2015 PART III EXAMINATIONS

Subject Title: **C10 Commercial Actuarial Practice**

Date: **Friday, 8 May 2015**

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-two** (22) pages (excluding this page).

ENTERPRISE RISK MANAGEMENT

QUESTION

Everso Super Fund ("ESF")

The ESF is a mid-sized Australian industry superannuation fund. It is a not-for-profit fund and draws its membership from employees of an industry group who are covered by relevant industrial awards. The Government mandates compulsory superannuation contributions of 9.5% of salaries for all employees and the industrial awards mandate that employees covered by the awards must join ESF.

ESF has suffered a significant loss as a result of a fraud committed by one of the fund administrators. 3.9 million was stolen from dormant member accounts over an eight year time period and was not detected by ESF until late 2014. The stolen money is unlikely to be recovered. The case received wide publicity and caused serious concern amongst ESF members and the fund has received many phone calls from members about the security of their benefits.

ESF notified the prudential regulator when the fraud was discovered and there have since been a number of meetings with the regulator. The regulator's main concern is to ensure that ESF has an appropriate fraud risk management framework to ensure a low likelihood of a similar problem.

The Trustee board of ESF has also discussed the fraud at length. Its first action was to terminate the services of the CEO of the fund and appoint a new CEO, Kim Nestegg, through an external search. Kim has a finance background and substantial experience in superannuation fund administration.

On his second day in the new role Kim received a letter from the regulator which read, in part:

> *"We refer to our discussions with ESF about the fraud event. We are concerned that the fraud continued for so long without being detected.*
>
> *We require that ESF submit a report explaining how fraud risk will be managed in future. ESF should obtain independent advice about:*
>
> - *How the funds stolen from members' accounts should be restored*
> - *A quantification of the likelihood and impact of fraud risks affecting ESF*
> - *The steps ESF should take to manage fraud risk*
> - *The steps ESF should take to integrate fraud risk management into its Enterprise Risk Management Framework".*

Kim has asked you, as a consultant with Enterprise Risk Consultants, to provide the independent report required by the regulator. But Kim has requested that your report should be broader than the specific requirements set by the regulator.

Kim is concerned that the directors on the trustee board are too focused on the interests of the parties they represent, namely the employers and trade unions, and not sufficiently focused on the interests of fund members. He thinks this may have contributed to governance weaknesses in the past.

So Kim would like you to prepare a report addressed to the CEO of ESF, but intended for the trustee board and the regulator. The report should be written in a way that will help the

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trustee board to understand their own role in ensuring good risk management and good governance for the benefit of fund members. It also needs to satisfy the regulator that ESF is serious about good risk management and good governance, not just about fraud risk management.

To provide some background and colour for you, Kim has noted the following items of discussion at the last meeting of the trustee board. Kim suggested you should incorporate these items into your report.

- One director said that there is little that can be done to prevent fraud in advance especially where there is collusion between key people – but there should be good processes for early detection and a clear policy for dealing with any fraud that occurs
- Another director said that there are two types of fraud risk that should be considered separately – attritional fraud risk such as the event experienced by ESF, and catastrophic investment fraud risk where potentially large losses result from the theft of fund assets, as occurred with the Trio Capital collapse
- A third director referred to a Fraud Money Back Guarantee provided by a Big Bank to its credit card customers and asked whether a similar guarantee could be provided to fund members to reduce their concerns about future frauds. How would this work for ESF?

Your brief

Prepare your report as requested addressed to Kim Nestegg.

To assist in your work, Kim has prepared several notes which are appended below:

Appendices

Appendix 1	A press article on the ESF fraud
Appendix 2	An update on ESF, using information from its 2014 Annual Report
Appendix 3	Statistics on the superannuation industry and on attritional fraud risk
Appendix 4	Summary of Trio Capital fraud and the industry levy
Appendix 5	Big Bank Fraud Money Back Guarantee

END OF QUESTION

APPENDIX 1

ESF Fraud

There were many reports in the press about the ESF fraud, including the one below, There was also much discussion between members of ESF including in the social media.

Daily Telegraph, 25 November 2014 - Rhodes man charged over missing $3.9 million super money

"Late this afternoon Fraud and Cybercrime Squad detectives arrested and charged the man, alleging the senior administrator at a business providing services to a superannuation company altered documents and transferred money from members' accounts.

