Large Account Pricing

Presenter: Joshua Taub, FCAS

CAS Ratemaking and Product Management Seminar
March 19, 2018
Chicago, IL

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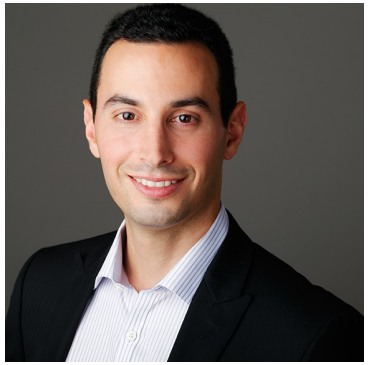
Agenda

1. Who I am
2. Intro to Large Accounts
3. Experience Rating
4. Schedule Rating
5. Retrospective Rating

Who I am



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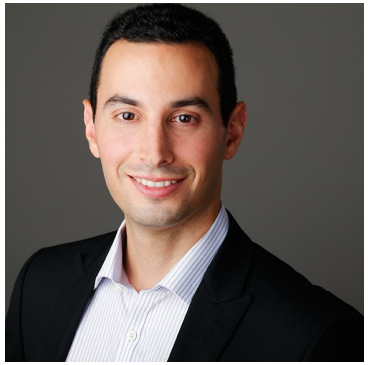

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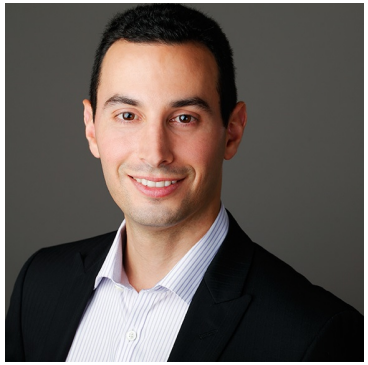

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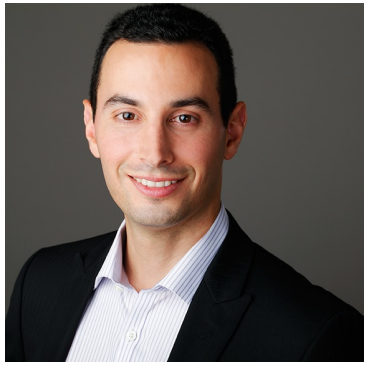

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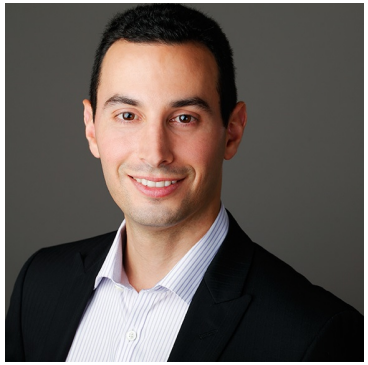

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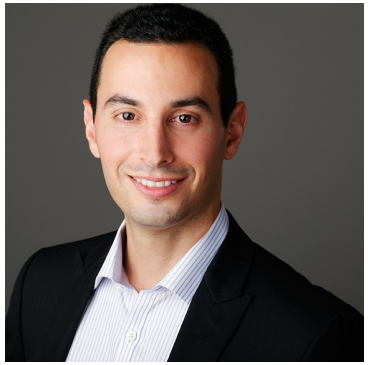

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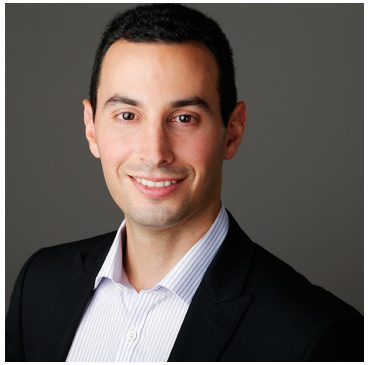

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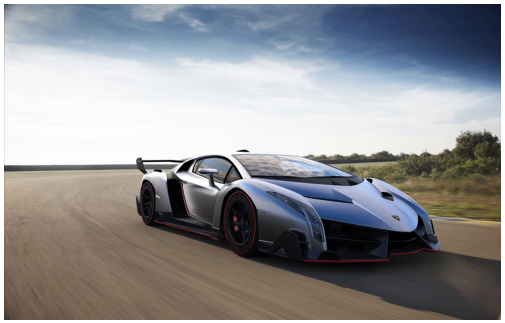

