



Actuarial Professionalism: Considerations Regarding Price Optimization

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What Is the Controversy?

How Controversial?



- Banned in Four States (MD, OH, CA, FL)
- One De Facto Ban (WA)
- NY Gathering Information
- NAIC Studying
- CAS, AAA, ASB

“The Views Expressed by Participants Are Their Own, and the CAS Takes No Position on the Views Expressed. It Is Also the Policy of the CAS that Its Members Should Practice Within the Bounds of Local Laws and Regulations.”

What Is Price Optimization?

***Definitions Vary Substantially With
Respect to Its Use in Insurance***

- NAIC (Draft)—“...the advent of **sophisticated data mining tools** and pricing models have allowed actuaries to provide **more objective, quantitative information** about the judgmental aspects of the rate-setting process instead of relying primarily on anecdotal evidence as has been the case in the past. This process is now referred to as “price optimization.”

■ Earnix (P.O. Vendor):

- ◆ “systematic and statistical method to help an insurer estimate a rating plan factoring in a competitive environment.”
- ◆ “using mathematical algorithms to determine optimal values of rating factors to meet business goals and constraints.”

■ Maryland:

- ◆ “...[V]arying rates based on **factors other than risk of loss**, including, but not limited to:
 - a) The likelihood that a policyholder will engage in activities that result in policy turnover; and
 - b) The willingness of a policyholder to pay a higher premium compared to other policyholders.”

■ Ohio:

- ◆ “While price optimization has no absolute definition, it generally refers to an insurer’s practice of **varying premiums based upon factors that are unrelated to risk of loss in order to charge each insured the highest price that the market will bear.**”

■ Florida:

- ◆ “...a process for modifying the insurance premium that would otherwise be charged to an insured or class of insureds in order to **maximize insurer retention, profitability, written premium, market share,** or any combination of these while remaining within real world constraints.”

■ California:

- ◆ “...any method of taking into account an individual’s or class’s **willingness to pay a higher premium** relative to other individuals or classes.”

■ New York:

- ◆ “...the practice of varying rates based on **factors other than those directly related to risk of loss**, for example, setting rates or factors based on an insured’s likelihood to renew a policy or on an individual’s or class of individuals’ perceived willingness to pay a higher premium relative to other individuals or classes”

Do Other Industries Use Price Optimization?

***Yes, Consistent with Basic
Microeconomic Principles Related to
Supply and Demand***

Insurance Is Not Priced Like Water – Or Most Consumer Products

1.4 Cents
Per Ounce
(\$5.49 for
24 Bottles)

Insurers
Don't Do
This



5.9 Cents
Per Ounce
(\$23.76 for
24 Bottles)



320% Price Difference. Does It Cost \$18.25 to Unpack the Bottles and Keep Them Cold? Insurers Do Not Price Like This.

Differences Between Pricing Insurance, Other Products

Pricing Water (for example)

- It's cold – charge more.
- It's near the front of the store – charge more.
- It's easy to carry – charge more.
- It's Memorial Day – charge *less*.
- “What the market will bear.”

None of These Are Related to Projected Expenses

Pricing Insurance

1. Expected value of future costs
2. Provides for all costs of risk transfer
3. Provides for all costs of individual risk transfer
4. Reasonable rate estimates all future costs of risk transfer

SOURCE: CAS Statement of Ratemaking Principles (1988).

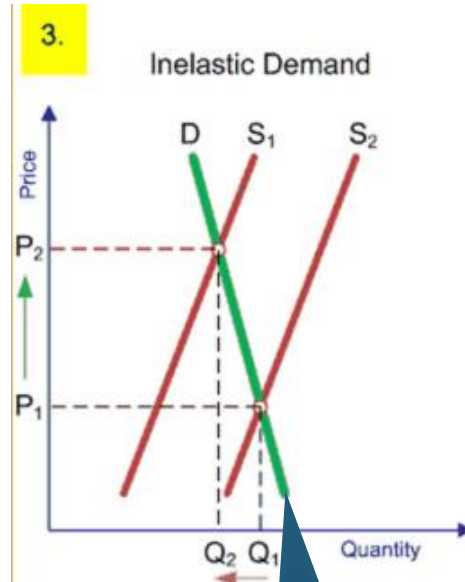
All of These Are Related to Projected Expenses

For Most Products, Supply and Demand Set Price—But Not In Insurance. Insurance Rates Are Tied to Loss, Expense.

