2014 PART III EXAMINATIONS

Subject Title: **C10 Commercial Actuarial Practice**

Date: **Wednesday, 22 October 2014**

Time: **9:00 am – 5:00 pm**

Time allowed: Eight (8) hours

Instructions: Type an answer in Microsoft Word. Only your MS Word Document will be marked. Do not link data from spreadsheets. Spreadsheets must be embedded in your MS Word Document.

Number of Questions: **Five** (5)

Candidates are required to answer only **ONE** question.
This paper has **twenty-five** (25) pages (excluding this page).

ENTERPRISE RISK MANAGEMENT

QUESTION

Golden Wattle Financial ("GWF")

GWF was a finance company which was placed in receivership 12 months ago mainly because of defaults on its mortgage assets.

GWF operated in a rural area with a head office and 10 branch offices in towns all located in the same region. It had operated for nearly 50 years and built a strong reputation in the local community by employing local people, sponsoring local activities and sporting clubs, and generally being more flexible in its financial dealings with local customers than the larger national financial institutions.

GWF raised funds by issuing debentures mainly to local people, charities and small businesses. Each debenture series was documented by means of a prospectus registered with the national consumer protection regulator.

The funds so raised were invested in mortgages mostly originated by mortgage brokers. The mortgages were secured by residential housing, farms and commercial premises located nation-wide.

GWF was not registered as an authorised deposit-taking institution and was therefore not regulated by the national prudential regulator, and was not subject to minimum capital requirements or other prudential regulation.

GWF was a private company with about 100 shareholders. The larger shareholders were well represented on its Board of Directors and in the senior management team.

TrustUs

TrustUs is a specialist trustee company which operates nationally. TrustUs was appointed as the trustee company for each prospectus issued by GWF. The Trustee's role is to represent and act in the best interests of the debenture holders, in accordance with a Trust Deed. The Trustee holds security over the assets of GWF on behalf of debenture holders.

TrustUs became uncomfortable about the financial position at GWF and eventually forced the Directors of GWF to obtain an independent assessment of the mortgage assets of GWF. This showed that the liabilities of GWF exceeded its assets by a considerable margin. The Directors of GWF then invited TrustUs to appoint a firm of receivers to manage the company on behalf of the debenture holders.

TrustUs appointed the reputable firm of Gather Floggitt and Billhard ("GFB") to act as Receivers for GWF. GFB have substantial experience in winding up failed finance companies.

Under the terms of the receivership, TrustUs works closely with the Receivers and continues to be involved in, and ultimately approve, all major decisions throughout the receivership. The Trustee's primary responsibility is to oversee the Receivers' performance of their role in realising the assets and maximising the returns to debenture holders.

GFB

The role of the Receivers is to ensure that GWF is properly managed and controlled, that its assets are preserved for the benefit of debenture holders, and that all GWF debenture holders are treated fairly and equitably amongst themselves.

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Impact of the receivership

GWF was not a large financial institution from a national perspective, with assets at the time the Receivers were appointed of $693 million. But the financial impact of the failure on the local community was profound with so many locals losing their savings.

The failure attracted nation-wide publicity with a focus on individual debenture holders who suffered substantial losses and on the roles of the various stakeholders in GWF. This included scrutiny of the roles of the directors of GWF, the senior management team, the auditors, the trustee acting for the debenture holders, and the consumer protection regulator. The Government established a Committee of Inquiry into the causes of the failure and the assistance needs of the community and individual debenture holders.

International Credit Ratings Agency

The role of an international credit ratings agency was also questioned.

The Agency had given (and re-affirmed) an "above average" rating to the mortgage management capability of a GWF subsidiary that carried out the back-office mortgage processing work. This opinion was publicised by GWF to attract more lenders to the group. The rating stated "The above average ranking reflects GWF's stable industry-experienced management team, low annual staff turnover, effective use of technology to support risk management and quality assurance processes, and comprehensive loan-servicing standards."

When questioned by the media a spokesperson for the Agency said: "Our report was not a rating. It was an assessment of the company's operational capabilities, rather than their ability to pay their financial obligations. To think this talks about financial strength is not correct. These reports are popular with non-bank originators who service loans and some people use them as a way to demonstrate the sorts of processes, systems and practices they use."