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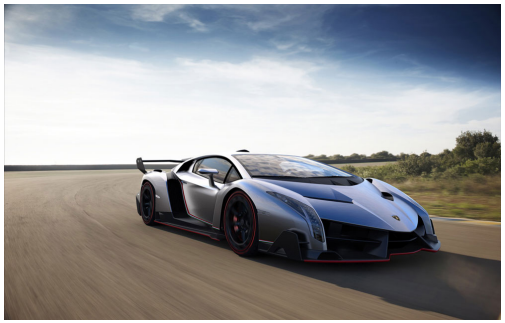

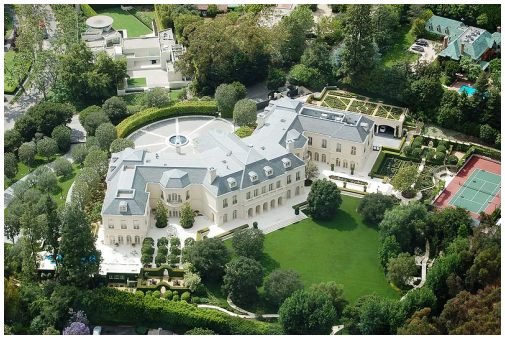

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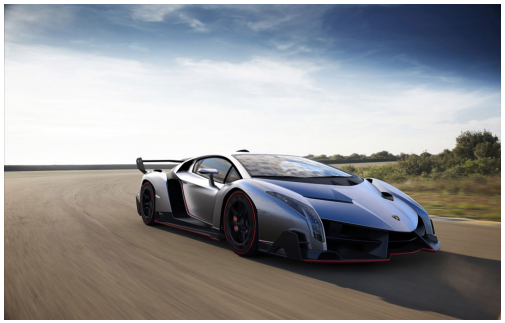
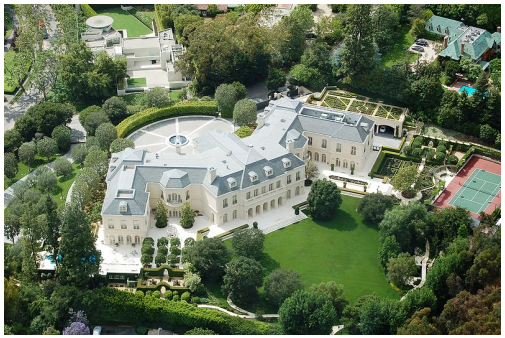


Photo Credit: www.dts-nachrichtenagentur.de

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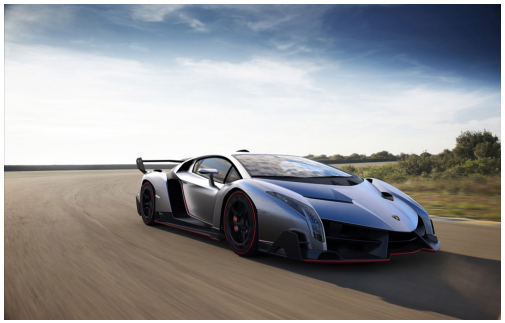
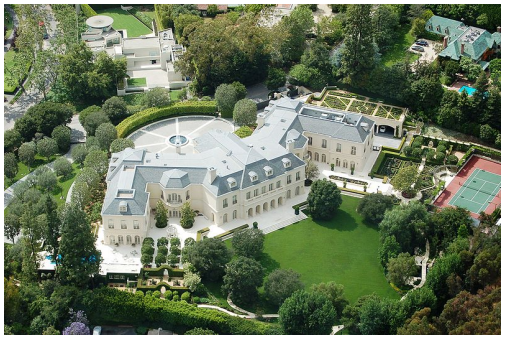


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In our case, none of these

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What does significant mean?

- Big enough for an insured’s own loss experience to have some credibility in predicting their own future losses.
- Generally: the more premium, the more credibility

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- Varying degrees of risk aversion

Options for Large Account Insurance

- Self-Insurance Mechanisms

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  - Experience Rating
  - Schedule Rating

Question #1

You are the Chief Risk Officer for a large corporation, and you are deciding on how to manage the risks your company faces. You have 2 goals:

1. You want to retain a moderate amount of risk.
2. You want an insurer to handle all claims.

Which option do you choose?