They also alleged the money was then withdrawn over a period of eight years, with the funds used for gambling.

Detectives arrested the man at his workplace and charged him with 16 counts of obtaining money by deception and 3 counts of fraud."

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APPENDIX 2

Update on ESF (Information extracted from the 2014 Annual Report)

Background

ESF is an industry superannuation fund originally established to provide superannuation benefits to employees of the transport and logistics industry but since broadened to cover other industries also.

ESF is recognised in a number of industrial awards as the default fund to accept compulsory superannuation contributions for employees covered under those awards. Contributions are paid by employers at the rate of 9.5% of salaries. This results in an automatic flow of new members to ESF, but the fund is also a public offer fund accepting other employees who wish to join the fund.

Like other industry funds the fund is not-for-profit and has no shareholders.

Governance

The fund is governed by a trustee board consisting of an independent chairman, four employer representatives and four trade union representatives. The trustees are appointed by employer associations and trade unions and are not elected by fund members.

The fund is managed by a secretariat headed by the Chief Executive Officer ("CEO") of the fund. The major functions in running the fund, member administration, investment and insurance are outsourced to professional firms specialising in each area.

Such funds are regulated by the prudential regulator which has a comprehensive framework of regulations and supervision aimed at protecting the interests of fund members.

Fund Benefits

The fund provides only accumulation benefits (defined contributions) not defined benefits. Most members are in the accumulation phase of superannuation but there are a modest number of members in the draw-down phase receiving account-based incomes.

The fund provides retirement benefits and benefits on death and disablement. Members no longer covered by a relevant award can choose to transfer their benefits to another superannuation fund.

Investments

The fund provides three investment options: cash plus, balanced and equity plus. Members can choose between these options, including a mix of the options. If members do not make a choice their contributions are invested in the balanced option.

The balanced and equity plus options are invested in a spread of investments including international investments, and some illiquid investments such as property, infrastructure, and absolute return funds.

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Investment policies are set by the trustee board acting on the advice of the fund's chief investment officer and an external independent asset consultant. The fund has outsourced its investment management, appointing 35 professional investment managers to manage the various asset pools.

Investment returns are passed through to members, after tax and fees, by means of crediting rates which are normally calculated monthly.

Size (at 30 June 2014)

Number of employers	14,000
Number of members including members not currently contributing	122,000
Net assets	$3.8 Billion

Reserve Accounts (at 30 June 2014)

While most of the net assets represent members' account balances there are two unallocated reserves included within the $3.8 billion net assets. There are:

Operational Risk Financial Requirement	$11.4 Million
Strategic Risk Reserve	$3.8 Million

The first of these is a regulatory requirement to hold surplus funds to meet the costs of unexpected operational risk events, including fraud. The regulatory requirement is that this reserve should be maintained at 0.25% of net assets, that is currently $9.5 million, and replenished promptly if the fund is drawn down to meet the costs of an operational risk event.

The second reserve allows the fund to invest for the benefit of members e.g. developing a new retirement income product.

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APPENDIX 3

Industry and attritional fraud statistics

Industry Statistics

The statistics in the table below are as at 30 June 2013 and are published by the regulator. ESF is included in the "industry" category.

Type of fund	Net assets ($ Billions)	Number of funds	Number of member accounts (Millions)
Corporate	62	108	0.5
Industry	323	52	11.5
Public sector	257	38	3.3
Retail	422	127	14.4
Self-managed	559	531742	1.0
Life insurance funds	50		
Total	**1673**		**30.7**

KPMG 2012 Fraud Study ("attritional" fraud events)

There are limited statistics available on fraud experience in the superannuation industry. Not all organisations are willing to admit to frauds and not all frauds are detected.

In 2012 KPMG carried out a study of frauds by surveying 281 firms. The firms surveyed included financial services firms and firms in other industries. Most of the frauds reported (86%) were from financial services firms so the statistics are fairly reliable for financial services firms. Note that financial services firms include superannuation funds, banks, insurance companies and other firms.