Your brief

You are a consulting actuary who has specialised in risk management and TrustUs has been an occasional client in the past. Nat Trustworthy, the CEO of TrustUs has asked for your assistance in providing some independent advice on a number of aspects relating to the failure of GWF.

Nat said that the Directors of TrustUs are very concerned about GWF's failure and the reputational damage to TrustUs. They are keen to limit the chances of future client failures and also to ensure that the Receivership results in the best possible outcomes for the debenture holders. These issues have dominated recent Board meetings.

Nat said that TrustUs had put considerable weight on the report by the Credit Ratings Agency and that they are all very embarrassed about having placed so much reliance on a report which was so limited in scope.

At the last TrustUs Board meeting discussion focussed on three issues.

The first was the attached letter from the Receivers about a possible sale of the performing loans. Some directors were sceptical that a sale would provide the best results for debenture holders because a purchaser would demand high risk margins. Nat was asked the following questions:

- Can you give us a likely pattern of cash flows from the performing loans so we can see how long debenture holders will have to wait if the sale does not

proceed (an approximation will be good enough, using the data in the letter from GFB)?

- What factors should we consider in setting the minimum acceptable price?
- Can you make an estimate of the minimum acceptable price?

The second issue relates to another TrustUs client, with a similar business to GWF, which has also suffered some asset defaults but is able to continue trading as a going concern. The directors want to avoid a repeat of the GWF situation, and they are prepared to make some investment to assist the second client to strengthen its business. Some directors are strong advocates of the value of Enterprise Risk Management and asked whether TrustUs might provide some help to the second client to review and improve its ERM Framework. Nat was asked to consider:

- Is it practical for TrustUs to conduct such a review at a reasonable cost and in a reasonable timeframe (assuming the client is supportive)?
- What aspects of the ERM Framework would be most important for this business?
- How would we ensure that our suggestions for improvement are followed?

The third issue is the upcoming hearings of the Government Committee of inquiry. Nat and a director of TrustUs have been invited to attend and give evidence about the role of the trustee in prospectus-based fundraising by finance companies. The directors would like to take a positive and pro-active stance in giving evidence. The directors agreed that obtaining full credit ratings for organisations like GWF is not practical because of cost and the frequency of business changes for smaller organisations. So they discussed whether instead TrustUs might in future rate prospective finance company clients in terms of the quality of their ERM Frameworks. For example an “A” rating would be acceptable, a “C” rating would be unacceptable and a “B” rating would mean some improvements are needed before TrustUs takes on the trustee role. Nat was asked to consider:

- How would TrustUs define A, B and C ratings for this purpose i.e. what are the characteristics of each rating?
- Is this a practical approach and who would be best suited to doing the work?
- Are there any other ideas that Nat might suggest (without researching these in detail) for TrustUs to present a positive and pro-active stance at the hearings?

Prepare your report to assist Nat in answering these questions.

Attachment

1. C10_ERM_Sem_2_2014_letter_from_GFB.pdf

END OF QUESTION

GENERAL INSURANCE

QUESTION

It is 9am on 15th October 2014 and you are Anne Actuary, the chief actuary (the only actuary!) for Laurie Insurance, a Capland insurer specialising in liability insurance. You have been working in this role for several years, setting prices and outstanding claims reserves and monitoring performance. The Capland actuarial society requires you to follow the Australian Code of Professional Conduct, but none of the Australian professional standards apply.

The Capland Law Society is one of Laurie's largest clients, and they run a professional indemnity scheme for their members. The legal environment is such that professional indemnity claims can be subject to common law, including punitive damages related to the at-fault firm's annual income. Laurie insures the scheme, with the coverage terms and premium rates negotiated with the Capland Law Society once every three years. There is a 15 year exclusivity agreement between the Capland Law Society and Laurie Insurance that commenced in 2006 with the following terms:

- The law society must give Laurie the first right of refusal to offer professional indemnity for each three year period i.e. Laurie must be the first insurer that the law society negotiates with, and if those negotiations fail and the law society reaches an agreement with a different insurer, then Laurie has the right to match those terms and retain its position as insurer.
- The law society charges agreed premium rates for individual members.
- There is a single insurance contract with Laurie as the insurer and the law society as the insured.
- That insurance policy has a commencement date on 1st January of each year. Even though the policy commences on 1st January, the scheme coverage is on a risk attaching basis (note that "risk attaching" means that Laurie covers all contracts that commence during that underwriting year): individual legal firms are covered for one year from the date of the specific firm's policy anniversary during that year.
- Premiums will be paid monthly to Laurie by the Capland Law Society.
- The law society will provide quarterly statistics to Laurie showing the member exposures by turnover band, claims triangles and a listing of all claims with incurred over $500,000. (You have been provided with a copy of these reports in the data attachment.)
- Individual law firm coverage is on a claims-made basis (for claims reported during the year commencing the specific firm's policy anniversary), although some allowance is made for processing delays in reporting claims.
- Individual legal firms insuring with the Capland Law Society have sub-policies with anniversary dates spread throughout the year.
- The Capland Law Society handles all of the claims itself. Laurie reimburses Capland Law Society each month for the cost of claims paid, and from time to time will advance extra funds when a very large claim is due to be settled.

- It is compulsory by law for all legal firms to insure via the Capland Law Society, with the exception of multinationals (because they have their headquarters outside of Capland). Laurie must cover all law society members.
- It is required by law that the insurance policy includes all legal firms who are members of the law society and who are required by law to purchase professional indemnity via the law society i.e. no underwriting acceptance criteria apply.
- The Capland Law Society will enforce appropriate risk management practices for its members.
- At the end of each three year period,
    - Laurie will provide a written report on the scheme's profitability,
    - the law society will be paid a profit share equal to the amount by which the accounting incurred claims amount (excluding risk margins) is less than 75% of the earned premium. If that value is negative, then the profit share is zero, but that negative amount will not carry forward into future years, and
    - Laurie and the law society will negotiate the terms for the following three years, including premium rates, limits of indemnity, policy wordings and exclusions, claims handling practices and risk management practices. Three years ago the limits of indemnity were changed to include the option of a $5,000,000 limit of indemnity. Six years ago the claims handling practices were changed to remove some conflicts of interest.

The current three year period finishes on 31st December 2014. Note that Capland fully complies with IFRS accounting rules.

Your boss, Catherine Everton-Overton comes into your office and informs you that next month's meeting, with the CEO of the law society and an actuary from Stern Re (the lead reinsurer on Laurie's quota share reinsurance treaty and risk excess of loss treaty), has been moved to 5pm today at the request of Stern Re. You need to have your three yearly scheme review report ready for that meeting.

The Task

Prepare your report.

Appendices

Appendix 1: Email from Izzie Grim, the treaty pricing actuary from Stern Re

Appendix 2: Email from Bernie Wildered, the CEO of the Capland Law Society

Appendix 3: File Note: 2011 Review of Capland Law Society Scheme, by Anne Actuary

Attachment

1. C10_GI_Sem_2_2014_Review_Data.xls

APPENDIX 1: EMAIL FROM IZZIE GRIM

From: Izzie Grim

To: Catherine Everton-Overton

Date: 14-Oct-14 6:31pm

Subject: Capland Law Society

Dear Catherine,

As you are aware from our previous discussions, Stern Re is dismayed at the performance of the Capland Law Scheme. The reinsurance recoveries that we have accrued for large claims from this scheme exceed the total excess of loss premium we charge to Laurie Insurance for all of its business.
We therefore urgently request to bring forward the scheme review meeting to 5pm 15-Oct-2014.

Izzie

APPENDIX 2: EMAIL FROM BERNIE WILDERED

From: Bernie Wildered

To: Catherine Everton-Overton

Date: 14-Oct-14 6:41pm

Subject: Capland Law Society

Dear Catherine,

I confirm that I am able to attend a meeting tomorrow at 5pm. Why is there such a rush? Is there a problem? We're giving you more premium income than ever, so I expect that the results should look good.

Bernie

APPENDIX 3: FILE NOTE: 2011 REVIEW

Triangle Analysis (excluding large claims > $500,000)

- Claim reporting patterns and claim development patterns remain stable. Therefore development pattern assumptions are unchanged since last review.
- Claim inflation is also stable at 3.5% pa. Therefore assumption is unchanged since last review.