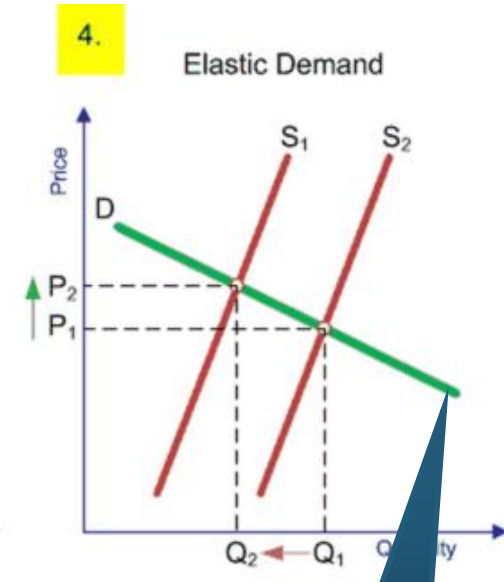
Econ 101: Determination of Supply and Demand

Elasticity of Demand

- Econ 101: How Much Will Sales Fall If Price Rises?
- Steep Demand Curve → Consumer Doesn't Care Much If Prices Rise
- Companies that Understand Demand for their Products Have a Competitive Advantage
- Many industries are characterized by rapid and frequent price changes over time and/or across consumer segments;
...But Not Insurers



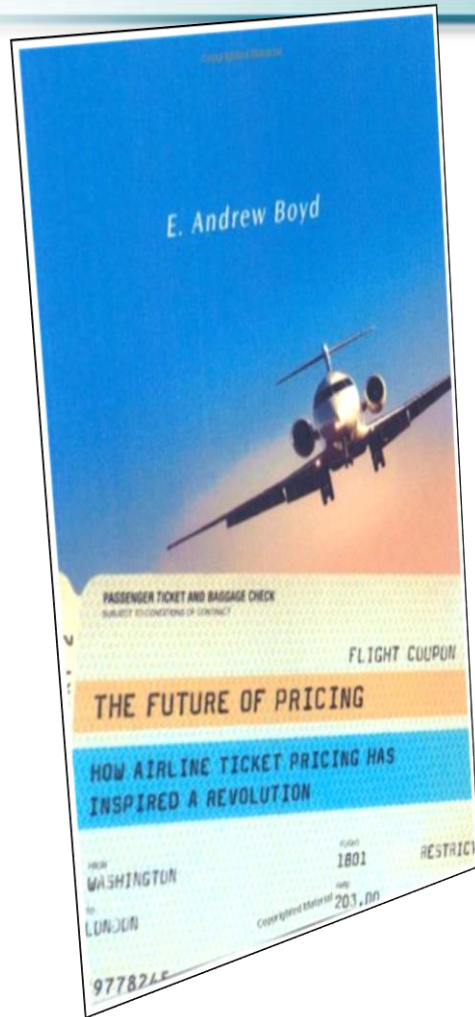
Example:
Gasoline



Example:
Shell
Gasoline

Now Many Non-Insurance Companies Use Very Sophisticated Computer Algorithms to Model Elasticity of Demand.

Other Industries Routinely Change Prices on a Near Continuous Basis



- Computer-Driven Dynamic Pricing Sets Rates for:
 - ◆ Hotels
 - ◆ Airline Tickets
 - ◆ Uber Rides

- Prices Change
 - ◆ Weekly
 - ◆ Daily
 - ◆ *Instantaneously*

Outside Insurance, Companies Often Vary Prices Tremendously – Across Customers and Over Time

Have Insurers Always Optimized Prices?

Do Rates Always Adhere to Projected Loss?

