INSTITUTE AND FACULTY OF ACTUARIES

February 2017

CA3: Communications

Paper 2

Time allowed: 2 hours

INSTRUCTIONS TO THE CANDIDATE

1. You have 2 hours to complete the paper.
2. You must write your submission from the beginning and not use an imported e-template.

Your file names must include your ARN and each file should also contain your ARN as a header or footer.

Please note that the content of this paper is confidential and students are not to discuss or reveal the contents under any circumstances nor are they to be used in a further attempt at the exam.

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You work for Woodgreen Insurance, which writes life and critical illness insurance cover. Woodgreen Insurance reinsures 80% of its claims cost in a quota share arrangement. The reinsurer charges Woodgreen Insurance a premium in relation to each policy (which is set by the reinsurer and has no defined relationship with the premium that Woodgreen Insurance charges its customers) and in return, when a claim occurs, the reinsurer will reimburse Woodgreen Insurance with 80% of the cost of the claim.

Two new directors have joined the company neither of whom have a life insurance background. You have received the following email from your boss, Eva Williams.

Dear Frank

I have received the email below from one of the new directors, Robert Wilkinson, asking why we reinsure most of the cost of the claims from the policies that we write. He has asked us to give him, and Tina Brown (the other new director) a presentation about this. As you know I am going to be away for the next two weeks, so I would like you to give this presentation. They have set aside a ten minute slot for you after the next board meeting on Wednesday, but Robert mentioned that he needs to leave to catch a train after this so make sure you don't overrun.

In your presentation you should briefly describe how reinsurance works. For a policy that is reinsured, the reinsurer sets the premium to take on the risk and will base this premium on the reinsurer's share of the expected cost of the claims, plus the reinsurers expenses, cost of capital and profit loading. I'd then like you to spend most of the time covering the three key benefits that we get from reinsuring the risk as follows:

- a reduction in volatility of our results – for 80% of the risk we pay reinsurance premiums and get reimbursed for claims, so when claims are higher or lower than expected, this has no effect on our profits for the reinsured portion of the risk. To illustrate this point I would just show the volatility of actual claims when compared to expected claims over time. You don't need to go into technical detail about the type of reinsurance contract – stick to the broad principle of ceding the risk;

- expertise in underwriting, claims management, and product development; and

- relatively low reinsurance rates because of the capital benefits of reinsuring the risk.

There is no need to go into lots of detail here, particularly on the capital benefits. You just need to explain the high level concepts, rather than the detailed numbers. It would be worth recapping on why we hold capital first, given that they do not have an insurance background, before briefly explaining that the reinsurer has a lower capital cost than Woodgreen Insurance. This means that the premium they charge us could actually be less than it would cost us to retain the business, because we do not need to hold capital in respect of the reinsured portion of the risk, and so do not need to pay the higher return that our investors would demand from us. In this way, it is possible for reinsurance to increase profitability, rather than reduce it. I have asked Rebecca to dig out some information about our reinsurance arrangement which she will send through to you.

Kind regards,
Eva

On 4 February, Robert Wilkinson wrote:

Dear Eva,

First please let me introduce myself. I have recently accepted a role as a director of Woodgreen Insurance Ltd. Previously I was a politician, and so my background is not life insurance, but I intend to bring economic and legislative knowledge and experience to the company in the coming years. I have been reading through the company's business strategy over the last couple of days to prepare for my first board meeting, and one part that caught my eye was the section on reinsurance.

I understand the basic concept of reinsurance; we pay part of the premium that we receive for each policy to a reinsurance company, and if there is a claim on that policy then the reinsurance company pays a pre-agreed portion of that claim. However, the reinsurance company, like all businesses, must make some profit on this arrangement. That must mean that we are giving away some of our own profit by entering into a reinsurance contract. I see from the figures that we reinsure 80% of our business. Would it not be better to reduce this percentage, or perhaps stop reinsuring altogether, pay the claims ourselves, and keep this additional profit?

It would be good if you could talk me through this at some point, perhaps straight after the next board meeting? I am sure the other new director, Tina, would like to attend as well.

Kind regards,

Robert

A junior colleague, Rebecca, has put together the following notes to assist you in producing the presentation:

- Our relationship with our reinsurer brings expertise to Woodgreen Insurance, most particularly:

    - Underwriting – lives that are particularly difficult to form an underwriting opinion on (i.e. make a decision about whether to accept the policy application) because of complicated medical history or risky occupations or hobbies, can be referred to the reinsurer for an opinion.

    - Claims management – The reinsurer is available to advise on cases where our claims assessors have concerns about the validity of a claim. This helps us to challenge claims we believe to be invalid (for example, with critical illness, if the illness being claimed for is not as serious as the criteria set out in terms of the policy).