The following table shows fraud claims for a two year period 2010 to 2012:

Total value of fraud reported by survey respondents	$372 Million
Average fraud loss for organisations reporting a fraud	$3.08 Million

Other interesting points from the survey are:

- 75% of frauds were committed by internal staff , about one-third in management and executive positions
- 71% of frauds were committed by individuals, 29% by groups of two or more in collusion
- Main causes of fraud in superannuation were the interception of contributions from employers to funds, and payments from funds to members, banks, fund managers and custodians
- High risk areas in superannuation are manual processes, dormant accounts, bogus refunds and transfers to self-managed superannuation funds

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APPENDIX 4

Catastrophic investment frauds – the collapse of Trio Capital

Background - Extracts from the Joint Parliamentary Committee of Inquiry into the Collapse of Trio Capital

"This inquiry has investigated the collapse of Trio Capital, which was the largest superannuation fraud in Australian history. Roughly $176 million in Australians' superannuation funds is lost or missing from two fraudulently managed investment schemes: $123 million from the Astarra Strategic Fund and $53 million from the ARP Growth Fund. Trio Capital was the 'responsible entity' for both schemes.

In the committee's view, the Trio collapse raises distinct, and in some ways more troubling, issues than those raised by the collapse of Storm Financial and Westpoint. Westpoint and Storm involved Australian investors being persuaded to put their money into investment vehicles which were much higher risk than was appropriate for—or understood by—most of the investors. Trio involved a fraud.

Nearly 6,090 Australians invested in Trio and lost their money despite the legislation in place under the SIS Act. 5,400 of those Australians had their money invested in Trio through APRA-regulated superannuation funds. Under the provisions of Part 23 of the SIS Act, investors in APRA-regulated funds received compensation totalling nearly $72 million. This was financed through a prepaid levy on all APRA-regulated superannuation funds.

Of the remaining 690 Trio Capital investors, 415 were direct investors and around 285 investors were in self-managed superannuation funds (SMSFs). Under the SIS Act, these investors are not eligible for compensation: the Act excludes SMSFs from financial assistance where certain superannuation entities have suffered loss as a result of fraudulent conduct or theft."

"The committee's investigation revealed that a number of investment vehicles operated by Trio Capital appear not to have been legitimate investments but merely conduits through which investors' money was stolen. In November 2003, a reputable funds manager, Tolhurst, was acquired by new owners; it now appears that they made this acquisition with a view to defrauding Australian investors (particularly superannuation investors) of substantial sums of money.

The Trio fraud appears to have been designed to take advantage of vulnerabilities in the superannuation system. A key element of the scheme was to move the funds of Australian investors overseas. This had made it much harder for Australian auditors and others to verify the existence of the funds; for Australian liquidators to recover any remaining funds; and for Australian authorities to investigate and to pursue those who have carried out criminal conduct.

The key figures responsible for the Trio collapse appear to have escaped any criminal or other sanctions. The evidence suggests that the 'mastermind' was Mr Jack Flader, an American citizen, at one stage resident in Hong Kong and believed to live in Thailand. The committee heard evidence that he has a history of involvement with securities fraud. While ASIC and APRA accepted enforceable undertakings from a number of former Trio directors, only one former director—Mr Shawn Richard—has been jailed. There is no current investigation relating to Trio by the Australian Federal Police (AFP) or the Australian Crime Commission."

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Losses from Trio Fraud

Trio Capital was purchased by new owners in November 2003 and placed under administration in December 2009.

Losses from the Trio fraud were:

Regulated superannuation funds	$80 Million
Other investors	$96 Million
Total fraud loss	**$176 Million**

Compensation

Superannuation regulations provide for compensation for members of regulated superannuation funds in the event of catastrophic fraud losses. Members are compensated to 80% of the amount lost. This compensation is funded by a levy on all other regulated superannuation funds, generally funded by deductions from members' accounts.

Compensation for Trio losses were:

Compensation amount	$72 Million
Compensation levy on the assets of other regulated funds	0.016% i.e. 1.6 basis points*

* Subject to maximum and minimum amounts per fund

In the last 15 years there have been three such levies on regulated superannuation funds, the other two being much smaller than the Trio levy.

APPENDIX 5

Big Bank Fraud Money Back Guarantee

[Applies to all Big Bank credit cards]

Our goal is to provide you with the simplest and most effective banking services possible. However we can only do this if you feel safe and confident using them.

