

RPM Workshop 1: BASIC RATEMAKING

Overall Rate Level Considerations

Mark Komiskey, FCAS, MAAA
Assistant Actuary
Allstate Insurance Company
Mark.Komiskey@Allstate.com

March 19, 2012
Philadelphia, PA

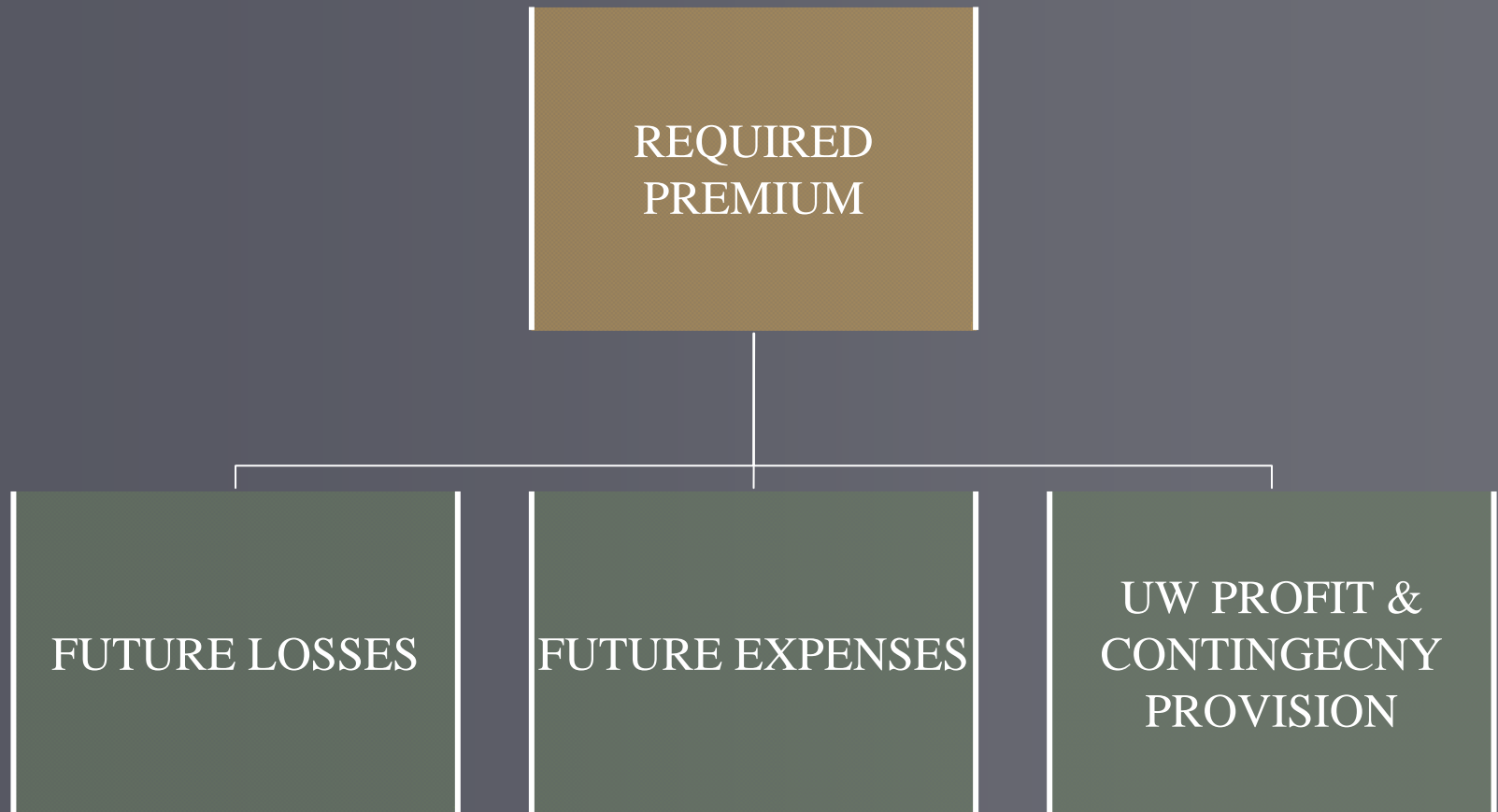
ANTITRUST NOTICE

- The Casualty Actuarial Society is committed to adhering strictly to the letter and spirit of the antitrust laws. Seminars conducted under the auspices of the CAS are designed solely to provide a forum for the expression of various points of view on topics described in the programs or agendas for such meetings.
- Under no circumstances shall CAS seminars be used as a means for competing companies or firms to reach any understanding – expressed or