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GENERAL INSURANCE PRICING SEMINAR

13 JUNE 2008, LONDON

PRACTICAL PRICING FOR COMMERCIAL LINES AN INTRODUCTION

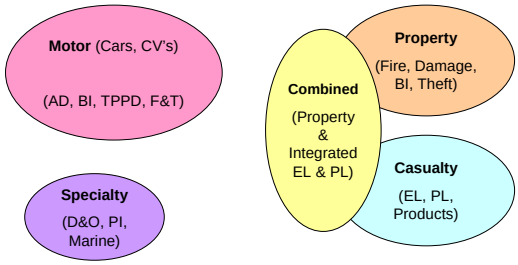
Martin Cross

Characteristics of Commercial Lines

- Very wide product range
- Policies of widely varying sizes
- Much less homogeneity, especially larger risks
- More difficult to establish average exposure rates
- Huge amount of data collected – but little makes it into systems
- Underwriter will have final say on price
- Underwriter will adjust 'average' rates to reflect individual risk characteristics

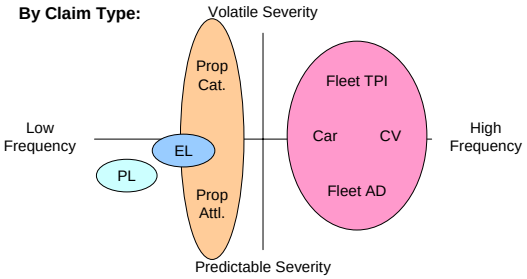
Types of Commercial Lines Product

By Lines of Business:



Type of Commercial Lines Product

By Claim Type:



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Type of Commercial Lines Product

By Method of Rating:

- Exposure (Book) rated – Usually Small
- Experience rated – Usually Large
- Blended (book & experience):
  - Claims modified exposure
  - Full credibility blending

Note that method is usually directly related to size of risk

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Type of Commercial Lines Product

By Type of Policy:

- Off the shelf standard
- Standard but modified by endorsement
- Standard with modifications
- Bespoke

Note that complexity is usually directly related to size of risk

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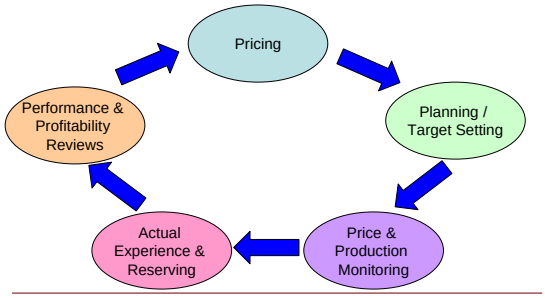
Pricing is only one aspect of the Control Cycle



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Pricing Commercial Lines

Additional Background Reading:

- Highly recommend 1997 paper from previous Working Party (The Premium Rating of Commercial Risk, Michaelides et al) presented at Blackpool GIRO
- It's surprising how little has changed over the last 11 years!
- Also of interest are the 2007 GIRO paper "How Life Can Go Badly Wrong and What Lessons We Can Learn", Widdows et al, and several articles in The Actuary

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Technical Price

- Regardless of where we believe we are within the insurance cycle businesses (actuaries?) should calculate the price that ***should*** be charged to achieve the business objectives (Technical Price)
- This serves as a benchmark from which underwriters can start their pricing process
- Separately calculate the different components of premium, even if exposure (book) rating

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Technical Price

Establish values for:

- Expected cost of claims:
  - Attritional Claims
  - Large Claims
  - Catastrophic Claims
- Load for Profit Share
- Discounting effect
- Loading for Profit
- Expenses
  - Fixed
  - Variable
  - Claims Handling
  - Levies
  - Commission
  - Cost of reinsurance

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Pricing Formula

Combine the various components of Price by using a formula similar to the following:

$$P = \frac{\text{(Discounted Claims + Per Policy Loadings)}}{\text{(1 - Commission – Premium related Loads)}}$$

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Estimating Claims Costs - Attritional

- Attritional claims from:
  - Exposure rates (using rating factors only), or
  - Exposure rates modified by reference to actual claims experience (e.g. NCD), or
  - Exposure rates blended with actual experience, or
  - Actual experience projected forward
- Dependent upon U/W characteristics e.g. size or volatility of claims
- Identifying appropriate exposure measure very difficult for some risks (e.g. PL and Property Damage)
- Less homogeneity within C/L risks, underwriters may want to amend projections to allow for un-modelled elements of the risk (subjective judgement), should only reflect characteristics of the insured, not experience

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Attritional Claims - Credibility Blending

- Take account of actual policy experience by blending projected claims experience with expected (book) cost of attritional claims
- Credibility is actually a measure of trust in book rates, not of the experience
- Use appropriate credibility method (e.g. Bühlmann-Straub, Bayes etc.)
- Excellent papers on credibility theory, especially on CAS website
- Credibility of experience should depend on size of risk, or numbers of claims, or both
- Easier to apply in high-frequency LoB's
- Takes 'guesswork' out of underwriter pricing by effectively giving them the return period of claims experienced
- Can be a proxy for inadequate book rates

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Estimating Claims Costs - Large

NB Underwriters may be inclined to ignore large claims ("It won't happen again") and not load anything when no large claims have occurred!