    - Product development – The reinsurer is happy to get involved when we design new products. They are able to advise us based on the experience they have of the market, and give an indication of how changes in the product design might change the ultimate claims experience and therefore the cost of the risk.

- Without reinsurance we would be exposed to the full volatility of claims experience each year. Over the last ten years, underlying claims costs have varied as follows:

  Figures in pounds

Year	*Expected number of claims (based on policies in force)*	*Expected claim amount (based on policies in force) (E)*	*Actual number of claims*	*Actual claim amount (A)*	*A / E – 1*
2007	769	18,882,795	904	22,234,303	17.75%
2008	820	19,561,920	844	20,157,104	3.04%
2009	930	24,398,550	956	25,118,728	2.95%
2010	1,050	28,817,250	1,121	30,725,865	6.62%
2011	1,003	27,835,256	997	23,579,045	–15.29%
2012	1,075	30,144,075	1,018	28,404,075	–5.77%
2013	1,130	31,560,900	1,249	35,552,220	12.65%
2014	1,037	29,147,996	984	27,723,835	–4.89%
2015	1,123	32,389,566	1,128	32,572,813	0.57%
2016	1,178	33,644,858	1,170	33,808,959	0.49%

  In the last year Woodgreen Insurance made a pre-tax profit after the cost of capital of £2 million. If we did not reinsure, claims costs would only need to be around 6% higher than expected for this profit to be eroded.

- Woodgreen Insurance must hold capital for any risk it is exposed to; this is a regulatory requirement.

- Reducing the reinsurance will increase the risk exposure and therefore increase the capital that is required. Woodgreen will need to ensure that it makes enough profit to earn the return on this capital that investors are expecting. When using reinsurance, negligible capital is held in respect of the reinsured portion of the risk, i.e. in the case of Woodgreen Insurance, capital must be held to cover only the 20% of the risk that is not reinsured.

  The reinsurer itself will need to hold capital for the risk it takes on from Woodgreen Insurance, and it too would need to earn a return on this capital. This is what most of the margin in the reinsurance premiums goes towards. However, the reinsurer is likely to have a lower capital cost for a given risk than we have because it has two advantages over Woodgreen Insurance when holding capital:

  - The reinsurer writes a lot of different risks, not just life and critical illness insurance. The diversification benefit that this brings reduces the amount of capital that the reinsurer needs to hold relative to the size of the business it takes on. Therefore, for the same block of Woodgreen's business, the reinsurer will hold less capital than Woodgreen itself would need to.

  - The reinsurer generates large and stable profits, and can therefore pay investors a lower return on the capital invested than is demanded of Woodgreen Insurance. The minimum annual return on capital that Woodgreen must make is 13% to satisfy investors, a reinsurance company would need to make around a 7% return.

These effects are illustrated by the simplified income statement for Woodgreen Insurance below. This statement is a projection for 2017, and therefore uses expected premiums and claims figures rather than actual experience.

	£	*With 80% reinsurance*	*With no reinsurance*	*Comment*
A	Premiums in 2017	48,768,192	48,768,192	Premiums from policyholders
B	Expected claims cost in 2017	36,610,317	36,610,317	Expected claims to be paid out gross of reinsurance
C	Increase in reserves	6,232,620	6,232,620	Held back to cover future claims – deducted from profits this year
D	Expenses	3,625,000	3,625,000	Expenses of running insurance company
E	Capital held by Woodgreen	988,479	4,942,393	Capital held in respect of the risk retained by Woodgreen
F	Return on Woodgreen capital (@ 13%)	128,502	642,511	Return required to pay for capital held (E × 13%)
G	Capital held by reinsurer	1,610,854	0	Capital held by reinsurer in respect of the risk reinsured
H	Return on reinsurer capital (@ 7%)	112,760	0	Return required to pay for reinsurance capital (G × 7%)
I	Additional expenses and profit loaded by reinsurer	50,000	0	
J	Insurance premium	29,451,014	0	(80% × B) + H + I
K	Claims reimbursed by reinsurer	29,288,254	0	80% × B
L	Expected profit	2,008,993	1,657,744	Final profit (A – B – C – D – F – J + K)

The key savings come from the fact that the amount of capital held per unit of risk and the return required on each pound of capital is lower for reinsurers (rows G and H respectively) than for Woodgreen Insurance (rows E and F respectively). So rather than giving away profit, expected profits may rise when reinsuring.

All of the figures and information provided is correct for the purposes of the question. There is no need to calculate further figures for the presentation. You are not expected to comment on any additional advantages or disadvantages of reinsurance beyond what is laid out in the question.

END OF PAPER