That's why we're proud to announce the Big Bank Fraud Money Back Guarantee. This means that if you suffer a loss as the result of a fraudulent transaction on your Big Bank credit card, Big Bank will credit your account with the amount of the loss provided you:

- Didn't contribute to the loss, and
- Have notified Big Bank promptly of the fraud.

So you can feel completely at ease wherever and whenever you use your Big Bank card.

If you notice any unusual transactions on your account please contact us immediately at the following phone numbers which are available 24 hours per day and 7 days per week:

- Local .....
- International .....

END OF QUESTION

GENERAL INSURANCE

QUESTION

It is 30th April 2015, and you are Anne Actuary, the motor actuary for Cutting Edge Insurance (CEI), one of the three largest insurers in Capland. CEI is known for its progressive approach to insurance, introducing such innovations as internet claim notification and claim tracking, new-for-old vehicle replacement, multi-policy discounts, and protected no claim bonus for long term customers who stay with CEI for 7 years or more without a claim. In particular, the multi-policy discount (7.5% discount on all premiums for any policyholder who has more than 1 policy with CEI) has proved to be successful, improving the renewal retention rate from 85% to 92% for customers that have taken multiple policies. CEI is owned by People's Bank, a government owned retail bank, with a retail market share of 40%.

Capland is a developed country with a population of 30 million people, with a GDP per capita of $85,000. The Capland dollar is approximately on parity with the Australian dollar. The yield curve is currently flat, with interest rates of 4% pa. Capland's legal environment is not as litigious as Australia's, and there are no common law benefits for motor bodily injury. CEI is a direct insurer – it does not sell via agents or brokers. Traditionally it sold most of its policies via People's Bank branches, but during the past 5 years internet sourced business has grown to the point where almost half of its customers interact with CEI via the internet, and a third of its customers interact with CEI via its call centre. Internet based customers have liked the "choose your own premium" web site feature that lets customers say how much premium they wish to pay, and then suggests an amount of cover that gives that premium amount. For example, to reduce premiums, it may suggest higher excesses or excluding flood cover. Nevertheless, more than 95% of CEI's policyholders are also People's Bank customers.

CEI writes only personal lines business. Its three classes of business are householders, motor and personal accident. In Capland, motor insurance includes both property damage and bodily injury (in Australia bodily injury is called compulsory third party). Bodily injury cover is compulsory for all vehicles registered to drive on the road. Typically customers purchase both property damage and bodily injury cover bundled together into a single policy, but some customers choose to purchase only the compulsory cover. Property damage fire – event-only cover only is available for vehicles that are not registered to be driven on roads, for example when a classic car is being restored in a garage.

Motor insurance premiums are partially regulated. The only rating factors that are legal are

- age and gender of each driver
- number of years driving experience for each driver
- claim history of each driver
- vehicle make and model
- vehicle manufactured year
- vehicle value
- postcode
- multi-policy discount
- loyalty discount
- whether parked in a garage

However insurers are allowed to reject risks on any basis, subject to anti-discrimination laws that protect against pricing discrimination based upon race, nationality, sexual preference and pregnancy. Also, underwriting acceptance rules must be published, objective, and

consistently applied. CEI only collects rating and identity information from its customers, and no other information. Your regular analysis shows that there are no cross-subsidies between these rating factors i.e. that the rating factor pricing relativities fully reflect the underlying risk relativities.

Overall Capland follows similar accounting and insurance practices to Australia, with only these exceptions:

- all insurance premiums are paid annually at the commencement of the policy
- insurance contracts can only be cancelled during the 1 month free-look period for new business
- IFRS applies with the exception of deferred acquisition costs. Expenses are accrued fully at the time at which they were incurred. Deferred acquisition costs only apply to agent and broker commissions.

Catherine Everton-Overton, the CEO of CEI, wants to grow the business, particularly in the personal accident line, due to its high historical profit margin of 25% of premium. She has set a target of growing personal accident gross written premium by 35% during 2015 and this target comprises 25% (applying to underwriting, operational and support roles) to 75% (applying to sales and marketing staff) of the Key Performance Indicators used for calculating the bonuses of the executive team.