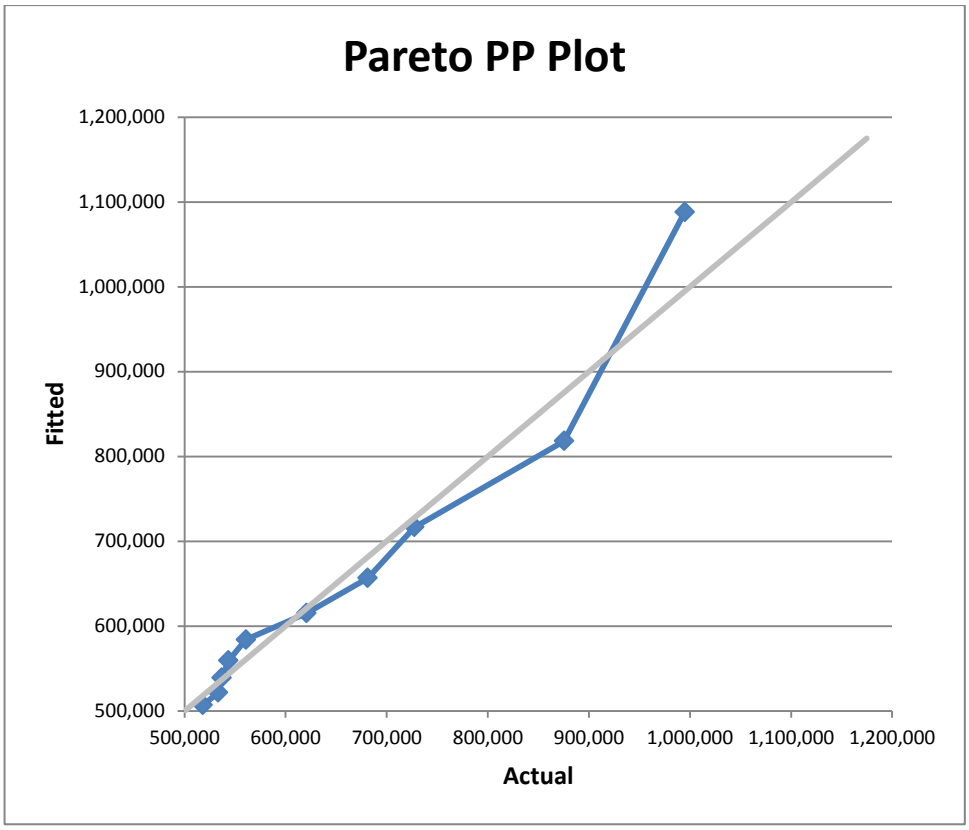
Exposure

- Historical growth in number of legal firms was 2% pa. But in the past year growth in legal firm count has stopped. I enquired why, and it is because some legal firms have merged this year into a single co-operative firm to take advantage of cheaper professional indemnity premiums for larger firms. Sample documentation was supplied to me by the Capland Law Society, which confirmed what is happening. This appears to a one off, as the new combined firm has set a rule to not allow any further firms to join. Therefore the legal firm growth assumption is unchanged since last review.
- Capland Law Society advises that large firms have better risk management, and are therefore better risks, with fewer claims per staff member. But I shall be conservative and assume that the claim frequency doesn't improve.
- Growth in total legal turnover remains stable at 5% pa. Therefore assumption is unchanged since last review.

APPENDIX 3 cont….

Large Claims > $500,000

- Inflation adjusted claim severities fit a Pareto distribution quite well



- The location parameter is $500,000 which is our cut off definition for large claims
- The shape parameter is 3.85, which was fitted using maximum likelihood estimation

Pricing for the New $5,000,000 Limit of Indemnity

- Based upon the Pareto distribution I have fitted, the risk premium is 0.2% higher for a $5m limit of indemnity versus a $1m limit of indemnity.
- However, inflation will increase this cost
- So let's add a safety margin and charge 5% extra for the higher limit of indemnity

END OF QUESTION

GLOBAL RETIREMENT INCOME SYSTEMS

QUESTION

Clothes 'n Down Pty Ltd manufactures and sells clothing and doonas in Australia. The US parent has indicated that it wishes to centralize its manufacturing globally and, as a result, the local operation has announced that it will cease manufacturing as at 31 December 2016 but retain its sales and marketing functions.