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2. Excess
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Choice between 1 and 3 depends on the plan parameters of each.

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3. **Enhance Competition**: More insurers willing to write business if better chance of profit.

Personal vs Commercial Lines

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Experience rating credibility is inversely related to the strength of the classification plan.

Question #2

Two insurers are competitors in writing personal auto insurance.

- Insurer #1 only has rating factors for age of driver, miles driven, and # of prior claims.
- Insurer #2 only has rating factors for age of driver, miles driven, territory, credit score, and # of prior claims.

Which insurer's prior claim surcharges are likely to be more credible?

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- **Multi-Split**:
$A_p = I + (1-d)I + (1-d)^2 I + ... + (1-d)^N (A - N \times I)$
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The ELRs and D-ratios are adjusted for these, so expected losses are on same basis as actual losses used.

Exam 8 - 2007 Q25(a)

For a given risk, the losses entering the workers compensation experience rating formula are as follows.

Claim Number	Indemnity Loss	Medical Loss	Total Loss
1	$2,000	$4,000	$6,000
2	$0	$2,800	$2,800
3	$10,000	$8,000	$18,000
4	$0	$12,000	$12,000

Additionally, the following information is given for this risk.

Expected Primary Losses:	$13,000
Expected Excess Losses:	$50,000
Ballast:	100,000
Weight:	0.20

Assume that there is a single split point of $5,000 between primary and excess.

Calculate the risk's experience modification factor.

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Assume that there is a single split point of \$5,000 between primary and excess.

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Exam 8 - 2007 Q25(a)

For a given risk, the losses entering the workers compensation experience rating formula are as follows.

Claim Number	Indemnity Loss	Medical Loss	Total Loss
1	\$2,000	\$4,000	\$6,000
2	\$0	\$2,800	\$2,800
3	\$10,000	\$8,000	\$18,000
4	\$0	\$12,000	\$12,000

A_p A_e

Additionally, the following information is given for this risk.

Expected Primary Losses:	\$13,000
Expected Excess Losses:	\$50,000
Ballast:	100,000
Weight:	0.20

$$Mod = \frac{A_p + WA_e + (1-W)E_e + B}{E+B}$$

Assume that there is a single split point of \$5,000 between primary and excess.

Calculate the risk's experience modification factor.

Exam 8 - 2007 Q25(a)

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3	\$10,000	\$8,000	\$18,000
4	\$0	\$12,000	\$12,000

A_p \$5,000 A_e \$1,000

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Expected Primary Losses:	\$13,000
Expected Excess Losses:	\$50,000
Ballast:	100,000
Weight:	0.20

$$Mod = \frac{A_p + WA_e + (1-W)E_e + B}{E + B}$$

Assume that there is a single split point of \$5,000 between primary and excess.

Calculate the risk's experience modification factor.

Exam 8 - 2007 Q25(a)

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Claim Number	Indemnity Loss	Medical Loss	Total Loss	A_p	A_e
1	\$2,000	\$4,000	\$6,000	\$5,000	\$1,000
2	\$0	\$2,800	\$2,800	\$840	\$0
3	\$10,000	\$8,000	\$18,000		
4	\$0	\$12,000	\$12,000		

Additionally, the following information is given for this risk.

Expected Primary Losses:	\$13,000
Expected Excess Losses:	\$50,000
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4	\$0	\$12,000	\$12,000	\$1,500	\$2,100
			Total:	\$12,340	\$16,100

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Ballast:	100,000
Weight:	0.20

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$$Mod = \frac{12{,}340 + 0.20(16{,}100) + (1-0.20)(50{,}000) + 100{,}000}{(13{,}000 + 50{,}000) + 100{,}000}$$

Assume that there is a single split point of \$5,000 between primary and excess.

Calculate the risk's experience modification factor.

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			Total:	\$12,340	\$16,100

Additionally, the following information is given for this risk.

Expected Primary Losses:	\$13,000	$Mod = \frac{A_p + WA_e + (1-W)E_e + B}{E+B}$
Expected Excess Losses:	\$50,000	
Ballast:	100,000	$Mod = \frac{12{,}340 + 0.20(16{,}100) + (1-0.20)(50{,}000) + 100{,}000}{(13{,}000+50{,}000)+100{,}000}$
Weight:	0.20	$Mod = 0.95$

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Calculate the risk's experience modification factor.

