

15. (2.5 points)

The following information is provided for a federally-regulated property and casualty insurance company as at December 31, 2018. All amounts are in thousands of dollars (\$000s).

Incremental Paid				
AY*	12	24	36	48
2015	8,500	2,000	500	250
2016	8,000	1,500	1,000	
2017	9,000	5,000		
2018	10,000			

Actuarial Present Value Ultimate				
AY*	12	24	36	48
2015	16,000	16,500	17,250	17,250
2016	14,200	15,500	16,000	
2017	18,500	20,100		
2018	20,250			

* Accident year

Discounted excess/(deficiency) ratio:

Calendar Year	Accident Years 2015 and Prior	Accident Years 2016 and Prior	Accident Years 2017 and Prior
2016	-4%		
2017	-12%	-14%	
2018	-10%	-16%	-7%

Other information:

- The investment yield is 2.5% for all years.
- The company started writing business in 2015.

a. (0.75 point)

Calculate the investment income on unpaid claims for accident year 2015 in calendar year 2018.

b. (1.25 points)

Calculate the cumulative discounted excess/(deficiency) ratio for accident year 2016 as at December 31, 2018.

c. (0.5 point)

Analyze the discounted excess/(deficiency) ratio exhibit from the perspective of the Office of the Superintendent of Financial Institutions (OSFI).

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Common errors included:

- Stating that a decrease in equity will result in a decrease of ROE
- Assuming there is no impact on net income
- Failing to explain how a change in DPAE impacts equity or net income

Part d

Candidates were expected to identify two different methods for evaluating loss ratios underlying the premium liabilities.

Common errors included:

- Stating two methods that were very similar
- Commenting on the nature of data used for evaluating loss ratios and not listing methods

Part e

Candidates were expected to calculate the margin for premium liabilities used for the MCT calculation.

Common errors included:

- Not excluding PfADs from the premium liabilities
- Not including contingent commissions, future reinsurance premium, and maintenance expenses in premium liabilities
- Not applying the maximum correctly
- Omitting the 30% x NWP calculation

QUESTION 15

TOTAL POINT VALUE: 2.5

LEARNING OBJECTIVE(S): C1

SAMPLE ANSWERS

Part a: 0.75 point

Sample

APV unpaid claims for AY 2015 at 36 months : $17,250 - (8,500 + 2,000 + 500) = 6,250$

APV unpaid claims for AY 2015 at 48 months : $17,250 - (8,500 + 2,000 + 500 + 250) = 6,000$

Investment income = $(6,250 + 6,000) * 0.025 / 2 = 153.125$

Part b: 1.25 points

Sample 1

APV unpaid claims for AY 2016 at 12 months : $14,200 - 8,000 = 6,200$

APV unpaid claims for AY 2016 at 24 months : $15,500 - (8,000 + 1,500) = 6,000$

APV unpaid claims for AY 2016 at 36 months : $16,000 - (8,000 + 1,500 + 1,000) = 5,500$

Investment income = $(6,200 + 6,000) * 0.025 / 2 + (6,000 + 5,500) * 0.025 / 2 = 296.25$

Excess/(Deficiency ratio) = $(\text{unpaid claims@begin} - \text{unpaid claims@end} - \text{cumulative paid} + \text{investment income}) / \text{unpaid claims@begin}$

$$= (6,200 - 5,500 - (1,500 + 1,000) + 296.25) / 6200 = -24.25\%$$

Sample 2 (calculation of ratio)

Excess/(Deficiency ratio) = $(\text{APV@begin} - \text{APV@end} + \text{investment income}) / \text{unpaid claims@begin}$

$$= (14,200 - 16,000 + 296.25) / 6200 = -24.25\%$$

Part c: 0.5 point

Sample 1

The excess/deficiency ratios are always negative. The company doesn't have sufficient reserves to cover unpaid claims. OSFI may intervene.

Sample 2

OSFI would be alarmed by the fact that the company seems to understate its initial unpaid amounts every year. OSFI may suggest strongly that the company re-evaluate their methods.

EXAMINER'S REPORT

Candidates were expected to be able to calculate the discounted excess/(deficiency) of unpaid claims as well as comment on the meaning of the excess/(deficiency) ratio calculated.

Part a

Candidates were expected to be able to calculate investment income.

Common errors included:

- Using APV ultimate instead of APV unpaid claims
- Using incremental paid instead of cumulative paid when calculating unpaid claims
- Calculating the investment income for all of AY 2015 instead of just that for CY 2018
- Not calculating the investment income for the right time period

Part b

Candidates were expected to be able to calculate the ratio using change in discounted ultimate plus investment income, divided by discounted reserves.

Common errors included:

- Calculating the investment income incorrectly
- Pulling incorrect figures from the triangles to enter into the equation
- Dividing by the initial discounted ultimates instead of unpaid claims
- Using incremental paid instead of cumulative when calculating unpaid claims
- Not calculating the ratio for the right time period

Part c

Candidates were expected to analyze the excess/(deficiency) ratio calculated from OSFI's perspective.

Common errors included:

- Not mentioning reserve/ultimate deficiency across all AYs and CYs
- Not mentioning that OSFI could be concerned with the solvency of the company