PRINCIPLES OF RISK MANAGEMENT AND INSURANCE

CLASS NOTES

Chapter 26 Financial Operations of Insurers

Topics

- Property and Casualty Insurers
  - Financial Statements
  - Measuring Financial Performance
- Life Insurance Companies
  - Financial Statements
  - Measuring Financial Performance
- Ratemaking in Property and Casualty Insurance
- Ratemaking in Life Insurance

Financial Statements of Property and Casualty Insurers

- Balance Sheet: a summary of what a company owns (assets) and what it owes (liabilities)

Total Assets = Total Liabilities + Owners' Equity

Exhibit 7.1 ABC Insurance Company

ABC Insurance Company Balance Sheet December 31, 2006			
Assets:		Liabilities:	
Bonds	$250,000,000	Loss Reserves	$120,000,000
Common Stock	80,000,000	Unearned Premiums	101,000,000
Real Estate	20,000,000	Loss Adjustment Expenses	14,000,000
Cash & Short-term Investments	12,000,000	Commissions Payable	9,000,000
Mortgage-backed Securities	30,000,000	Other Liabilities	11,000,000
Total Invested Assets	$392,000,000	Total Liabilities	255,000,000
Premiums Receivable	29,600,000	Surplus and Capital	
Data Processing Equipment	400,000	Paid-in Surplus	16,000,000
Other Assets	18,000,000	Unassigned Surplus	169,000,000
Total Admitted Assets	$440,000,000	Total Liabilities and Surplus	$440,000,000

Financial Statements of Property and Casualty Insurers

- The primary assets for an insurance company are financial assets
- Insurers' liabilities include required reserves
- A loss reserve is an estimated amount for:
  - Claims reported and adjusted, but not yet paid
  - Claims reported and filed, but not yet adjusted
  - Claims incurred but not yet reported to the company
- Case reserves are loss reserves that are established for each individual claim
  - Methods for determining case reserves include:

- The judgment method: a claim reserve is established for each individual claim
- The average value method: an average value is assigned to each claim
- The tabular method: loss reserves are determined for certain claims for which the amounts paid depend on data derived from mortality, morbidity, and remarriage tables

- The loss ratio method establishes aggregate loss reserves for a specific coverage line
  - A formula based on the expected loss ratio is used to estimate the loss reserve
- The incurred-but-not-reported (IBNR) reserve is a reserve that must be established for claims that have already occurred but that have not yet been reported
- The unearned premium reserve is a liability item that represents the unearned portion of gross premiums on all outstanding policies at the time of valuation
  - Its purpose is to pay for losses that occur during the policy period
  - It is also needed so that refunds can be paid to policyholders that cancel their coverage
  - It also serves as the basis for determining the amount that must be paid to a reinsurer for carrying reinsured polices
  - The annual pro rata method is one method of calculating the reserve

Financial Statements of Property and Casualty Insurers

- Policyholders' surplus is the difference between an insurance company's assets and liabilities
  - The stronger a company's surplus position, the greater is the security for its policyholders
- The income and expense statement summarizes revenues and expenses paid over a specified period of time
- The two principal sources of revenue are premiums and investment income
  - Earned premiums are those premiums for which the service for which the premiums were paid (insurance protection) has been rendered
- Expenses include the cost of adjusting claims, paying the insured losses that occurred, commissions to agents, premium taxes, and general insurance expenses
- The loss ratio is the ratio of incurred losses and loss adjustment expenses to premiums earned $Loss\ Ratio = \frac{Incurred\ Losses + Loss\ Adjustment\ Expenses}{Premiums\ Earned}$
- The expense ratio is equal to the company's underwriting expenses divided by written premiums $Expense\ Ratio = \frac{Underwriting\ Expenses}{Premiums\ Written}$
- The combined ratio is the sum of the loss ratio and the expense ratio. A positive ratio indicates an underwriting loss

Measuring the Performance of Property and Casualty Insurers

- The investment income ratio compares net investment income to earned premiums

$$Investment\ Income\ Ratio = \frac{Net\ Investment\ Income}{Earned\ Premiums}$$

- The overall operating ratio is equal to the combined ratio minus the investment income ratio
  - This ratio measures the company's total performance (underwriting and investments)