ISO Experience Rating

ISO uses a no-split plan for General Liability. Like NCCI, 3 years of loss experience is generally used.

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The plan also caps the basic limits Loss + ALAE for each historical claim at a Maximum Single Loss (MSL).

No-Split plan formula is re-written:

$$\text{Mod} = Z \times \frac{AER - EER}{EER}$$

AER = Actual Experience Ratio
EER = Expected Experience Ratio

ISO Experience Ratios

$$\text{Mod} = Z \times \frac{AER - EER}{EER}$$

$$EER = \frac{\text{Expected ultimate basic limits losses and ALAE limited by the MSL}}{\text{Expected ultimate basic limits losses and ALAE NOT limited by the MSL}}$$

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Note that the EER is conceptually similar to the NCCI's D-Ratio.

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The denominator is known as the Company Subject Loss Cost (CSLC).

ISO CSLC Standard Method

First calculated for each year of experience and each subline (Premises/Operations and Products/Completed Ops).

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$$CSLC_{y,sl} = BLEL_{sl} \times DeTrend_{y,sl}$$

$$CSLC = \sum_{y=1}^{3} \sum_{sl} CSLC_{y,sl}$$

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$$AER = \frac{\text{Actual basic limits losses and ALAE to date limited by the MSL + Expected Development}}{CSLC}$$

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First term in numerator obtained from actual loss and ALAE. Need to first cap losses at basic limits, then cap (basic limits loss + ALAE) by MSL.

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$$ExpectedDevelopment_{y,sl} = CSLC_{y,sl} \times EER \times LDF_{y,sl}$$

LDFs can be from ISO or company, and EER is from ISO tables.

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$$ExpectedDevelopment = \sum_{y=1}^{3} \sum_{sl} ExpectedDevelopment_{y,sl}$$

Exam 5 - 2006 Q49

Given the following information for a commercial general liability risk, calculate the experience (Credit)/Debit based on the ISO CGL Experience Rating Plan. Show all work.

Actual Losses in the experience period valued as of March 31, 2006:

Claim	Loss	ALAE
1	$1,000	$200
2	1,500	200
3	5,000	800
4	6,000	1,000
5	12,000	1,800
6	23,000	2,200
7	120,000	40,000

Expected Unreported Losses and ALAE @ March 31, 2006 = $45,000
Company Subject Basic Limits Loss and ALAE costs = $250,000

Basic Limit = $100,000
MSL = $150,000
Expected Experience Ratio = 0.9
Credibility = 0.6

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Basic Loss Min(Basic Loss+ALAE,MSL)

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Basic Loss	Min(Basic Loss+ALAE,MSL)
1,000	1,200
1,500	1,700

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4	6,000	1,000	6,000	7,000
5	12,000	1,800	12,000	13,800
6	23,000	2,200	23,000	25,200
7	120,000	40,000	100,000	140,000
			Total	194,700

Expected Unreported Losses and ALAE @ March 31, 2006 = $45,000
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5	12,000	1,800	12,000	13,800
6	23,000	2,200	23,000	25,200
7	120,000	40,000	100,000	140,000
			Total	194,700

Expected Unreported Losses and ALAE @ March 31, 2006 = $45,000
Company Subject Basic Limits Loss and ALAE costs = $250,000

Basic Limit = $100,000
MSL = $150,000
Expected Experience Ratio = 0.9
Credibility = 0.6

$$\text{Mod} = Z \times \frac{AER - EER}{EER}$$

$$AER = \frac{194{,}700 + 45{,}000}{250{,}000} = 0.9588$$

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4	6,000	1,000	6,000	7,000
5	12,000	1,800	12,000	13,800
6	23,000	2,200	23,000	25,200
7	120,000	40,000	100,000	140,000
			Total	194,700

Expected Unreported Losses and ALAE @ March 31, 2006 = $45,000
Company Subject Basic Limits Loss and ALAE costs = $250,000

Basic Limit = $100,000
MSL = $150,000
Expected Experience Ratio = 0.9
Credibility = 0.6

$$\text{Mod} = Z \times \frac{AER - EER}{EER} = 0.6 \times \frac{0.9588 - 0.9}{0.9}$$

$$AER = \frac{194{,}700 + 45{,}000}{250{,}000} = 0.9588$$

Exam 5 - 2006 Q49

Given the following information for a commercial general liability risk, calculate the experience (Credit)/Debit based on the ISO CGL Experience Rating Plan. Show all work.