implied – that restricts competition or in any way impairs the ability of members to exercise independent business judgment regarding matters affecting competition.
- It is the responsibility of all seminar participants to be aware of antitrust regulations, to prevent any written or verbal discussions that appear to violate these laws, and to adhere in every respect to the CAS antitrust compliance policy.

AGENDA

- BASIC RATEMAKING EQUATION
- UNDERLYING DATA MANIPULATION
- PROFIT AND CONTINGENCY PROVISIONS
- EXAMPLE

BASIC EQUATION



BASIC METHODS

LOSS RATIO

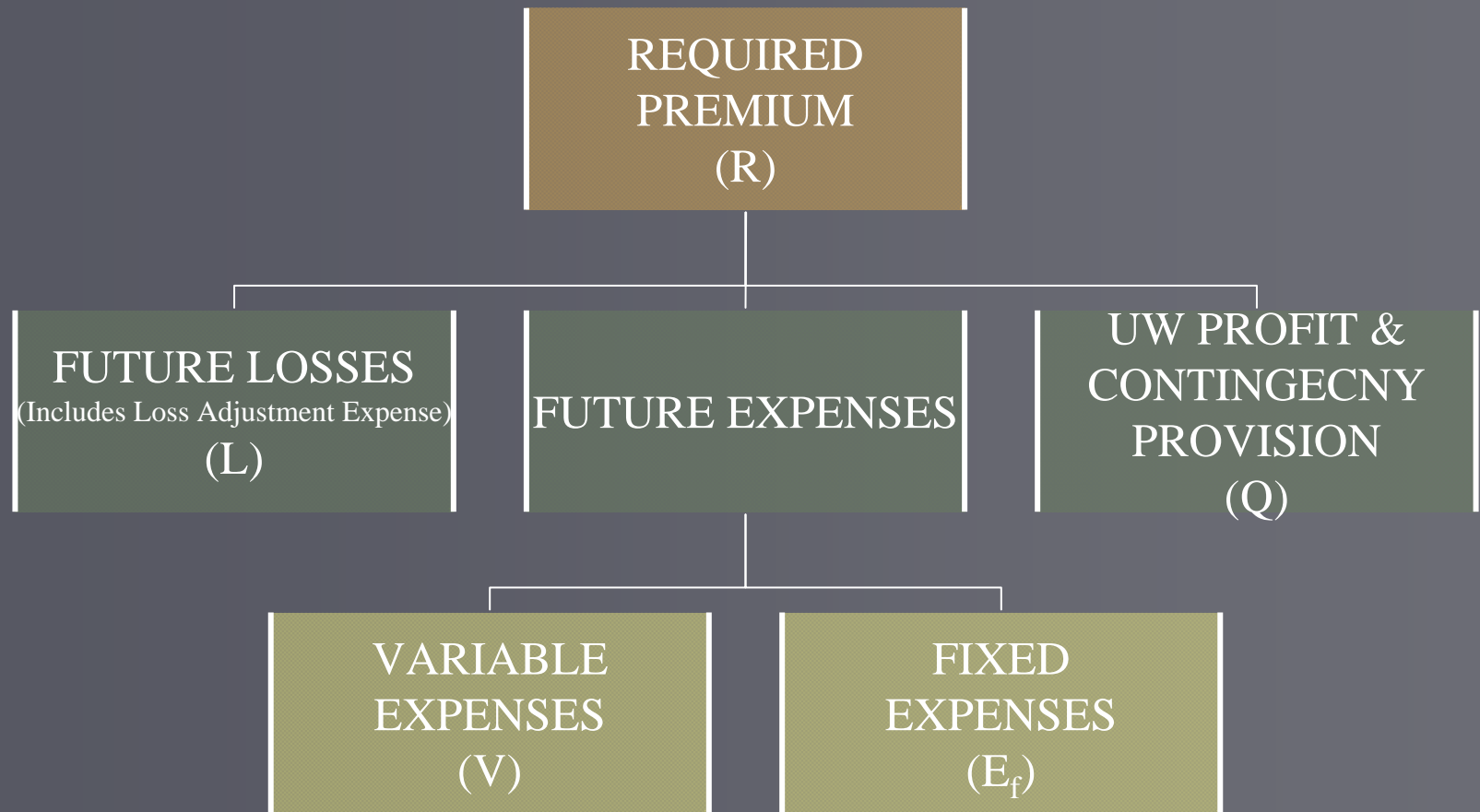
- Produces Indicated Rate Change
- Based on Loss Compared to Current Premium
- Requires Data on Existing Rates