Recently CEI has started trialling the use of big data for marketing purposes. CEI has obtained individual customer banking behavioural data from People's Bank and linked this data so that they know the banking behaviour of their insurance customers. Mark Yitting, the Chief Marketing Officer, is sponsoring this project and has hired Anna-Lee Tick, a statistician with customer analytics experience, to develop cross-selling propensity models. Mark has been using the propensity models for direct marketing campaigns that target customers who are most likely to purchase a new personal accident policy. Recently Mark made a claim that CEI is several years ahead of its competitors in the use of data and analytics.

CEI has an executive committee meeting scheduled for 6:00pm this afternoon.
At 8:30am Tina Pannik, the Chief Underwriting Officer walks into your office. Tina is the boss of your boss and you have worked with her a lot over the years you have been at CEI. Tina pulls out her iPad, logs into Facebook and shows you a meme (see Appendix 1) from unethicalhacks.com, a website that describes itself as "Unethical hacks are life hacks that will help you advance through life by taking advantage of loopholes in society." Tina expresses her concerns that Mark's cross-selling of personal accident policies is giving huge multi-policy discounts to unethical policyholders, and that this will impact on Tina's ability to achieve her combined ratio target of 98%, which has a 50% weighting in her KPIs to achieve her annual bonus. She wants your advice on what she can do to stop Mark.

Due to IT data privacy restrictions, you don't have access to the behavioural data. So you respond to Tina's visit by asking Anna-Lee to compile some data from both your own (motor) sources, combined with her banking behavioural data. Anna sends the data at 9:00 am and apologises that she will be out of the office for the remainder of the day. Your report is due at 5:00pm, giving Tina enough time to prepare for the executive committee meeting by reading your report and writing her presentation slides. Tina will attend the executive committee meeting at 6:00 pm, where she will present her slides and also circulate copies of your report to all members of the executive committee.

Appendices

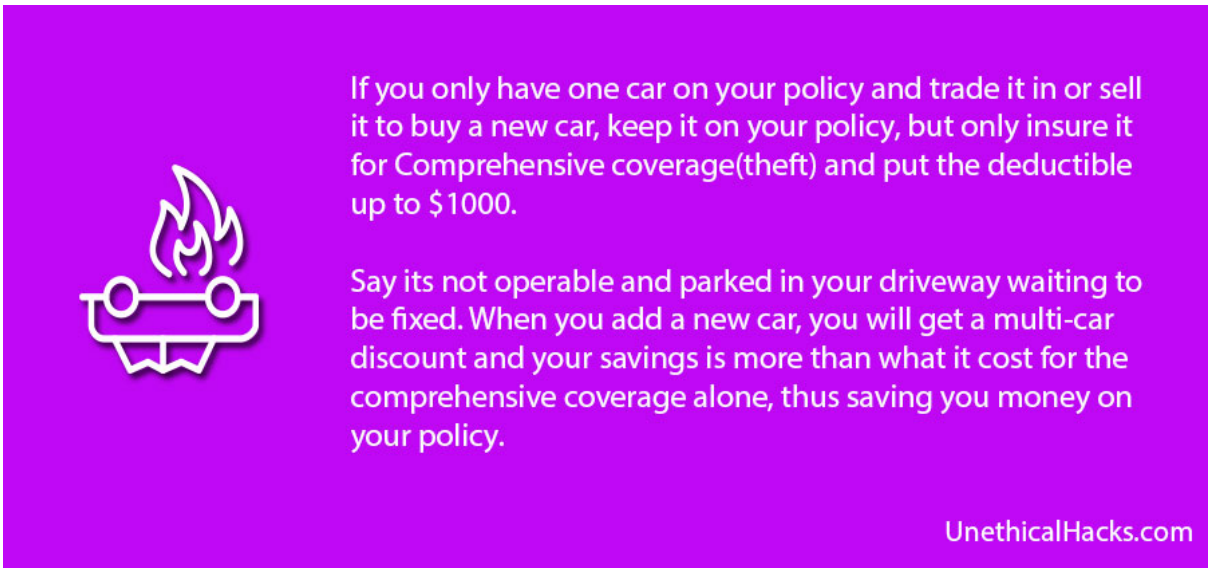
Appendix 1: Unethicalhacks.com
Appendix 2: Personal Accident Cross-Selling Target Customers

