

EXAM 6 – CANADA, SPRING 2016

15. (2.5 points)

The following information is available for a Canadian property and casualty insurance company as at December 31, 2015. The company began operations on January 1, 2015. All amounts are in thousands of dollars (\$000s).

Accident Year	Net Paid Loss	Net Incurred Loss	Net Ultimate Loss
2015	2,000	3,500	10,000

	Discount Rate	Claims Development MfAD	Reinsurance Rate MfAD
Net	5.00%	6.00%	4.00%

Cumulative accident year payment pattern (net layer only):

- Percentage paid by 12 months = 20%
- Percentage paid by 24 months = 30%
- Percentage paid by 36 months = 50%
- Percentage paid by 48 months = 75%
- Percentage paid by 60 months = 100%

Assume that all payments are made in the middle of the year.

The gross discounted present value of claims liabilities (excluding PfADs) as at December 31, 2015 is 18,121.

Total net unpaid claims and adjustment expenses on an actuarial discounted basis as at December 31, 2015 are 8,180.

a. (2 points)

Calculate the net Investment PfAD at December 31, 2015.

b. (0.5 point)

Identify two considerations in calculating the portfolio yield.

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SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 15	
TOTAL POINT VALUE: 2.25	LEARNING OBJECTIVE: C1
SAMPLE ANSWERS	
Part a: 2 points	
Sample Answer:	
<p>Net Undiscounted Unpaid Loss = $10,000 - 2,000 = 8,000$</p> <p>Future net paid losses: 2015: $8,000 * 0.1 / 0.8 = 1,000$ 2016: $8,000 * 0.2 / 0.8 = 2,000$ 2017: $8,000 * 0.25 / 0.8 = 2,500$ 2018: $8,000 * 0.25 / 0.8 = 2,500$</p> <p>Net disc at disc rate = $1,000 / (1.05)^{0.5} + 2,000 / (1.05)^{1.5} + 2,500 / (1.05)^{2.5} + 2,500 / (1.05)^{3.5} = 7,155.23$</p> <p>Net Claims PfAD = $7,155.23 * 6\% = 429.31$ Net Reinsurance PfAD = $(18,121 - 7,155.23) * 4\% = 438.63$ Net Total PfADs = $8,180 - 7,155.23 = 1,024.77$</p> <p>Net Investment PfAD = $1,024.77 - 438.63 - 429.31 = 156.83$</p>	
Part b: 0.5 point	
<p><u>Possible considerations:</u></p> <ul style="list-style-type: none"> • T-bills are sold at a discount and mature at par, quoted “coupon rates” generally are nominal simple discount rates. May need to convert to annual effective. • Bond portfolio yields are commonly nominal yield, compounded semi-annually. May need to convert to annual effective. • Bonds can have call features that result in early redemption, which may impact valuation. • Early principal repayment features may accelerate bond payments. • Accrued investment income should be combined with the book value of bonds. • Returns on equities are volatile and history may not be representative of future – caution required. • Actuary may use and take responsibility for the estimate of IRR from an investment professional if actions are justified. <p><u>Additional Accepted Answers:</u></p> <ul style="list-style-type: none"> • The method of valuing assets and reporting investment income • The allocation of those assets and that income among lines of business • The return on the assets at the balance sheet date • The yield on assets acquired after the balance sheet date • The capital gains and losses on assets sold after the balance sheet date 	

SAMPLE ANSWERS AND EXAMINER'S REPORT

- Rate of return on assets backing up liabilities
- Investment expenses, and losses from default (C1 risk)
- Reinvestment Risks
- Liquidation of Assets/Credit Risk
- Market condition
- Payment pattern
- New money rate/risk-free interest rate
- Duration of the assets

EXAMINER'S REPORT

- The candidate was expected to know the calculation for discounted claims liabilities and know the considerations for determining the portfolio yield/discount rate
- Candidates generally scored well, with a majority of candidates getting most, if not all of the marks
- The question was pretty straightforward. The only tricky part is that it required candidates to work backwards to get the investment pfad.

Part a

- The candidate was expected to know the formula to calculate the discounted claims liabilities
- In order to get full credit the candidate had to solve for the net investment pfad
- Candidates generally did well on this part
- Common errors made by candidates were:
 - Incorrectly calculating the reinsurance pfad (subtracting the net unpaid claims and expense from the gross)
 - Incorrectly calculating the future net paid losses; mix the concepts of Net Incurred Loss and Net Paid Loss.
 - Incorrectly calculating the net discounted future paid losses, some candidates include the net paid loss in calculating the present value.

Part b

- The candidate was expected to know the considerations for determining a portfolio yield/discount rate
- In order to get full credit the candidate had to give two considerations
- Candidates generally did well on this part
- Candidates gave answers from other parts of the paper, and not specifically from the portfolio yield section of the paper
- Common errors made by candidates were:
 - Whether the current value of assets is sufficient to cover liabilities has no bearing on the portfolio yield.