Actual Losses in the experience period valued as of March 31, 2006:

Claim	Loss	ALAE	Basic Loss	Min(Basic Loss+ALAE,MSL)
1	$1,000	$200	1,000	1,200
2	1,500	200	1,500	1,700
3	5,000	800	5,000	5,800
4	6,000	1,000	6,000	7,000
5	12,000	1,800	12,000	13,800
6	23,000	2,200	23,000	25,200
7	120,000	40,000	100,000	140,000
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Expected Experience Ratio = 0.9
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$$\text{Mod} = Z \times \frac{AER - EER}{EER} = 0.6 \times \frac{0.9588 - 0.9}{0.9} = 0.0392$$

$$AER = \frac{194{,}700 + 45{,}000}{250{,}000} = 0.9588$$

NCCI vs ISO

Component	ISO Experience Rating Plan	NCCI Experience Rating Plan
Experience period	Typically 3 years, lagged 1 year	Same as ISO
Experience Mod	Add 1 to get a factor	Already in factor form
Credibility	Up to 100% (of limited loss experience)	Less than 100%
Plan type	No-split plan	Single-split plan
ALAE	Included in Mod calculation	Not included in mod calculation
Trending of losses	No trending of actual loss, de-trend expected loss	Same as ISO
Loss development	Compares ultimate losses	Compares undeveloped losses
Loss limits	Basic limits and MSL	SAL

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Some carriers now implement predictive models through schedule rating.

Schedule rating should avoid considering any risk characteristics that are already fully reflected in experience rating.

ISO CGL Schedule Rating Plan

ISO Commercial General Liability Plan categories:

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- **Cooperation**: Medical facilities and safety program: Up to 4% credit or debit.

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The credits and debits by risk characteristic are summed, and then capped at $\pm 25\%$, so the maximum schedule debit is 1.25, and the maximum schedule credit is 0.75.

Exam 5 - 2010 Q34

An insurer has been tracking the claims experience of a very large construction company for the three years the construction company has been insured by this insurer. The construction company will implement a new safety program starting in the upcoming year.

(a) Determine whether the insurer should use experience rating, schedule rating, or both to rate the construction company for the upcoming policy period. Briefly explain your answer.

Exam 5 - 2010 Q34

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BOTH. Experience rating will reflect the actual experience over the last few years, and schedule rating will reflect the expected impact of the new safety program.

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(b) Assuming no additional changes, determine whether the insurer should use experience rating, schedule rating, or both to rate the construction company five years from now. Briefly explain your answer.

Only experience rating. Since the safety program would now be fully reflected in the insured's experience, the experience rating will pick up the impact of the safety program. Using schedule rating to reflect the safety program would double count the impact of the program.

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May be many years before policy premium is finalized.

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Note these are **NOT** coverage limits!

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Exam 5 - Spring 2013 Q15

An employer negotiated a workers compensation retrospective policy with an insurer, effective from January 1, 2011 to December 31, 2011. The first adjustment of the retrospective premium occurs six months after the end of the policy period and annually thereafter until the tenth adjustment.

The reported losses during the policy period evaluated as of June 30, 2012 are as follows:

Claim	Reported Losses
#1	$300,000
#2	$200,000
#3	$100,000

The provisions for this retrospective rating plan are as follows:

Minimum retrospective premium ratio	50%
Maximum retrospective premium ratio	150%
Loss Conversion Factor	1.2
Per Accident Loss Limitation	$150,000
Expense Allowance Excluding Tax Multiplier	25%
Expected Loss Ratio	60%
Tax Multiplier	1.05
Net Insurance Charge	44.6%
Standard Premium	$540,000

(a) Calculate the retrospective premium as of June 30, 2012.

(b) Discuss what could cause the retrospective premium in part (a) above to change for the insured between June 30, 2012 and the tenth adjustment.

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(b/P) = 25% - (1.2 - 1)60% + (1.2)(44.6%)

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Claim	Reported Losses
#1	$300,000
#2	$200,000
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The provisions for this retrospective rating plan are as follows: $R = (b + CA)T$

Minimum retrospective premium ratio	50%
Maximum retrospective premium ratio	150%
Loss Conversion Factor	1.2
Per Accident Loss Limitation	$150,000
Expense Allowance Excluding Tax Multiplier	25%
Expected Loss Ratio	60%
Tax Multiplier	1.05
Net Insurance Charge	44.6%
Standard Premium	$540,000

$b = e - (C - 1)E[A] + CI$
(b/P) = 25% - (1.2 - 1)60% + (1.2)(44.6%)
(b/P) = 0.6652

(a) Calculate the retrospective premium as of June 30, 2012.