Attachment

1) C10_General_Insurance_Sem_1_2015_Data.xlsx

END OF QUESTION

Appendix 1: unethicalhacks.com



Appendix 2: Personal Accident Cross-Selling Target Customers

After doing some complex statistical modelling, Anna-Lee has determined that the following selection criteria optimise the performance of the personal accident cross-selling campaigns:

- bank savings account balance greater than $50 and less than $2,500
- use an ATM at least 3 times per month
- product holdings of either or both of:
    - motor
    - householders
- does not already have a personal accident policy
- has a credit card and does not pay off the full monthly balance

Anna-Lee's definition of optimal selection criteria is the net present value of profit from the personal accident campaign for the individual, allowing for:

- $5,000 fixed graphic design and management costs per campaign
- each campaign goes out to 50,000 random customers who match the selection criteria above, but who have not been mailed in the previous 12 months
- $1 printing and mailing costs per customer contacted
- People's Bank charges CEI $0.50 per customer contact as a fee for providing the behavioural data on its customers
- $30 telephone call centre costs per customer who responds to the campaign
- 25% profit margin on personal accident premiums, not allowing for the costs listed above
- Average personal accident premium is $139, after allowing for the 7.5% multi-policy discount on the personal accident policy
- 75% pa renewal retention rate, with a further 22% of customers cancelling their policy within the first month free-look period and obtaining a full refund
- Net present value only considers profit from the first 10 years of the policy

The campaigns are producing a response rate (sales per customer contacted) of 4.8%. There will be 6 direct mail campaigns per annum.

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GLOBAL RETIREMENT INCOME SYSTEMS

QUESTION

The government of Capland operates an earnings based pension plan (the Capland Pension Plan) for its employees which is funded on a pay-as-you-go basis from general revenue. Pension liabilities are disclosed in the government's financial accounts according to International Financial Reporting Standards.

You have been appointed to provide actuarial advice to the government.

A new government has been elected recently, and the new Treasurer has been in discussions with you regarding the funding and design of the pension plan. Particular issues concerning the Treasurer are as follows:

1. The Treasurer has reviewed the 31 March 2012 actuarial funding valuation and noted that the recommended contributions were expressed as a percentage of employees' salaries. She has expressed her view that this approach is meaningless as the government funds the benefits paid each year.

   She understands that it is a professional requirement that your actuarial funding valuation report must disclose results on future contribution rates, but she notes that the professional standard states:

   > *The actuary must determine the recommended contribution rate as a percentage of salary, or alternatively, the recommended future levels of contributions expressed in some other form which is appropriate to the circumstances of the Fund. The contributions must be those required for funding purposes.*

   She has therefore asked for your advice on an alternative approach for recommended contributions in the forthcoming 2015 valuation appropriate to the circumstances of the pension plan.

2. The recent economic downturn in Capland has seen government bond yields reducing to rates much lower than historical averages with volatility in those rates from month to month. The outlook for salary increases for government employees is also subdued. The government has recently announced that salary increases for the next 6 years will be limited to 2.0% pa.

   Previous actuarial funding valuations over many years have adopted the same economic assumptions based on long term bond yields of 5% pa (based on the long term average of the 30-year government bond yield) and a salary increase assumption of 4.0% pa.

   The Treasurer would like your view on whether shorter-term assumptions that reflect the current 30-year bond yields and lower salary increase expectations can be adopted to value the pension liabilities and expense and the likely impact on the government's balance sheet.

3. As government bond yields have dropped, there will be a significant increase in the employee pension liability shown in the Government's financial statements. The Treasurer is worried that this increase will concern the ratings agencies which could lead to a drop from the current rating of AA+.

   The Treasurer has asked you to prepare a communication to the ratings agencies as to why the pension liability on the government's balance sheet does not necessarily indicate the financial status of the government.

4. The pension plan has been closed to new members for more than 10 years. While there is no intention to cease accrual in the pension plan for current members, the Treasurer would like to explore some strategies to constrain the increasing costs of its pension liabilities. Your advice should consider possible changes to the benefit design and limiting member options available and should include estimates of the likely savings from each strategy.

