors influencing the share price, without suggesting that averaging over a large enough sample would alleviate this problem. There was a wide distribution of marks for this part.

Paper 1, Question 4 (10 Marks)

This was a straightforward KU (bookwork) type of question about the use of the zero coupon discount function to compute coupon bond prices, and forward rates. It also covered bond pricing, duration and modified duration. It was handled reasonably well by most students. The average mark was 15.4 out of 20 or 77.0%.

Paper 1, Question 5 (15 Marks)

This was a difficult question about the pricing of hybrid securities, exchanging voting shares for a package equivalent to non voting shares, the use futures / forward pricing and the use of the put call parity relationship. The examiner rated this at 2.6 level of difficulty, a combination of CJ and SJ type questions. The average mark was 11.0 out of 30 or 36.7% and the relative variability was 57.5%, which indicates the question had good discriminating power.

Some areas of knowledge tested can be considered as fundamental to finance knowledge such as the effect of tax rates and dividend imputation on returns for tax-payers with differing tax rates, or option strategies and payoff diagrams. In part (a) Some students did not realise that exactly the same cash-flows occurred whether the original security vs. the package consisting of "prime + score" was held. In part (b) some candidates did not read the question - several candidates priced the "score" rather than the "prime". For part (c), again, a lot of the students did not read the question properly. The question asks for a synthetic security that has the same cashflows as the "prime". A lot of students instead provided an explanation of how to create a synthetic long futures contract.

Paper 1, Question 6 (18 Marks)

This question covered capital structure, the conflicts between the interests of debtholders and shareholders and how embedded options added to debt securities may impact on this conflict. It also required candidates to compute the effect on coupon rate of a debt security of having an embedded gold option added to it. The examiner rated this as partly a KU type of question and partly a SJ type of question. The average mark was 16.1 out of 36 or 44.8%. More than half the candidates passed this question. It was similar to questions asked in previous years.

Paper 1, Question 7 (15 Marks)

This question covered Mergers and Acquisitions and valuation of intellectual capital for a software company. This question was reasonably well handled by the candidates. The average mark was 16.8 out of 30 or 56.0% and 62% of the candidates passed the question. The examiner rated this as a moderately difficult question mid way between SJ and CJ. The students' performance was better than expected on this question.

Paper 2, Question 1 (16 Marks)

This question covered properties of brownian motion and the notion of convenience yield and mean reversion. These are basic concepts in the mathematics of option pricing. The average mark on this question was 14.1 / 32 or 44.2%. The examiner rated this question as mostly a KU type of question.

Overall performance on this question was poor. Many students demonstrated a lack of understanding of basic statistics. The main problems in part (a) of the question arose in parts (iii) and (iv) with the first two parts being well answered. Part (iii) required students to prove a result related to the covariance structure of the Brownian bridge. This question, in many cases, led students to demonstrate a lack of understanding of the basic properties of Weiner processes. Part (iv), while very simple, caused difficulty for many students. Parts (c) and (d) of the question were very basic bookwork type questions and responses often did not reflect the number of marks available for these parts.

Paper 2, Question 2 (18 Marks)

This question was about the use of Value at Risk as a method for quantifying the initial deposit for a new futures contract and a new futures option contract for a futures exchange. The question spanned several different topics in the finance course, including VaR, zero coupon bonds, bond pricing, futures pricing and options pricing.

The examiner rated this as a question of moderate difficulty, mid way between being a "SJ" and a "CJ" type of question. This question was handled badly by a lot of the candidates, with some very obvious mistakes being made, even on the easier parts of the question. For instance, the initial deposit is intended to cover the exchange against default risk for a period of 1 day, so the holding period for the VaR calculation should be 1 day. Many candidates recommended much longer holding periods and made many other obvious errors.

The average mark was 15.3 out of 36 or 42.4%. The relative variability of the mark was 44.9%, which is quite high and indicates the question had good discriminating power. Even the better students had trouble scoring a good mark on this question.

Paper 2, Question 3 (16 Marks)

This question was about the valuation techniques which may be applied to value an executive option. It covered the topics of black scholes valuation and numerical valuation techniques. The examiner rated this question as having a rating of 2.5 (mid way between sj and cj level of difficulty. This question was particularly poorly handled by candidates. The average mark was 10.1 out of 32 or 31.6% and the relative variability was 53.8%, which was quite high.

The markers commented that "… parts (a) and (c) were straightforward. In part (b), the general nature of the question and absence of guidance as to the structure of the answer meant that many of the answers were vague and lacking in detail. Several candidates spent a lot of time on the detail of mathematical derivations of processes and the Cholesky square root, leaving no time for other parts of the answer"

Paper 2, Question 4 (16 Marks)

This question was poorly handled overall. Only 16% of candidates passed this question. The average mark was 7.6 out of 32 or 23.8% and the relative variability of this mark was 63.4%. This question was rated by the examiner as the most difficult question on the paper with a rating of 2.75, i.e. mostly complex judgement.

The question was about interest rate derivatives and using some standard valuation models to price them. The problem was to use black's model to price bond futures options, to quantify an underwriting fee for underwriting a bond issue (valued as a put option) and to use the Vasicek / Jamshidian approach to value a an interest rate guarantee. The last part of the question was particularly badly handled.

In my view the way the question was worded confused a lot of students and they failed to recognise that the question was about these interest rate option pricing models or how to use the information in the question to apply these models. However a well prepared candidate who properly read the question should have realised what the question was asking them to do.

Paper 2, Question 5 (20 Marks)

This was a question on exotic (Asian) options that made the candidate think about methods of valuation for options on arithmetic average prices, for which there are generally no analytic solutions. The first three parts required the candidate to derive the underlying PDE for arithmetic average options, with the fourth part looking at the solution to the PDE in a particular case, and the final part looking at an analytic approximation in a more general case.

Overall the question was answered poorly. The average mark was 13.7 out of 40 or 34.2%. The relative variabilty at 55.7%, was quite high. Only 27% of the candidates passed this question. This was rated by the examiners as a combination of sj and cjk type components.

The first three parts were fairly "standard", and the fourth part was simply a matter of verifying that a particular function satisfies a PDE and the boundary condition for the option in question.

Part (a) was generally well answered. In part (b) the derivation of the expression for dA was reasonably answered. The explanation part was very poorly handled. Part (c) was handled reasonably well, with most candidates applying the methodology for deriving the Black-Scholes PDE to the problem in the question. Part (d) was answered very poorly. The vast majority of candidates did not attempt part (e).

Paper 2, Question 6 (14 Marks)

This was a straightforward numerical question about using the binomial model for option pricing calculations. Based on exam performance, this was the easiest question on paper 2. The average mark was 17.3 out of 28 or 61.8% and most students passed this question.

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November 2004