The local company sponsors a sub-plan in a master trust that has two defined benefit categories (which are closed to new members) and an accumulation (defined contribution) category, with a company contribution rate of 10% of salaries for all categories. The master trust's Trustee is responsible for setting the investment policy and crediting rate policy for the defined benefit categories. Assets for the accumulation category are invested as selected by the members.

As the Plan has defined benefit categories, the master trust charges an additional "defined benefit" administration fee of the greater of $80,000 p.a. (indexed with inflation) and 0.15% of total Plan assets (including accumulation members). The company has agreed to meet these costs.

A brief description of the benefit design for each category is set out in Appendix 1. The defined benefit membership data at 30 June 2014, including an indicator of which members are in the manufacturing operation, is provided in the attached spreadsheet. The members affected by the manufacturing closure will be paid the retrenchment benefit from the Plan.

There are also 400 members of the accumulation section with a total payroll of $32 million and total account balances of $17 million.

Manufacturing union representatives have met with the Company and demanded that manufacturing union members to be affected by the closure be allowed to convert to accumulation benefits immediately, with a transfer value equal to the retrenchment benefit. The union has also demanded that union members be allowed to attend a seminar by the Doona Workers' industry superannuation fund so that members can consider a transfer to the industry fund.

The assets ($31.1 million at 30 June 2014) backing the defined benefits are invested in the Up and Down Investment Option which has a 75% allocation to shares and listed property and 25% to fixed interest and cash. The master trust also offers a Cash Investment Option and the Less Up and Down Investment Option with a 25% allocation to shares and listed property and 75% to fixed interest and cash. The investment fees for Plan assets are built into the unit prices determined for each investment option.

A USGAAP accounting valuation at 31 December 2013 using a discount rate of 5% pa and salary increase rate of 4% pa disclosed unrecognized losses on defined benefit liabilities of A$3 million on the company's balance sheet.

You are the external adviser to the Company and the CEO has asked for your advice on the funding required to meet the retrenchment benefits payable when the manufacturing operations cease. Specific advice is also required in relation to the investment policy and crediting rate policy for the defined benefit assets.

The CEO has also asked for your recommendation regarding the manufacturing union's

demands and the implications for the plan's operations and USGAAP disclosures both before and after the manufacturing operations cease.

For the purpose of this analysis you can assume that no tax is payable on contributions or investment earnings in a superannuation fund and that benefits are not taxable. You can also ignore the Superannuation Guarantee minimum contribution requirement

Appendix

Appendix 1: Clothes 'n Down - superannuation benefit design (see below)

Attachment

1) C10_GRIS_Sem_2_2014_DB_Data.xlsx

APPENDIX 1:

Clothes 'n Down - superannuation benefit design

Feature	Management (defined benefit) Category A	Staff (defined benefit) Category B	Accumulation Category C
Member contributions	5%	5%	Voluntary
Lump sum at retirement after age 55.	20% x final average salary over latest 3 years x contributory membership subject to minimum of 2.5 x Member Contribution Account (Note 2)	15% x final average salary over latest 3 years x contributory membership subject to minimum of 2.5 x Member Contribution Account (Note 2)	Account balance (Note 1)
Leaving service before age 55.	2.5 x Member Contribution Account (Note 2)	2.5 x Member Contribution Account (Note 2)	Account balance (Note 1)
Retrenchment before 55.	20% x final average salary over latest 3 years x contributory membership times (1-0.01n) where n is period to age 55 in years and completed months. OR Leaving service benefit, if greater.	15% x final average salary over latest 3 years x contributory membership times (1-0.01n) where n is period to age 55 in years and completed months. OR Leaving service benefit, if greater.	Account balance (Note 1)
Retrenchment after age 55.	As for retirement.	As for retirement.	Account balance (Note 1)
Lump Sum Death and Total and Permanent Disablement	20% x salary x projected membership in years to age 65 subject to minimum of current retrenchment benefit.	15% x salary x projected membership in years to age 65 subject to minimum of current retrenchment benefit.	Account Balance (Note 1) plus 10%, 15% or 20% of salary x period in years to age 65 as selected by member.