5. The new government is planning to sell and privatise some entities. Current Employees of any privatised entities will continue as members of the Capland Pension Plan if they are already members, but new employees of privatised entities will not be able to join the plan. The government will provide the funding for the benefits accrued up to the privatisation date. The private entities will be responsible for funding future service benefit accruals for their employees' service from the privatisation date until they cease employment.

   The Treasurer has informed you that contributions from private entities will be absorbed into general revenue and benefits will continue to be paid on a pay-as-you-go basis; that is, there will be no separate pools of assets set up for privatised entities.

   The Treasurer has asked your advice on the following:

   a. What discount rate is to be adopted for calculations of funding recommendations for private entities? Potential purchasers have expressed the view that the discount rate should be based on expected returns on investment strategies that corporate funds generally invest in, and not on a government bond yield. The Treasurer has asked you to present arguments for and against this view.

   b. The government is concerned that any higher salary increases awarded by the privatised entities will lead to further increases in its pension liabilities as the government is still responsible for benefit accruals prior to the privatisation dates. The Treasurer has asked you to advise on possible mechanisms that could be introduced to meet any increased funding of accrued benefits due to higher salary increases awarded by the privatised entities.

The Appendix and attachments include the pension benefit design, relevant membership and financial data and government bond yield history.

You have already completed the experience analysis for the 2015 valuation, and have reached agreement with the Treasurer regarding the demographic assumptions to be used. These assumptions are also included in the attachment. An annual pension indexation rate assumption of 2.5% pa has also been agreed.

Prepare your report to the Treasurer addressing all the concerns she has raised regarding the funding and design of the pension plan.

Appendix

Appendix 1: Capland Pension Plan benefit design

Attachment

2) C10_GRIS_Sem_1_2015_DATA.xlsx

END OF QUESTION

APPENDIX 1

Capland Pension Plan benefit design

Member Contributions
Members can elect to contribute 5% or 10% of salary. The rate elected can be changed annually.

Member contributions are invested and allocated to individual Member Contribution Accounts but members do not have investment choice. The target investment return on Member Contribution Accounts is 7% pa, but the accounts are subject to a minimum crediting rate at the inflation rate.

Member Benefit Multiple = sum of annual member contribution rate for each year of service

Employer Benefit Multiple = 2 x Member Benefit Multiple

Leaving Service at or after age 55:
Lump sum of final salary x (Member Benefit Multiple + Employer Benefit Multiple)

Option to receive full or part of lump sum as pension benefits. Pensions are indexed annually in line with the Capland Consumere Prices Index. Llump sum to pension conversions are at fixed factors below.

Age	Lump sum to pension conversion factor (initial annual pension = lump sum / factor)
55	14.0
56	13.8
57	13.6
58	13.4
59	13.2
60	13.0

When a member elects to receive part of their benefit as a lump sum, the lump sum is paid from the Member Contribution Account balance. Any excess Member Contribution Account balance remaining after the lump sum payment is paid into general revenue, and any shortfall of the Member Contribution Account balance against the lump sum payment is met by funds from general revenue.

All pension benefits are paid from general revenue thereafter.

Leaving Service before age 55:

The leaving service benefit is 2.5 x Member Contribution Account balance.

Disability / death benefits
Before age 55 - Lump sum of projected retirement benefit at age 55, assuming future member contributions at 5% of salary until age 55

On or after age 55 – Lump sum of leaving service benefit accrued to the date of disability or death.

INVESTMENTS

QUESTION

Big Beef Properties ("BBP") is a company which operates a number of very large Capland properties specialising in breeding and raising beef cattle for sale. 75% of their production is sold in overseas markets. BBP's exports were 6% of Capland's total export income in 2014.

They have not previously used either beef or currency derivatives markets. The company's management has recently been restructured. The new Finance Director is concerned about their large exposure to the currency markets given that all their expenses are incurred in domestic currency but a large majority of income is in US$. He wishes to develop a comprehensive strategy, including hedging, to reduce the risk.

You are a sole practitioner specialising in investment and finance and have provided advice to the Finance Director in other contexts over a number of years. He has asked you to prepare advice for the Board which proposes a currency management strategy, including hedging, together with comprehensive justification for your recommendations.

Your discussions with the Finance Director have revealed the following information.

The company has been privately owned but is proposing to list on the stock exchange during the next year.