PURE PREMIUM

- Produces Indicated Rates
- Based on Loss per Exposure
- Does Not Require Data on Existing Rates

Note: The two methods produce identical results when identical data and assumptions are used.

BASIC FORMULA:



BASIC FORMULA

$$R = L + V * R + E_F + Q * R$$

Solve for R:

$$R - V * R - Q * R = L + E_F$$

$$R * (1 - V - Q) = L + E_F$$

$$R = \frac{L + E_F}{(1 - V - Q)}$$

Variable Permissible Loss Ratio = $1 - V - Q$

- The percentage of each premium dollar that is intended to pay for the projected loss and fixed expense components.

BASIC FORMULA:

Loss Ratio

Indicated Change = $\frac{\text{Loss Ratio} + \text{Fixed Expense Ratio}}{\text{Variable Permissible Loss Ratio}}$

$$R_1 / R_0 = \frac{(L/R_0 + E_F/R_0)}{(1 - V - Q)}$$

BASIC FORMULA:

Pure Premium

Indicated Rate = $\frac{\text{Pure Premium} + \text{Fixed Expense}}{\text{Variable Permissible Loss Ratio}}$

$$R_1/X = \frac{(L/X + E_F/X)}{(1 - V - Q)}$$

DATA CATEGORIZATION

- CALENDAR YEAR
- POLICY YEAR
- ACCIDENT YEAR

CALENDAR YEAR

Premium and Loss transactions that occur during the year.

– Advantages:

- Data is available quickly
- FIXED AT YEAR END
 - Consistent with Financial Statements

– Disadvantage:

- Premium and Loss Transactions DO NOT match.
 - Loss data includes payments and changes to reserves for policies whose premiums were earned in prior periods.

POLICY YEAR

Premium and Loss transactions on policies with effective dates (new or renewal) during the year.

– Advantages:

- Premium and Loss transactions DO match.
 - Transactions from policies effective in prior years do not distort the data for ratemaking.

– Disadvantage:

- Data is not available until one term after the end of the policy year.
- Losses are NOT fixed at year end.

ACCIDENT YEAR

Loss transactions for accidents occurring during the year, and Premium transactions during the same 12 months.

