19. (2.5 points)

The following applies to a retrospectively rated policy with a \$500,000 loss limitation. The insured has elected to include a premium element to stabilize premium adjustments.

Standard premium	\$2,000,000
Minimum premium	\$1,000,000
Maximum premium	\$3,000,000
Expected loss	\$1,400,000
Actual unlimited losses at second adjustment	\$1,700,000
Actual limited losses at second adjustment	\$1,500,000
Excess loss factor	0.15
Loss conversion factor	1.10
Retrospective development factor at second adjustment	0.07
Provision for expenses and profit exclusive of taxes	\$400,000
Converted insurance charge	\$100,000
Tax factor	1.05

a. (2 points)

Calculate the policy's retrospective premium at second adjustment.

b. (0.5 point)

Describe one reason an insurance company would include retrospective development factors in a policy.

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Question 19:

Part a
Model Solution 1

Retro Premium Before Max/Min = Tax Factor (Basic Premium + Converted Losses + Excess Loss Premium + Retro Development Premium) = 1.05 * (360,000 + 1,650,000 + 330,000 + 154,000) = 2,618,700. Premium within Min/Max so no further adjustments.

Basic Premium = e – (c – 1.0)*E +CI = 400,000 – 0.1*1,400,000 + 100,000 = 360,000.

Converted Losses = c * Actual limited loss = 1.10 * 1,500,000 = 1,650,000.

Excess Loss Premium = c * SP * ELF = 1.1 * 2,000,000 * 0.15 = 330,000.

RDP = c * SP * RDF = 1.1 * 2,000,000 * 0.07 = 154,000.

Model Solution 2

Basic Premium = 0.2 – 0.1*0.7 +0.05 = 0.18

Converted Losses = 1.10 * 0.75 = 0.825

Excess Loss Premium = 1.1 * 0.15 = 0.165

RDP = 1.1 * 0.07 = 0.077

Retro Premium = 2,000,000 * 1.05 *(0.18 + 0.825 + 0.165 + 0.077)
= 2,000,000 * 1.30935 = 2,618,700

Premium within Min/Max so no further adjustments.

Examiner's Comments:
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Typical mistakes on Part A were for missing some part of any of the retro premium components. The following is a list of many of the common errors:

- Missing one of the 3 components that went into the basic premium.
- Missing the ELP or RDP.
- Not using standard premium in the RDP or ELP calculations.
- Not using the LCF in the RDP, ELP, or converted loss.
- Not using limited loss in the converted loss component.
- Forgetting to include the tax multiplier in the final calculation.

- Having all the correct components but the final number calculated incorrectly.
- Incorrect calculations above the max or below the min and where the candidates didn't cap the retro premium appropriately.

Some candidates attempted to calculate the premium at the first adjustment and at the second adjustment and then subtracted premium at the first adjustment from the second adjustment. Although not enough information was given in the question to calculate the premium at the first adjustment, candidates did not have any points deducted for attempting to calculate the premium at this adjustment and then subtracting this premium from the calculated premium at the second adjustment
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Part b
Model Solution 1

Include this because it stabilizes the premium adjustments bringing them closer to ultimate so that the premium paid upfront is closer to final which reduces credit risk of collecting subsequent premiums from adjustments.

Model Solution 2

Since losses develop over time, without a RDF, usually losses will be lower at early adjustments which will cause a refund to the insured. Once losses develop higher, the insured will pay the money back. To avoid volatility and back-and-forth payments, retro development factors are used to stabilize premium adjustments.

Examiner's Comments:
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Full credit was given to candidates for demonstrating complete understanding of RDF's writing out that that an RDF minimizes the back-and-forth between an insured and the insurer as without RDF's there would typically be a refund early on and then following that up with one of the following additional points of credit risk, investment income, or a mention of losses developing to ultimate leading to the insured having to repay the insurer.

Partial credit was given to candidates that gave a good explanation of 'stabilizing premium' but didn't give a complete description. Candidates that just mentioned how it minimized the back and forth payments as typically there would be a refund but then didn't explain why this would be the typical pattern (i.e. no mention of loss development) or didn't add on why this was beneficial to an insurance company (i.e. credit risk, generating investment income) were only given partial credit.

Deductions were taken for words repeated from the NCCI handout without any explanation which would demonstrate understanding of the material. For example,

responses such as “to account for any future increase in loss cost”, ‘to stabilize premium adjustments’, or “to account for future loss development” were not given credit.
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