Its objective with its hedging strategy is to provide a floor to any earnings downside while at the same time not giving away all the upside. The emphasis is to be on the medium to long term reduction of this downside risk. Given the volatility of all agricultural companies' profits a reasonable amount of volatility has to be accepted however the prime objective of the hedging strategy should be to reduce the volatility arising from the currency risk. He has suggested that the hedging strategy might have a target of taking out half of the downside risk present with no hedging strategy but only losing 10% of the upside benefit because of the hedging costs. He has asked you whether this is a sensible target or whether you have an alternative recommendation.

While the company will have the ability to raise additional capital once it is listed the Finance Director has asked that you identify any capital requirements that your recommended strategy would suggest. The Finance Director has also reminded you that the company's core business is beef cattle not hedging currency.

The share of the company's production which is sold in overseas markets varies according to the local demand and prices. The objective is to maximise the profitability. While the current share is 75% it has been as low as 60% and as high as 95%.

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The Task

The Finance Director has asked you to prepare a report for the company's Board. He has reminded you that most of the Board are very skilled in cattle but know little or nothing about currency hedging.

Relevant Information

Attached are spreadsheets containing

- the historical data for the relevant beef and currency markets
  - currencydata.xls
  - prices costs production.xls
- the company's production figures and costs in recent years
  - prices costs production.xls

All overseas sales are made in $US. All costs are in the domestic currency which is the Z. There is a very sophisticated currency market for the Z with futures and options available. Options are available for a wide range of strike prices and terms.

Attachments

1) C10_INV_Sem_1_2015_currency.xlsx
2) C10_INV_Sem_1_2015_prices_costs_production.xlsx

END OF QUESTION

LIFE INSURANCE

QUESTION

Capland is a first world country with a fully developed financial market. The Capland regulations have a liability valuation method designed to give a smooth profit flow, similar to MoS. There are no regulations which restrict the payment of commission to intermediaries.

Best Intermediaries ("BI") is a large, long standing firm of life insurance intermediaries. Its CEO, George Standing, is the grandson of one of the founders of Great Capland Life ("GCL"), a medium sized, publicly listed, life insurance company.

BI has been one of GCL's largest intermediaries ever since GCL was founded, 60 years ago. The relationship has been very strong over all that time and George wants it to remain that way.

GCL sells a wide range of investment and risk products through intermediaries. The intermediaries are independent financial planners and a small number of older style life agents now also described as financial planners.

GCL has been working on an idea to replace some, or all, of the commission it pays to intermediaries, in respect to risk business, with a share of the profit generated by each intermediary. Profit would be calculated in the same manner as required by the Capland regulations. The proposed new arrangements are set out in the attachment.

You are the Senior Partner of Actuaries for Intermediaries ("AFI") and have done work for BI on several occasions in recent years.

George is concerned that these proposed arrangements may not be to BI's advantage. He has asked you to provide advice in respect to

- the impact that this proposal would have on BI's income arising from business sold for GCL, and
- your recommendation as to changes, which might be suggested to GCL, in order to make the new arrangements more favourable to BI.

He has said that while he understands GCL's desire to align intermediary remuneration more closely to the profitability of the business produced, he wants a comprehensive report that can be used in negotiations with GCL. He has pointed to the long standing relationship between the two companies that he would, if possible, like to maintain. But without material disadvantage to BI.

The Task

Prepare your report

Relevant Information

Attached are the following

- Profit and commission data for BI [in *BIdata.xls*]
- Current commission arrangements
- Proposed new arrangements

GCL Current Commission Arrangements for Risk Business

Base Commission
65% of initial premium
11% of renewal premium

Additional Allowances

Class A intermediaries (those who write 4% or more of the total commission GCL pays on risk business in the running 12 months – before additional allowance) receive an allowance of 10% of base commission to assist with their expenses.

Class B intermediaries (those who write more than 1% but less than 4% of the total commission GCL pays on risk business in the running 12 months – before additional allowance) receive an allowance of 3% of base commission to assist with their expenses.

GCL Proposed New Arrangements for Risk Business

Base Profit Share

50% of profit. No commission. For these purposes profit is calculated before intermediaries' profit share.

Additional Allowance

The existing rules would apply except that the current percentages of 10% and 3% respectively would be applied to the base profit share amount.

END OF PAPER

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