- Large claims usually estimated from:
  - Exposure rates independent of attritional claims projections, possibly with one or two rating factors, or
  - Exposure rates modified by actual experience
- Rarely derived from experience
- May use ILF curves – should these apply to exposure rates or blended attritional claims costs?

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Estimating Claims Costs - Catastrophic

- Not just weather related (property & motor) but could also include latency and pollution in liability
- Catastrophic claims will usually require a fixed loading per policy/exposure i.e. not dependent upon the individual policy characteristics, as such claims are invariably fortuitous and could affect anyone equally.
- They are as difficult to price in C/L as they are in P/L!
- In Property, Construction is every bit as important as location when quantifying storm risk

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Loading for Profit Share

- Many Commercial arrangements include Profit Share
- Where this is aggregated across policies an appropriate loading is required to offset cross-subsidies
- It is not only paid out of 'surplus profit'!
- Model the distribution of policy loss ratios

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Discounting Allowance

- Allows for mean payment term of claims
- Investment income rate should reflect expected mean term and investment policy
- Could be same factor for all policies of that class or may derive an allowance based on individual risk parameters
- Also allow for premium payment terms

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Loading for profit

- Should be a Return on Capital Employed basis to reflect relative riskiness
- Need to estimate appropriate capital (use a risk based capital approach consistent with business capital allocation methodologies)
- Technical Price should use a return consistent with business expectations across the cycle
- Actual (or target) price may use a different figure consistent with short-term expectations or targets

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Expenses

- Investigate all internal and external expenses to determine appropriate loads for each type of business:
  - Claims handling (may be proportion of claims costs or related to expected claim frequency)
  - Per policy (not dependent on size e.g. issuance)
  - Variable:
    - Dependent upon size but not premium
    - Dependent upon actual premium (e.g. levies, commissions)

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Expenses - Reinsurance

- Claims costs may be estimated up to the reinsurance attachment points and then the costs of reinsurance should be added on top:
  - This may be the actual cost of reinsurance, or
  - This may be the expected ('average') medium-term cost of the reinsurance programme
- Alternatively claims costs could be estimated fully gross (i.e. up to the limits of indemnity). In this case, if reinsurance is purchased an expense equal to the expected cost of placing reinsurance (reinsurer's profit and expenses) must be included within the expense loads.

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Price to market

- The previous slides all relate to **'Technical Price'**
- This is what we'd like to charge to achieve stable returns, but rarely will the market allow us to achieve it
- It is an important benchmark against which achieved (or target) premiums can be measured
- As such, it is imperative that underwriters resist the urge to modify Technical Price to justify the achieved premium

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Price to market

- Market price may have different profit loadings
- It may also reflect marginal expenses rather than full loadings i.e. better to cover some expenses and write the business than not write it at all
- This is why it is important to separate them in the pricing formula
- Underwriters and/or sales teams should be allowed to monitor achieved prices to the Technical Price across the portfolio under their control as there will be a wide spread of credits and debits against the expected cost, but it will usually be possible to offset these across the account

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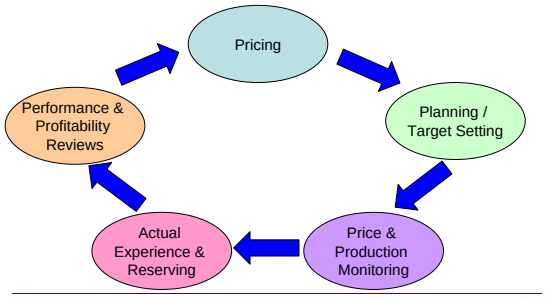
Pricing is only one aspect of the Control Cycle



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Price Monitoring

- Because of the wider spread of actual prices relative to expected it is vital that essential price monitoring is put in place to ensure adequate pricing across the portfolio, examples include:
  - Achieved price against benchmarks
  - Achieved change in rating strength
  - Production metrics (quote rates, hit rates, lapse rates)
  - Performance relative to expected (loss and/or combined ratio, frequency, severity)

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Pricing Tools

- As pricing gets more technical there is a need to supply underwriters (or sales teams) with more sophisticated rating tools
- These should link into base administration systems (double-keying is to be avoided)
- These are also important to improve data capture for future improvement
- Underwriters should be adequately trained in tool utilisation, including an understanding of technical basis of the tools

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Pricing Tools

- Also require:
  - Price and Production monitoring tools as defined earlier
  - Performance monitoring tools to show deviations from expected performance to enable proactive rate changes
  - Portfolio optimisation tools to maximise returns (not so easy in C/L as persistency is less easily determined)
  - Feeds into Reserving process as a-priori loss ratios
- Linking these to the business plans would be a sound base for overall business management

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