

ON-LEVELING PREMIUMS:

A case study on two American firms'
approaches



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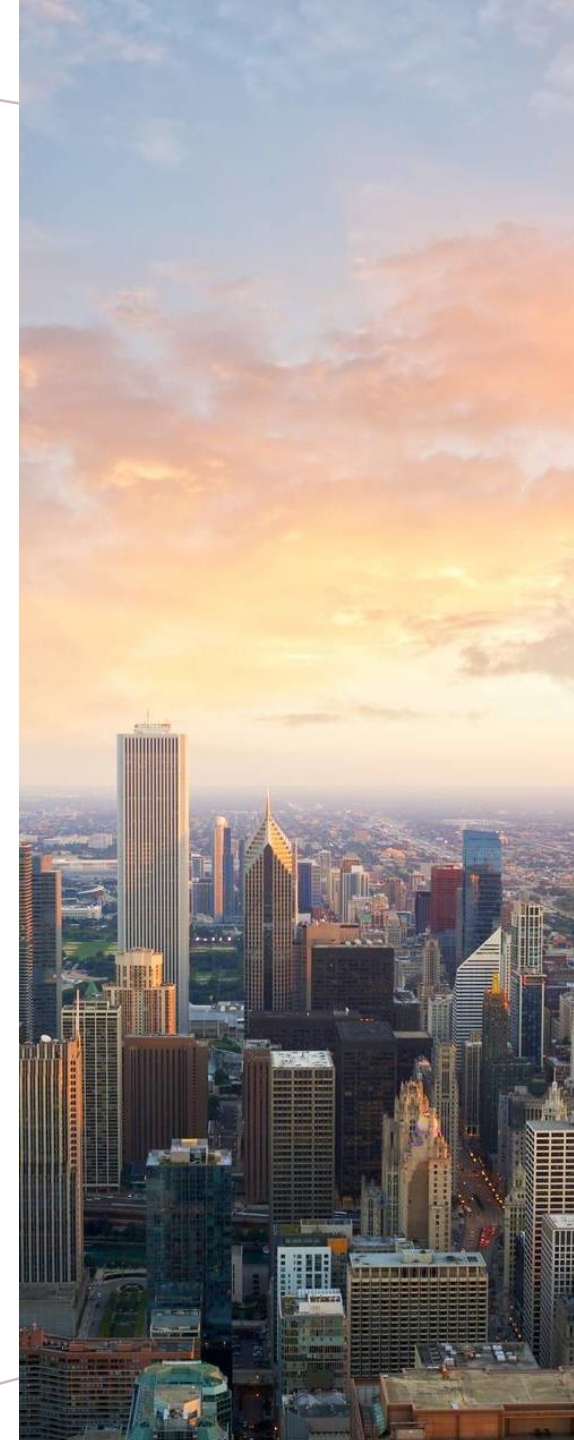
Introduction and my background

Common methods used in the US

Large firm vs small firm

Benefits of the extension of exposures technique

Q&A and discussion



Who am I?