Financial Statements of Life Insurers

- The balance sheet
  - The assets of a life insurer have a longer duration, on average, than those of property and casualty insurers
  - Because many life insurance policies have a savings element, life insurers keep an interest-bearing asset called "contract loans" or "policy loans"
  - A life insurance company may have separate accounts for assets backing interest-sensitive products, such as variable annuities
- Policy reserves are a liability item on the balance sheet that must be offset by assets equal to that amount
  - State laws specify the minimum basis for calculating policy reserves
- The reserve for amounts held on deposit is a liability representing funds that are owed to policyholders and to beneficiaries
- The asset valuation reserve is a statutory accounting account designed to absorb asset value fluctuations not caused by changing interest rates
- Policyholders' surplus is less volatile in the life insurance industry than in the property and casualty insurance industry
- Benefit payments, including death benefits paid to beneficiaries and annuity benefits paid to annuitants, are the life insurer's major expense
- A life insurer's net gain from operations equals total revenues less total expenses, policyowner dividends, and federal income taxes

Ratemaking in Property and Casualty Insurance

- A rate is the price per unit of insurance.
- An exposure unit is the unit of measurement used in insurance pricing, e.g., a car-year
- The pure premium is the portion of the rate needed to pay losses and loss adjustment expenses
- Loading is the amount that must be added to the pure premium for other expenses, profit, and a margin for contingencies
- The gross rate consists of the pure premium and a loading element
- The gross premium paid by the insured consists of the gross rate multiplied by the number of exposure units
- There are three basic rate making methods in property and casualty insurance:
  - Judgment rating means that each exposure is individually evaluated, and the rate is determined largely by the judgment of the underwriter

- Class rating means that exposures with similar characteristics are placed in the same underwriting class, and each is charged the same rate
- Class rates are determined using two basic methods:
    - Under the pure premium method, the pure premium can be determined by dividing the dollar amount of incurred losses and loss-adjustment expenses by the number of exposure units
    - Under the loss ratio method, the actual loss ratio is compared with the expected loss ratio, and the rate is adjusted accordingly
- Merit rating is a rating plan by which class rates are adjusted upward or downward based on individual loss experience
    - Under a schedule rating plan, each exposure is individually rated
        - A basis rate is determined for each exposure, which is then modified by debits or credits depending on the physical characteristics of the exposure
        - Commonly used in commercial property insurance
    - Under experience rating, the class or manual rate is adjusted upward or downward based on past loss experience
        - The insurer's past loss experience is used to determine the premium for the next policy period
    - Under a retrospective rating plan, the insured's loss experience during the current policy period determines the actual premium paid for that period
        - A provisional premium is paid at the beginning of the policy period; the final premium is calculated at the end of the policy period
        - Commonly used in workers compensation insurance

Ratemaking in Life Insurance

- Life insurance actuaries use a mortality table or individual company experience to determine the probability of death at each attained age
- The annual expected value of death claims equals the probability of death times the amount the insurer must pay if death occurs

Exhibit 7.2 ABC Insurance Company

ABC Insurance Company
Income and Expense Statement
January 1, 2006–December 31, 2006

Revenues:			
Premiums Written*	$206,000,000		
Premiums Earned		$205,000,000	
Investment Income:			
Interest	14,000,000		
Dividends	2,400,000		
Rental Income	600,000		
Gain on Sale of Securities	1,000,000		
Total Investment Income		18,000,000	
Total Revenues			$223,000,000
Expenses:			
Net Losses Incurred	133,600,000		
Loss Adjustment Expenses	14,000,000		
Total Losses and Loss Adj. Expenses		147,600,000	
Commissions	18,000,000		
Premium Taxes	5,050,000		
General Insurance Expenses	41,590,000		
Total Underwriting Expenses		64,640,000	
Total Expenses			212,240,000
Net Income Before Taxes			10,760,000
Federal Income Tax			3,260,000
Net Income			7,500,000

*Premiums written reflect coverage put in force during the accounting period.

End./.