Notes:

1. Account balance is the accumulation of employer contributions and any member contributions with investment earnings.

2. Member contribution account is the accumulation of member contributions with the declared crediting rates.

END OF QUESTION

INVESTMENTS

QUESTION

A rising tennis star from Capland, known simply as Oscar, has just raised his world rank to 15. He is aged 18 and is regarded as having a superb game worthy of a future number one.

He is managed by Big Star Management ("BST") who not only manage his sporting career but also provide extensive advice for their players' financial affairs.

Oscar wishes to use his likely wealth to provide opportunities for disadvantaged kids in Africa to have the possibility of becoming sports stars. He has established a foundation for this purpose and plans to contribute a proportion of his earnings from prize money and sponsorships to the foundation in order to build its wealth. BST has suggested the following ground rules for its operation

- Every year he will contribute a percentage, to be determined, of his prize money and sponsorship earnings to the foundation. This will commence this year and will continue until he reaches age 25,
- After five years of contributions the foundation will use 5% of its opening balance each year to provide support for the kids Oscar wishes to assist, and
- The foundation will be invested so as to maximise its earnings subject to the qualifications below.

The foundation will be domiciled in Capland and will pay no tax.

Oscar intends that his percentage contributions can be varied each year but wants a formula for any variations to be established in advance. While the percentage contribution can vary in each year the formula must be completely specified in advance and must not depend on the balance of the foundation from time to time. The formula should be determined so that after no more than 10 years the foundation should reach, and thereafter remain at, a level which is at least 1% of the Capland GDP from time to time. Currently GDP is C$5 billion.

Since his earnings will fluctuate depending on his performance he has established that the 1% of Capland GDP should be reached with a probability of at least 75%; and thereafter it should remain at that level with a similar probability for the foreseeable future. The probabilities are to include allowance for the earnings distributions resulting from the attached data on the professional tennis circuit.

BST has not proposed any restrictions on the investment strategy other than that implied by the probability statements made above. The only investments available to the foundation are those shown in the attached investment performance data. They have, however, indicated that Oscar is very wary of equity investments and would really like to keep the equity share as low as possible. He is particularly concerned about the funds of the foundation decreasing due to falls in the share market. He has also suggested that the 5% of capital which is to be used each year to provide support for the kids he wishes to assist should come primarily from income and not from asset sales.

You are a partner in Actuaries for Exotic Problems ("AEP") and have provided investment and other advice to BST's clients for many years. You have been asked to provide BST advice which can be passed directly to Oscar on three issues:

- The formula for the percentage contribution of earnings he should make each year,
- The investment strategy the foundation should follow, and
- Any comment you may wish to make about the reasonableness of the ground rules for the foundation's operations, the probabilities which have been established or Oscar's views on investment strategy.

BST have noted that Oscar, while a brilliant tennis player, has little advanced financial understanding. They have, however, reminded you that your report must contain sufficient detail so that their internal financial analysts can fully understand your reasons and calculations.

BST have provided you with certain information regarding the professional tennis circuit and probabilities specifically related to Oscar's assessed potential. You are very familiar with BST's work and are satisfied that you can rely upon their analysis without further investigation.

The Task

Prepare your report.

Appendices

Appendix 1: BST's data showing the probability associated with Oscar's moving up or down the rankings.
Appendix 2: BST's table showing the expected earnings according to one's place in the rankings.
Appendix 3: Data on past inflation rates for these earnings.

Attachments

1. C10_INV_Sem_2_2014_Capland_Investment_Data_June_2014.xls
2. C10_INV_Sem_2_2014_Capland_GDP_Growth_Rates.xls

APPENDIX 1:

Earnings According to Rank

Rank	Earnings p.a. from Prize Money and Sponsorships C$ million
1	75
2	70
3	65
4	60
5	55
6	50
7	45
8	40
9	37
10	35
11	33
12	31
13	29
14	27
15	25
16	23
17	21
18	19
19	18
20	17

For players ranked below 20 earnings decline linearly to $5 million at rank 50.

APPENDIX 2:

The annual rate of inflation for prize money and sponsorships over the past fifteen years is shown in the table.