Disposition

Disposition Date: 03/11/2015
 Effective Date (New): 05/01/2015
 Effective Date (Renewal): 05/01/2015
 Status: Approved

Comment:

| Company Name: | Overall % Indicated Change: | Overall % Rate Impact: | Written Premium Change for this Program: | Number of Policy Holders Affected for this Program: | Written Premium for this Program: |
|---------------|-----------------------------|------------------------|--|---|-----------------------------------|
| | 5.700% | 2.600% | \$169,000 | 632 | \$6,483,000 |
| | 17.400% | 2.600% | \$898,000 | 3,649 | \$34,492,000 |
| | -3.800% | 3.400% | \$1,859,000 | 15,942 | \$54,331,000 |
| | -6.300% | 3.200% | \$170,000 | 1,071 | \$5,284,000 |
| | 7.500% | 2.700% | \$955,000 | 5,793 | \$35,290,000 |

Overall Rate Information for Multiple Company Filings

Overall Percentage Rate Indicated For This Filing

Overall Percentage Rate Impact For This Filing

Effect of Rate Filing-Written Premium Change For This Program

Effect of Rate Filing - Number of Policyholders Affected

4.500%
 3.000%
 \$4,051,000
 27,087

Companies Rarely Take the Indicated Rate, Often Charging Less

Regulators Are Generally OK With That.

REDACTED

Sources: System for Electronic Rate and Form Filing (SERFF) via SNL Financial; Insurance Information Institute.

Is That Acceptable in the Actuarial Profession? Does Current Practice Conform to Ratemaking Principles?

Other Adjustments (Optimizations?)

By the Insurer

- ◆ Young Drivers Undercharged – Don't Want to Lose the Parents (Class Plan)
- ◆ Implementation of New Class Plan – Minimize Rate Shock (Individual)
- ◆ Post-Merger Rate Stabilization Factor (Individual)

Insurers Have. . .

- ◆ Infrequent (Annual) Rate Changes
- ◆ Traditionally Optimized in Tiny Adjustments Compared to Many Other Industries
- ◆ Charged Less Than Indicated in Vast Majority of Cases

Insurers Have Been Adjusting Rates for Reasons Unrelated to Loss for Decades – Usually Charging Less Than Indicated. Was That Wrong? Regulators Generally Approved of It.

By Government

- ◆ Proposition 103 (20% Rate Rollback) - 1988
- ◆ Flood Insurance (18% Cap on Rate Increases) - 2014
- ◆ Limit/Ban on Age/Gender As Rating Variable (~Seven States) – Ongoing
- ◆ Caps on Rate Changes in State-Run Pools and Plans

Government Mandated Adjustments Often Unrelated to Expected Loss – Generally Charging Less than Actuarially Indicated Rates.

Proponents

- It's Not, Except Software Replaces Subjective Process
 - ◆ May Make Rates More Stable
- Allowed Under Current Actuarial Standards of Practice [Statement of Principles?]

Opponents

- Harms Customers, Particularly Those Who Shop Less
 - ◆ Renewals and the Poor
- Conflicts With State Rating Laws
 - ◆ 'Not to Be Excessive, Inadequate, Unfairly Discriminatory'

Each Side Has Counterarguments, of Course.

- The principles in this Statement are **limited to that portion of the ratemaking process involving the estimation of costs** associated with the transfer of risk.
- “Ratemaking should provide for the costs of an individual risk transfer **so that equity among insureds is maintained.**” (Reasonable, not excessive, not inadequate, not unfairly discriminatory)
- Justification Via Considerations?
 - ◆ Mix of Business – “...distributional changes in deductibles, coverage limitations or type of risks **that may affect the frequency or severity of claims.**”

■ Justification Via Considerations?

- ◆ Operational Changes – “Changes in the **underwriting process**, claim handling, case reserving and marketing practices that affect the **continuity of the experience**.”
- ◆ Other Influences – “The impact of external influences **on the expected future experience** should be considered. . .”
(seems to focus on residual markets, etc.)
- ◆ Actuarial Judgment – “...may be applied throughout the ratemaking process...”

■ § IV. Conclusion

- ◆ “The actuary, by applying the ratemaking principles in the Statement, will derive an estimation of the future costs associated with the transfer of risk. **Other business considerations are also a part of ratemaking.**” [U/W, Marketing, Law, Claims, Etc.]

