19. (3.25 points)

The following information is available for a LDD policy:

Standard premium	$1,500,000
Expected ultimate loss ratio	0.75
State hazard group relativity	1.1
Deductible	$200,000
Excess loss factor	0.21
Aggregate limit on deductible	$1,000,000

The following Table M information is applicable to this policy:

Expected Loss Group	Range Rounded Values
30	$600,001 – $750,000
29	$750,001 – $925,000
28	$925,001 – $1,100,000
27	$1,100,001 – $1,300,000
26	$1,300,001 – $1,600,000
25	$1,600,001 – $1,950,000
24	$1,950,001 – $2,200,000

	Expected Loss Group						
Entry Ratio	30	29	28	27	26	25	24
0.75	0.4069	0.3989	0.3911	0.3833	0.3755	0.3677	0.3599
0.81	0.3777	0.3690	0.3605	0.3521	0.3436	0.3352	0.3267
1.07	0.2764	0.2661	0.2557	0.2453	0.2349	0.2245	0.2141
1.15	0.2522	0.2417	0.2310	0.2203	0.2096	0.1989	0.1882
1.23	0.2347	0.2241	0.2134	0.2027	0.1920	0.1813	0.1706
1.53	0.1690	0.1583	0.1476	0.1369	0.1261	0.1154	0.1047

a. (2.25 points)

Calculate the expected loss costs for the policy using the Insurance Charge Reflecting Loss Limitation (ICRLL) procedure.

b. (1 point)

Explain why the ICRLL procedure produces reasonably accurate insurance charges.

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Question 19:

Part a

Model Solution 1

Expected Unlimited Loss = 1.5M * 0.75 = 1.125M
Loss Elimination Ratio = 0.21 / 0.75 = 0.28
F = (1 + 0.8*LER) / (1 – LER) = 1.7
Adj Loss = 1.125M * 1.7 * 1.1 = 2.10375M -> ELG 24
Expected Limited Loss = 1.125 * (1-LER) = 810,000
Expected Excess Loss = 1.125M * LER = 315,000
Entry Ratio = 1M / 810,000 = 1.234
Charge = 0.1706 (from table)
Expected Loss Cost = Charge * Exp Lim Loss + Expected Excess Loss
= 0.1706 * 810,000 +315,000 = 453,186

Model Solution 2

Expected Unlimited Loss = 1.5M * 0.75 = 1.125M
Loss Elimination Ratio = 0.21 / 0.75 = 0.28
F = (1 + 0.8*LER) / (1 – LER) = 1.7
Adj Loss = 1.125M * 1.7 * 1.1 = 2.10375M -> ELG 24
Expected Limited Loss = 1.125 * (1-LER) = 810,000
Expected Excess Loss = 1.125M * LER = 315,000
Entry Ratio = 1M / 810,000 = 1.234
Charge = 0.1706 (from table)
Expected Loss Cost = Charge * Exp Lim Loss + Expected Excess Loss
= 0.1706 * 810,000 +315,000 = 453,186
Converting to Loss Cost as a % of Standard Premium: 453,186 / 1.5M = 0.3021

Examiner's Comments:
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Most candidates received full credit or a majority of partial credit on this problem. The most common errors included using unlimited expected losses to calculate the entry ratio instead of the limited expected losses or incorrectly calculating the loss elimination ratio. Some candidates lost points for using the excess loss factor as a percent of loss, without explicitly stating that as an assumption. Those candidates that did state that as an assumption did not lose partial credit.
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Part b

Model Solution 1

Because the LUGS adjustment shifts the aggregate loss distribution used to estimate the insurance charge to a loss distribution associated with a larger (less skewed) loss distribution. This less skewed distribution approximates the limited loss distribution that is really acting on the risk being rated due to the presence of the per loss limit. This will lead to insurance charges that are smaller than would be indicated in the absence of a loss limit reflecting the removal of the overlap between the "loss limitation" and the aggregate loss limit.

Model Solution 2

The use of the per-occurrence limit (or a deductible in this case) reduces the losses that count toward the aggregate limit. If one pulled an insurance charge without adjusting losses, there would be overlap between the losses eliminated by the deductible and implied losses eliminated by the aggregate limit. To reduce overlap, an expected loss group with more stable losses (resulting in a lower charge) is selected by finding an equivalent ELG based on the losses eliminated and the state hazard group relativity. Because the lower ELG produces lower charges for the aggregate limit, this helps to eliminate overlap and provide accurate charges

Examiner's Comments:

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Most candidates received partial credit. Responses that did not receive partial credit include those that described the process involved in part a rather than explain why the procedure produces accurate insurance charges. While most candidates were able to identify at least one reason as to why the procedure produces reasonable results, few were able to give a complete answer.

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