11. (4 points)

A homeowners insurance company uses only two rating variables, territory and amount of insurance. The company wishes to accomplish the following as part of an upcoming rate filing:

- Achieve an indicated average rate increase of +15%.
- Update class plan relativities based on indicated results.
- Adopt a minimum premium requirement of $800.
- Keep the same base classes.

The following information applies to the company's current book of business:

- Current base rate per exposure is $1,250.

Amount of Insurance	Current Relativity	Indicated Relativity
Less than $100,000	0.750	0.600
Greater than or Equal to $100,000	1.000	1.200

Territory	Current Relativity	Indicated Relativity
Territory 1	0.800	0.850
Territory 2	1.000	1.000

In-force Exposure Distribution		
Amount of Insurance	Territory 1	Territory 2
Less than $100,000	1,500	4,000
Greater than or Equal to $100,000	1,500	3,000

Using the extension of exposures method, calculate the base rate that satisfies all of the company's objectives.

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QUESTION 11	
TOTAL POINT VALUE: 4	**LEARNING OBJECTIVES: A9, A10**

SAMPLE ANSWERS

Sample Answer 1

Increase avg premium 15%
Minimum premium $800
Current br 1250

Current average premium = 1250[1500(.75)(.8)+1500(1)(.8)+4000(.75)(1)+3000(1)(1)] / (1000 + 1500 + 4000 + 3000)
=$1012.50
Proposed avg premium = 1012.50(1.15) = 1164.375

Ignoring minimum premium for now

Proposed BR B
1164.375 = B[1500(.6/1.2)(.85)+1500(1.0)(.85)+4000(.6/1.2)(1.0)+3000(1.0)(1.0)]/10,000
1164.375 = B(.69125)
B = 1684.45

Minimum premium impact – only affects terr 1, <100k
Prior 1684.45(.5)(.85)(1500) = 1,073,835.90
Prop 800(1500) = 1,200,000
126,164.1

Off-balance factor = 1 + 126,164.1/(1164.375(10,000)) = 1.0108

New base rate 1684.45/1.0108 = $1666

Sample Answer 2

AOI	Terr	In-force exp	In-force Premium	Prop terr rel	Prop rebased	proposed premium prior to BR change
<100k	1	1500	1,125,000	0.85	.6/1.2 = .5	796,875
<100k	2	4000	3,750,000	1	0.5	4000*1250*1*1.5 = 2,500,000
>=100k	1	1500	1,500,000	0.85	1	1,593,750
>=100k	2	3000	3,750,000	1	1	3,750,000
		Total	10,125,000			8,640,625

% change before BR change = 8,640,625/10,125,000 – 1 = 1466
BR change to get +15% overall: 1.15/(1-.1466) – 1 = 34.76%
Proposed BR = 1250(1-.3476) = 1685

But this causes Terr 1 and AOI < 100 to be <800 minimum premium
1685*.85*.5 = 716

Proposed premium for AOI<100k, Terr 1 w/ 800 premium = 800*1500 = 1,200,000

This gives terr 1, AOI<100k a change of 1.2M/1.125M – 1 = 7.856
We need the rest of the proposed premium to equal 10,125,000(1.15) – 1,200,000 = 10,443,750 to achieve a 15% change.

So base rate change = 10,443,750 / (2.5M+1.593750M+3.75M) – 1 = 33.15%

Proposed base rate = (1.3315)(1250) = 1664

Sample Answer 3

AOI	Terr	In Force Exposure	AOI chg	terr chg	15% rate	New Ind Rate
<100k	1	1500	.5/.75 = .67	.85/.8 = 1.0625	1.15	610.94
>=100k	1	1500	1	1.0625	1.15	1221.875
<100k	2	4000	0.67	1	1.15	718.75
>=100k	2	3000	1	1	1.15	1937.5

Rebased AOI Ind = .5

AOI	Terr	Old Rates
<100k	1	750
>=100k	1	1000
<100k	2	937.5
>=100k	2	1250

Initial Proposed Chg before min prem
= [610.94(1500) + 718.75(4000) + 1221.875(1500) + 1437.5(3000)] / [750(1500) + 1000(1500) + 937.5(4000) + 3000(1250)]

=936,722.5 / 10,125,000
=.9814

At this level base rate = 1250(1.15) = 1437.5
But that's -1.859% chg overall
Adj to get 15%: 1.15/.9814 = 1.172
New base = 1684.75

AOI	Terr	New Adj Rate	Min Prem
<100k	1	715.897	800
>=100k	1	1432.0375	
<100k	2	842.375	
>=100k	2	1684.75	

Final chg = [800(1500) + 1432(1500) + 842(4000) + 1684(3000)] / 10,125,000
= 1.1624

Final Adj to BR = 1.15/1.1624
= .989

Final Base Rate = .989(1684.75)
= 1667

EXAMINER'S REPORT

Candidates were expected to be able to rebalance the new Amount of Insurance relativities to the base class. Candidates were expected to be able to calculate the current and proposed premiums and to correctly adjust the base rate for the proposed rate level change in addition to offsetting the base rate for the rating factor changes. Candidates needed to correctly identify that policies in Territory 1, AOI <$100,000 would be impacted by the implementation of the minimum premium. They needed to calculate the total proposed premium with and without the minimum premium and then to adjust the base rate for the difference.

Common mistakes included:

- Neglecting to rebalance the new Amount of Insurance relativities to the base class
- Correctly determining the impact of the rating factor changes but accounting for it incorrectly when adjusting the base rate
- Using the prior base rate to calculate the minimum premium impact