I have 5 years of P&C experience

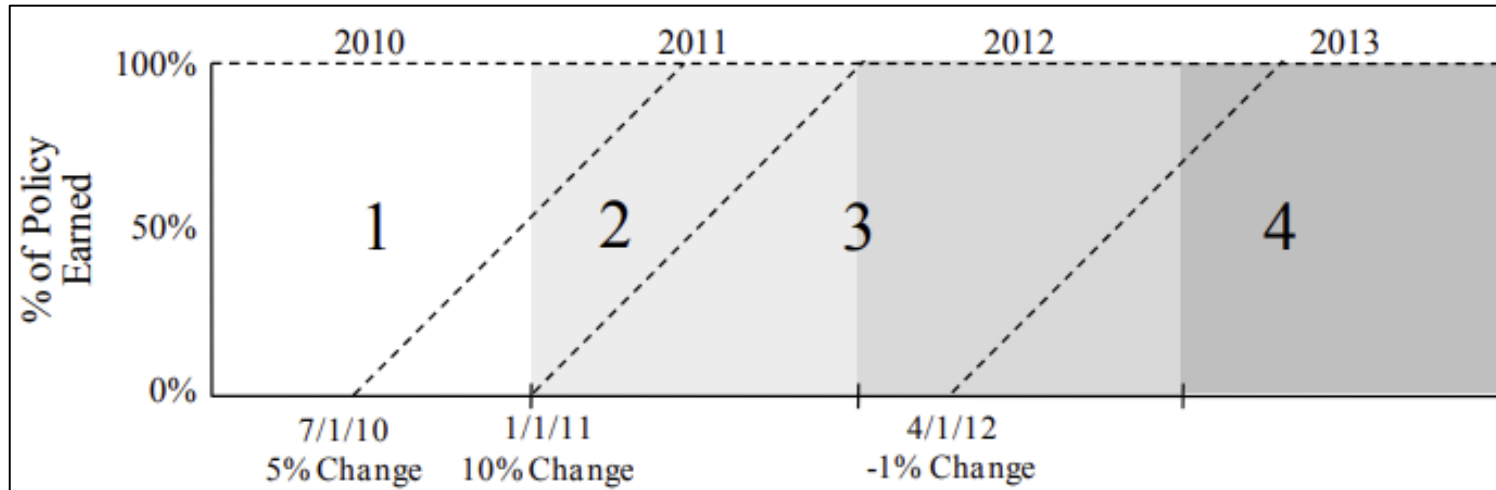
- 3 years at a large firm with 150+ actuaries
- 2 years at a smaller firm with 10 actuaries

I'm currently studying for my last exam

My last 12 months of work have been spent developing an on-leveling program



Parallelogram method



Effective Date	Rate Change	Rate Level
1/1/2010	-	1.000
7/1/2010	5%	1.050
1/1/2011	10%	1.155
4/1/2012	-1%	1.143

Benefits:

- Easy to apply
- Generally acceptable to regulators

Drawbacks:

- Assumes even writing throughout year
 - This is often untrue, particularly in seasonal LOBs
 - Can be mitigated by using smaller periods
- Applies at the aggregate level, assuming the same rate change to all business
 - This is a major shortcoming that has led many firms to abandon it

Extension of Exposures method

Rates and Factors

Class	Old Rate	New Rate
Sedan	1.00	1.00
Truck	1.50	1.75

Territory	Old Rate	New Rate
1	100	100
2	200	180

Calculated Premiums

Policy	Class	Territory	Written Premium	On-Leveled Premium
A	Sedan	1	100	100
B	Truck	1	150	175
C	Sedan	2	200	180
D	Truck	2	300	315

Benefits:

- Most accurate method
- More intuitive

Drawbacks:

- Requires very detailed data
 - The applicable rating characteristics for every policy in the historical period
- Historically it required tremendous computing power
 - This has been less of an issue in recent years
- Use of schedule credits and debits by underwriters makes this method difficult to apply

Large Firm vs Small Firm



- More resources, but more legacy system constraints
- Pricing actuaries are more specialized toward actuarial techniques



- Fewer resources, but more flexible
- Actuaries need a more generalized skillset

Extension of Exposures: Addressing the Downsides

Issue	Remedy
Actuaries must have access to very detailed data	Communication with data management teams to provide data or allow access
Requires computing power to process a lot of data	While less of an issue in recent years, it does require actuaries to be able to use specialized software
Underwriter judgment	Measuring how credit and debit practices have changed by reviewing distributions of debits and credits over recent years

Extension of Exposures: Maximizing the Benefits of Bringing it In-House

Previously mentioned benefits:

- Most accurate method
- More intuitive

Other applications and benefits:

- More accurate estimates of rate changes for regulators and internal customers
- Ability to test granular changes from new calculation methods
- The impact of adding new premium-based coverages can be more easily calculated
- Changes in minimum premiums can be accounted for
- Results in a front-to-back understanding of the algorithm for all actuaries involved



THANK YOU

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Sources:

Werner, G., and Modlin, C., Basic Ratemaking