Ratemaking Methods in Insurance Operations Part 2

Factors to Consider When Developing Credible Premiums

Factors to Consider in the Delay of Data Collection and use of Information:

Delays in reflecting loss experience in premium rates stems from the following sources:

1. Policyholder delay in reporting loss to an insurer

2. Time required to analyze claim data and prepare a rate filing

3. Delay in state approval of filed rates

4. Time required to implement new rates

5. Time period during which rates are effective-usually a year, but with some policies 2 to 3 years

6. Difference in time between policy year versus calendar year reporting
   of claims and premium income

7. Difference in policy claims experience based on either claims made
   versus occurrence based underwriting

Other Factors that May be Particularly Relevant

1. The Economic impact of inflation on claims cost
2. Legislative and regulatory changes --- tax law, underwriting
   requirements
3. Insurer projected expenses may not be stable over time, and are
    also subject to inflation

Ratemaking Methods Available to Insurance Actuaries

Casualty Insurers commonly use the following 3 ratemaking
Methods

1. Pure loss Premium Method
    Calculate the pure risk premium
    Estimate the expenses per exposure unit
    Determine the profit and contingent factor loading
    Add the pure premium and the expense provision and divide
    by one minus the profit and contingencies factor loading

2. Loss Ratio Method
    Adjust the existing insurance rate either upward or downward
    to reflect changing loss experience
    In its simplest form, this method uses two loss ratios –
        (1) the actual loss ratio and (2) the expected loss ratio

Example of the Loss Ratio Method:

Actual Loss Ratio === Incurred Losses/Earned Premiums

Expected Loss Ratio =   100% - Expense Provision [Loading %]

Rate Change = [Actual Loss Ratio – Expected Loss Ratio]/ Expected loss Ratio

The rate change can be either + or -   ===➜   - reduce rate   + increase rate

3. Judgment Making Method
   The older traditional method where underwriters determine rates primarily
   on the basis of their experience and judgment.   May be used when there
   is only sparse information ---- appears to be still used in inland and ocean
   marine insurance [super tankers, aviation, communication coverages].

Rate Making Development
  Steps to the Process:
    (1) Collect Data   (2) Adjust Data
    (3) Determine Territorial and Class Relativities
    (4) Prepare Rate Filings and Submit Rate Filings to State ins. Commissioners

1. Collect Data --- 3 Methods

(1) Policy-Year Data Collection – Involves analyzing earned premiums, exposure units and incurred losses associated with a particular group of policies that were issued within a specific 12 month period ---- this is a seriatim method.

(2) Exposure units, incurred losses and allocated loss adjustment expenses are linked to the policies and exposure units attached to the specific group of insureds in the study.

The policy-year method is the only ratemaking data collection technique that explicitly matches losses, premiums and exposure units to a set group of insureds.

There are however, 2 disadvantages to this method:
   (1) It takes longer to gather data than for a calendar-year or accident-year method
   (2) There is additional expense to gather data that are used only for ratemaking.   The data used for the competing methods are gathered as a byproduct of the insured's accounting operations. One factor that has significantly reduced the strength of this argument is the increasing role of MIS in insurance operations --- computerized recordkeeping overcomes this argument once you've amortized the fixed costs of automation.

2. Calendar-year Data Collection: Involves analyzing data that are used for
   accounting purposes.

   Rates are calculated from the following existing accounting data:
     Written Premiums
     Unearned Premium Reserves =
           Starting year Reserve + Written Premiums for the Year
           - Unearned Premiums at the End of the Year

     Losses =
       Loss Paid During the year [regardless of when they occurred]
       + Changes in Reserves [for all years' losses current and prior]
           {where changes in reserves = Total Reserves year-end
                                             - Total Reserves at Beginning
                                                 of the Year}

2 Disadvantages ➔ Accounting records do not contain exposure data and
                   the method is least accurate in terms of assigning
                   claims to premiums and experience

Accident –year Data Collection: calculates incurred losses for a given period using all losses and claims arising from insured events that occur during that period --- usually the calendar year for the insurer

For a given year, earned premiums are calculated the same ways as the calendar year method, but losses for all accidents that happen in that period are considered as the claims for the study.

2 Disadvantages ➔ Neither earned premiums nor incurred losses are tied directly to a specific group of policyholders, and accident-year data are slightly more expensive to compile than calendar year data collection.