– Advantages:

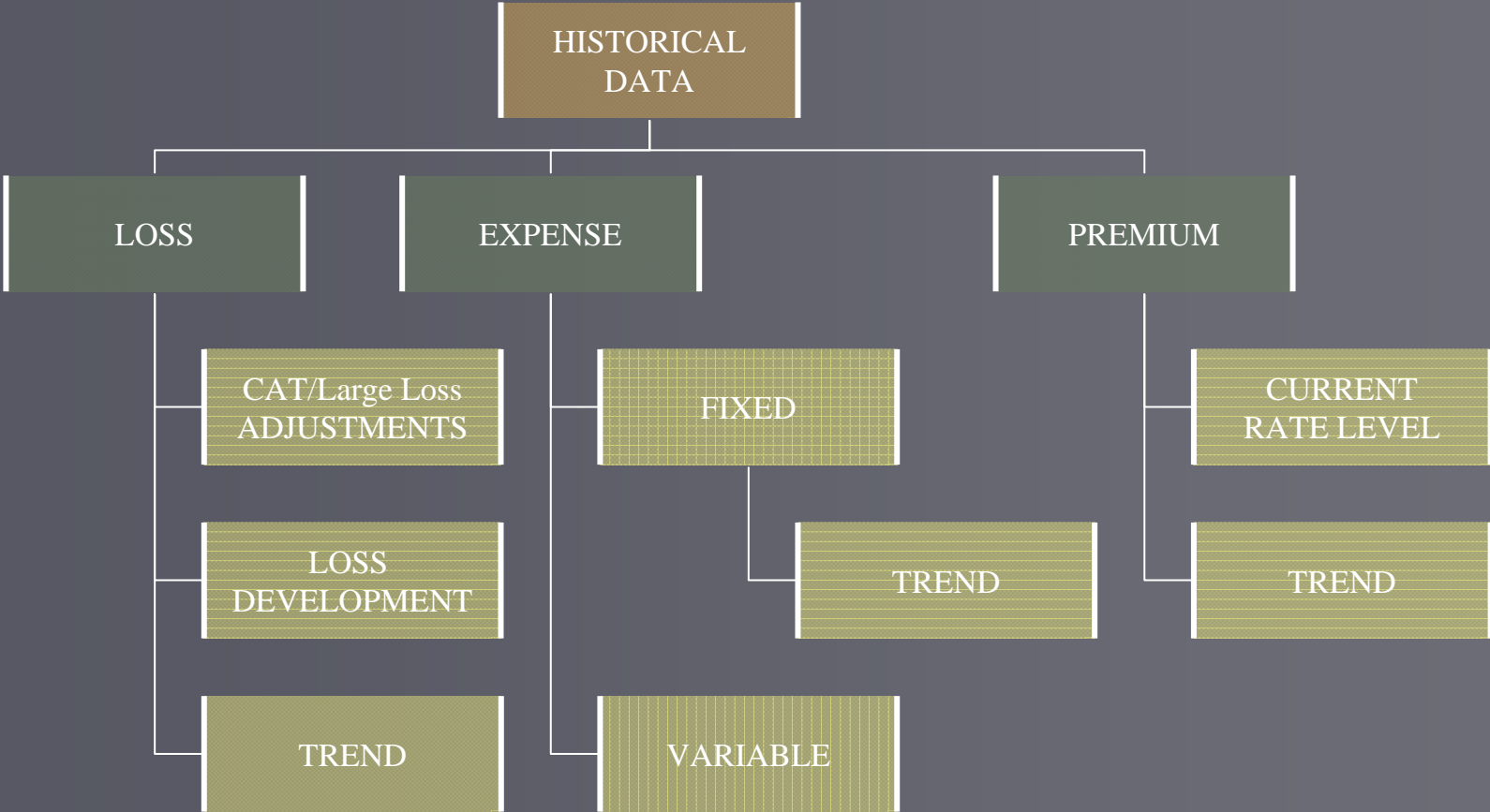
- Represents a better match of premium and losses than Calendar Year aggregation.

– Transactions from accidents occurring in prior years do not distort the data for ratemaking.

– Disadvantage:

- Data with slight time lag.
- Losses are NOT fixed at year end.