Year	Prize Money & Sponsorship Inflation %
2013	4.5
2012	4.9
2011	5.2
2010	6.5
2009	7.2
2008	8.2
2007	9.4
2006	11.5
2005	12.9
2004	14.9
2003	16.2
2002	15.8
2001	16.1
2000	14.0
1999	12.5

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APPENDIX 3:

Probabilities of Oscar Changing Rank in a twelve month period

Current Rank	Probability of Moving Up One Rank	Probability of Moving Down One Rank
1	n/a	0.20
2	0.15	0.18
3	0.15	0.16
4	0.15	0.15
5	0.16	0.15
6	0.17	0.15
7	0.18	0.13
8	0.19	0.12
9	0.20	0.10
10	0.21	0.10
11	0.22	0.10
12	0.23	0.12
13	0.28	0.15
14	0.35	0.15
15	0.35	0.15
16	0.40	0.15
17	0.40	0.15
18	0.45	0.15
19	0.30	0.15
20	0.25	0.10

If Oscar is ranked below 20 the probabilities remain at 25% and 10% down to rank 100. The probabilities of moving more than one place in a year are the cumulative product of the individual probabilities i.e. the probability of Oscar moving from rank 14 to rank 11 in one year is 0.35*0.28*0.23 = 0.023. There is no limit on the number of places he might move in a year – either up or down. However, if the first move in a year is up the rankings then any other moves in that year are also up – and conversely. Note that these probabilities apply only to Oscar and not necessarily to any other players.

END OF QUESTION

LIFE INSURANCE

QUESTION

Capland is a first world country with a fully developed financial market. Its banking and life insurance regulations are similar to Australia's.

Special Life Insurance Company ("SLC") is a medium sized life insurance company which specializes in providing life insurance products for banks to sell under their own brand names.

Great Capland Bank ("GCB") is the largest bank in Capland and is SLC's biggest client. It has sourced all its life insurance products from SLC for the last 20 years. SLC provides GCB a mortgage protection term insurance product that the bank's staff sell to customers taking out residential housing loans. The loans are owner occupied and are repaid with regular repayments of principal and interest. The product description including the underwriting requirements is attached. The penetration rate (the proportion of people taking out mortgages who also take out the insurance cover) has been low and the Head of Retail Banking has initiated a joint task force with executives of SLC to redesign the product so that penetration rates improve markedly.

The task force has conducted focus group sessions with customers and with bank staff. A common complaint in those groups has been the underwriting requirements that customers have to fulfil before the cover can be approved.

One of the retail bank regional managers has suggested that underwriting could be removed entirely. Her argument runs as follows

- Customers who are approved for a residential housing loan are always working,
- People who work have much lower mortality than others and the life company already offers automatic acceptance for group life,
- Even if mortality was worse the savings made by not underwriting and by writing much higher volumes of business would more than make up, and
- Hence no underwriting should work.

The task force is now considering this specific proposal.

You are the Chief Actuary of SLC but not a member of the task force.

The CEO of GCB, Susan Boss, has met with you and suggested that this idea seems to her to have significant merit and is likely to significantly increase the penetration rate – thus benefiting both GCB and SLC. She has mentioned that the proposal has generated some very heated internal debate between GCB and SLC. After the meeting she sent you the attached email.

SLC's minimum profit target is long bond rate + 6% on internally required capital. For term insurance internally required capital is determined as 125% of expected claims in the following 12 months. When the product was re-priced it achieved this minimum target provided the penetration rate was at least 10% of the expected number of new mortgages. At a penetration rate of 7.5% the return on capital reduced by 4.0 percentage points. Since then expenses have been broadly in line with assumptions but the volume has been lower, so profitability has been less than required.

The Task

Prepare your report.

Relevant Information

In addition to the information attached to the email the latest Capland life tables are also provided.

Appendices

Appendix 1: Email from Susan Boss

Appendix 2: New Business and Experience Tables

Appendix 3: Expected Mortality and TPD

Appendix 4: Product Description

Appendix 5: Premium Rates

Attachments

1. C10_LI_Sem_2_2014_SOA_Credit_Life_Experience.pdf
2. C10_LI_Sem_2_2014_Capland_Life_Tables.xls

APPENDIX 1: EMAIL FROM SUSAN BOSS

From: Susan Boss

To: SLC Chief Actuary

Subject: Urgent Advice

Further to our meeting earlier today I confirm that I would like your urgent response to the proposal for radically changing the underwriting requirements for mortgage protection life insurance in order to improve sales volumes. I need your response no later than Sunday evening so that I can digest it prior to the task force meeting on Monday morning.