Reality:
It's A
Static
Model.

■ Of Course, These Are the Old Principles . . .

- Statement of Ratemaking Principles Is Changing
 - ◆ Distinguish Between Principles (Worldwide) and Practices (Country-specific)
 - ◆ Separate Estimation of Rate From Setting of Rate
- ASB Developing U.S. Standard of Practice

CURRENT: *Ratemaking is the process of establishing rates used in insurance or other risk transfer mechanisms.*

PROPOSED: *Ratemaking is the process of establishing future costs associated with the transfer of risk in insurance or other risk transfer mechanisms.*

Distinguishes
Between
Technical
Price, “Street
Price”

Current Principles

- 4 Sections – Definitions, Principles, Considerations, Conclusion

Proposed Principles

- 3 Sections (Considerations Moved to Standards of Practice)

CURRENT/PROPOSED: *The actuary, by applying informed actuarial judgment and the ratemaking principles in this Statement, will derive an estimation of the future costs associated with the transfer of risk. Other business considerations are also a part of ratemaking insurance pricing.*

Replaces
'Ratemaking' With
'Insurance Pricing'

Some are dismayed

"...dismantling the cost-based standard as the bedrock of the actuarial profession . . .

"It is shocking to me as a Fellow of the CAS that the Society would propose a set of principles that [implies actuaries] not only have no impact on the prices that policyholders will pay, but acts to remove the actuary from the central role she has in ratemaking today."

- J. Robert Hunter, Consumer Federation of America

But For Reserving Actuaries, The Distinction May Sound Familiar.

Reserving Principles Have Already Undergone a Similar Change

Old Statement (1988-2014)

- Statement of Principles Regarding Property and Casualty *Loss and Loss Adjustment Expense Reserves*

New Statement (May 2015 – Present)

- Statement of Principles Regarding Property and Casualty *Unpaid Claims Estimates*

Old Principles

- 4 Sections – Definitions, Principles, Considerations, Conclusion

New Principles

- 3 Sections (Considerations Moved to Standards of Practice)

Implicit Is the
Difference
Between Estimate
and Booked

OLD: *A loss reserve is a provision for its related liability.*

NEW: *Unpaid Claims Estimate: An actuary's estimate of the unpaid amount required to make the future loss and/or loss adjustment expense payments related to a defined group of claims*

CAS on Unpaid Claims Estimates

- “The principal objective of revising the original Principles was to update them and to revise them where necessary to contain principles only, not standards of practice.”
- “This newly adopted Statement is not intended to provide prescriptive practice guidance to actuaries. Such practice guidance for actuaries has been developed in the U.S., for example, by the Actuarial Standards Board (U.S.) in the form of Actuarial Standards of Practice.”

The Same Reasoning Applies to Ratemaking in the Draft Principles.

■ Ratemaking Principles

- ◆ Current <http://casact.org/professionalism/standards/princip/sppcrate.pdf>
- ◆ Proposed http://www.casact.org/professionalism/SoP-Ratemaking-Discussion-Draft_October2014.pdf

■ Ratemaking Standards (Exposure Draft)

http://www.actuarialstandardsboard.org/wp-content/uploads/2014/12/Ratemaking_expsoure_draft_sept2014.pdf

■ Reserve Principles

- ◆ Old <http://casact.org/professionalism/standards/princip/sppcloss.pdf>
- ◆ New http://www.casact.org/professionalism/standards/princip/SOP-Regarding-Property-and-Casualty-Unpaid-Claims-Estimates_Final%204-22-2015.pdf

- Price Optimization Is A Controversial Activity.
 - ◆ Much Depends on How Term Is Defined.

- Ratemaking Principles Are Changing. Reserving Principles Changed.
 - ◆ Removing Nation-Specific Guidance.
 - ◆ Bedrock CAS Principles Apply Everywhere
 - ◆ Practice Guidelines Tend to Be Nation-Specific (ASB in US)

- Don't Break the Law
If the CAS Principle Changes, It's Still the Law in Many (Most?) States.

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***Thank you for your time
and your attention!***

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