UNDERLYING DATA MANIPULATION



TREND

Historical loss, premium and exposure data is trended to reflect the level predicted to exist during the pricing period.

- to account for expected difference between the historical period and the future period.

TREND PERIOD

Experience Period

Exposure Period



CATASTROPHE/Large Loss

- Catastrophe losses are very volatile from year to year, and should be removed from the underlying data because of their large size and infrequency of occurrence.
 - Recognition of exposure is appropriate and can be incorporated using various methods.
 - Long-Term Average, Catastrophe Simulation Modeling.
- Appropriate to give consideration to the impact of other non-catastrophe large losses on underlying data and analysis.

LOSS DEVELOPMENT

Adjustment made to underlying accident year loss data to reflect an expected ultimate value.

- 2 reasons for Accident Year losses to develop
 - New Losses emerge after year-end (IBNR)
 - Development on known claims

LOSS DEVELOPMENT FACTOR (LDF) METHOD

Incurred Losses

ACCIDENT YEAR	@ 12mo	@ 24mo	@ 36mo
2008	\$1,000	\$2,000	\$2,500
2009	\$2,000	\$3,000	
2010	\$2,500		X?

Loss Development Factors

ACCIDENT YEAR	12-24	24-36
2008	2.00	1.25
2009	1.50	

LDF	1.75	1.25
-----	------	------

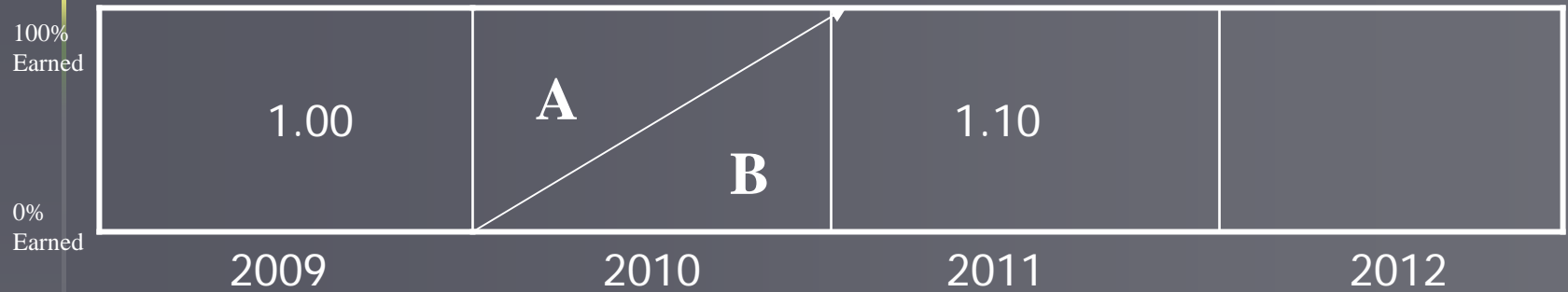
Estimated Ultimate 2010 AY Loss = $\$2,500 \times 1.75 \times 1.25 = \$5,469$

CURRENT RATE LEVEL

- Adjustment to reflect rate changes that are not already included in the historical recorded premium.
 - Common Techniques:
 - Extension of Exposures
 - Parallelogram Method

PARALLELOGRAM METHOD

Rate Change = 10% on 1/1/2010



Area	Percent of 2010	Rate Index
A	.50	1.00
B	.50	1.10
2010	1.00	1.05

$$2010 \text{ FCRL} = (1.10/1.05) = 1.048$$

PROFIT & CONTINGENCY

■ UNDERWRITING PROFIT PROVISION

- Basic Selection = 5%
- More Complex Calculation
 - Consideration of Investment Income

■ CONTINGENCY

- Provision for expected differences, if any, between the estimated costs and the average actual costs, that cannot be eliminated by changes in the other components of the ratemaking process.

? QUESTIONS ?