(b) Discuss what could cause the retrospective premium in part (a) above to change for the insured between June 30, 2012 and the tenth adjustment.

Exam 5 - Spring 2013 Q15

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(b/P) = 0.6652
b = 0.6652 $\times$ $540,000 = $359,208

(a) Calculate the retrospective premium as of June 30, 2012.

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Exam 5 - Spring 2013 Q15

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(b/P) = 0.6652
b = 0.6652 $\times$ $540,000 = $359,208

R = [$359,208 + (1.2)($400,000)] $\times$ 1.05

(a) Calculate the retrospective premium as of June 30, 2012.

(b) Discuss what could cause the retrospective premium in part (a) above to change for the insured between June 30, 2012 and the tenth adjustment.

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Net Insurance Charge	44.6%
Standard Premium	$540,000

$b = e - (C - 1)E[A] + CI$
(b/P) = 25% - (1.2 - 1)60% + (1.2)(44.6%)
(b/P) = 0.6652
b = 0.6652 $\times$ $540,000 = $359,208

R = [$359,208 + (1.2)($400,000)] $\times$ 1.05
R = $881,168

(a) Calculate the retrospective premium as of June 30, 2012.

(b) Discuss what could cause the retrospective premium in part (a) above to change for the insured between June 30, 2012 and the tenth adjustment.

Exam 5 - Spring 2013 Q15

An employer negotiated a workers compensation retrospective policy with an insurer, effective from January 1, 2011 to December 31, 2011. The first adjustment of the retrospective premium occurs six months after the end of the policy period and annually thereafter until the tenth adjustment.

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Net Insurance Charge	44.6%
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(b/P) = 25% - (1.2 - 1)60% + (1.2)(44.6%)
(b/P) = 0.6652
b = 0.6652 $\times$ $540,000 = $359,208

R = [$359,208 + (1.2)($400,000)] $\times$ 1.05
R = $881,168
Min Premium = 50% $\times$ $540,000 = $270,000

(a) Calculate the retrospective premium as of June 30, 2012.

(b) Discuss what could cause the retrospective premium in part (a) above to change for the insured between June 30, 2012 and the tenth adjustment.

Exam 5 - Spring 2013 Q15

An employer negotiated a workers compensation retrospective policy with an insurer, effective from January 1, 2011 to December 31, 2011. The first adjustment of the retrospective premium occurs six months after the end of the policy period and annually thereafter until the tenth adjustment.

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(b/P) = 25% - (1.2 - 1)60% + (1.2)(44.6%)
(b/P) = 0.6652
b = 0.6652 $\times$ $540,000 = $359,208

R = [$359,208 + (1.2)($400,000)] $\times$ 1.05
R = $881,168
Min Premium = 50% $\times$ $540,000 = $270,000
Max Premium = 150% $\times$ $540,000 = $810,000

(a) Calculate the retrospective premium as of June 30, 2012.

(b) Discuss what could cause the retrospective premium in part (a) above to change for the insured between June 30, 2012 and the tenth adjustment.

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R = [$359,208 + (1.2)($400,000)] $\times$ 1.05
R = $881,168
Min Premium = 50% $\times$ $540,000 = $270,000
Max Premium = 150% $\times$ $540,000 = $810,000

(a) Calculate the retrospective premium as of June 30, 2012. Answer = $810,000

(b) Discuss what could cause the retrospective premium in part (a) above to change for the insured between June 30, 2012 and the tenth adjustment.

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R = [$359,208 + (1.2)($400,000)] $\times$ 1.05
R = $881,168
Min Premium = 50% $\times$ $540,000 = $270,000
Max Premium = 150% $\times$ $540,000 = $810,000

(a) Calculate the retrospective premium as of June 30, 2012. Answer = $810,000

(b) Discuss what could cause the retrospective premium in part (a) above to change for the insured between June 30, 2012 and the tenth adjustment. Can only go down since already at max. Only way: reduction in case reserves.

Thank you!

THANK YOU!