I need you to give me

- Your opinion on the proposal
- The implications for sales volumes and profitability if the proposal were implemented,
- Any alternatives you suggest we might consider, together with their implications, and
- Finally, whether SLC is prepared to support this proposal, and , if not, the alternatives you suggest we might consider, together with their implications,

You should be aware that we may be prepared to seek alternative life insurance product suppliers if your response is not regarded as providing a solution to the penetration rate problem.

I have attached as much relevant information as I can locate at short notice. Unfortunately this is all you will have. Nevertheless I need your advice to be comprehensive.

Good luck!

Susan

PS I can't locate any persistency information but I can tell you that the average loan term i.e. from commencement to refinancing or repayment due to sale of the property, is currently 5 years and has reduced from 8 years in 2009.

PPS I also attach an extract from an article from the SOA I found by accident that looks like it examines mortality by underwriting for credit life insurance with small sums insured. I don't know whether it is at all relevant to our situation.

APPENDIX 2: NEW BUSINESS AND EXPERIENCE TABLES

New Business

Year Ending 30 June	New Mortgages	Average Mortgage Size $	New Mortgage Life Policies	Annual Premium $'000	Average Sum Insured $
2014	62100	241000	4127	2167	177000
2013	62599	224000	4432	2132	160000
2012	61345	209000	4678	2224	152000
2011	51234	198000	4268	2306	144000
2010	46578	176000	3718	2024	141000
2009	45598	159000	3412	1765	133000

Experience

Year Ending 30 June	Actual/Expected Mortality	Actual/Expected TPD
2014	89%	85%
2013	88%	91%
2012	91%	105%
2011	95%	89%
2010	87%	96%
2009	97%	91%

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APPENDIX 3: EXPECTED MORTALITY AND TPD

Expected Mortality and TPD

Samples of the ultimate expected mortality and TPD rates are as follows. The actual table has a select period of two years. These are the assumptions used for the current premium rates which were introduced in July 2011.

These rates are for Males, Non-Smoker.

Age (last birthday)	Death	TPD
27	.00067	.00018
32	.00075	.00027
37	.00086	.00038
42	.00116	.00062
47	.00172	.00107
52	.00243	.00172
57	.00397	.00316
62	.00654	

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APPENDIX 4: PRODUCT DESCRIPTION

Product Description

The product is a yearly renewable term insurance. TPD can be added at the customer's option. The maximum sum insured at commencement is equal to the mortgage amount at commencement. The sum insured does not automatically reduce as the mortgage reduces but the customer can make voluntary reductions.

When the mortgage is in joint names only one life can be insured under the product.

The underwriting requirements are as follows:

Age at Entry	**Sum Insured**			
	< $100,000	$100,000-$199,999	$200,000-$399,999	> $399,999
< 30	Q	Q	PMAR	Medical
30 – 39	Q	Q	Medical	Medical
40 – 49	Q	PMAR	Medical	Medical
> 49	PMAR	PMAR	Medical	Medical

All lives to be insured must complete a full medical questionnaire. PMAR requires a report from their own doctor. Medical indicates a medical exam from a company approved doctor.

Bank branches are paid commission at 60% of the first annual premium and 7.5% of every renewal premium.

Death cover ceases at age 65 and TPD cover ceases at age 60. The TPD definition is "disabled for six months and, in the opinion of the company, unable to work again in any occupation for which the insured is reasonably qualified by education, training or experience."

Approximately 50% of insurance customers add TPD cover.

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APPENDIX 5: PREMIUM RATES

Premium rates, per $1,000 sum insured, for Males, Non-Smoker are

Age Attained (last birthday)	Death	TPD
< 30	1.20	0.10
30 – 34	1.30	0.50
35 – 39	1.50	0.70
40 – 44	2.20	1.20
45 – 49	3.20	2.00
50 – 52	4.00	2.60
53 – 55	5.20	3.70
56 – 58	7.20	5.40
59 – 60	8.70	6.90
61	9.60	
62	10.60	
63	11.70	
64	13.00	

A policy fee of $65 p.a. applies and is indexed to CPI. All premiums are paid by monthly direct debit.

END OF QUESTION

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