

Contractual Saving Institutions: Insurance Companies

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General background on insurance

Life insurance companies

- Products and their evolution
- Performance
- Income sources: banks vs insurance companies
- Balance sheets
- Asset management

Property and casualty companies

- Types
- Underwriting cycle
- Performance
- Balance sheet

Insurance regulation

Who Are the Contractual Savings Institutions?

Insurance Companies

- Life
- Property and Casualty
- Health

Pensions

- Defined contribution plans
- Defined benefit plans

Life insurance firms are also major providers of pension plans.

Pension Funds and Life Insurance Companies

Pension products provided by life insurance companies are separate from their insurance activities

Effects of these pension products are reflected in

- Growth and relative importance of the various sources of premium income for life companies
- The size of the balance sheets of life companies, since pension fund reserves are the major liability of life companies

This topic covers the insurance products of life insurance companies

A subsequent topic covers pension products

Life Insurance Companies and Health Insurance

This section does not cover health insurance in detail. Rather, it offers only some summary comments.

Health insurance is basically a third part method of paying for medical care.

- As such, insurance companies involved in health care insurance are processor of claims.
- It is an important business line for many life insurance companies. Insurance companies write about 59% of health insurance premiums

In addition to life insurance companies, health insurance is provided by such private organizations as:

- Blue shield-Blue Cross organization
- Health Maintenance Offices
- Preferred Provider Organizations

These other writers of health insurance are NOT considered insurance companies and are NOT regulated as insurance companies

General Background on Insurance

Benefit:

- Risk is transferred to institutions better able to manage the associated risk
- Reduces society's cost of risk
- Uncertainty (chance of financial loss) is exchanged for a known premium

Risks Faced by Insurers

Objective Risks

Deviation between the actual loss and the expected loss

Law of large numbers plays a role in determining objective risk

- The larger the number of loss exposures, the more predictable becomes the average loss

Profitability depends, among other things, on the success of predicting losses. For the profitable, objective loss is small

Risk reduction entails reducing objective risk or the difference between expected and actual loss

Three procedures help

- Try to prevent losses
- Assure probability of individual loss is average
- Deductibles and other risk sharing techniques

General Structure of Insurance Companies

Organization

Stock

Mutual-fewer due to demutualization

- Largest demutualization in recent years: John Hancock and Prudential

Size

Here, too, large organizations dominate the field

P/C: State Farm Mutual

Life Insurance Companies

Life Insurance Products

Insurance Only

Term Insurance

Insurance and Investment Products

Fixed investment return

Whole Life

Performance-based return

Universal life

Variable life

Universal variable life

Investment Only

Annuities

Fixed

Variable

Evolution of Life Insurance Products

Until 1975, only choice was term and whole life insurance

- BUT: investment return in whole life did not keep pace with the inflation of the 1970s

Results: new customers unbundled their insurance premiums

- Purchased term insurance
- Invested or spent the difference between the term and the whole life premiums

Result: existing policy holders also responded to low yields on the investment portions of whole life policies

- Policy loans
- Policies lapses

Effect:

- Premium portion of industry's cash inflow deteriorated

Industry response:

- Performance based return on the investment portion of bundled contracts
 - 1975: Variable Life
 - 1979: Universal Life
 - 1985: Variable-Universal Life

Operational Consequences of Increased Customer Sophistication

Management had to place more emphasis on performance, since yield was the key to product differentiation among insurers

Policies were expensive to service which squeezed net underwriting margins

- Market rates are paid on accumulated premiums
- This led to higher contribution to reserves

Cash flow in and out was less predictable, increasing the need for accurate liquidity management

Net Underwriting Income

Revenue

- Premium payments
- Gross investment earnings
- Other income

Expenses

- Benefits payments
- Addition to policy rese
- Operating expenses
 - Commission
 - Office Expenses
- Investment Expenses

Taxes

Net income

Dividends to stockholders for stock-owned firms

Addition to capital or surplus

NUI = premium income less policy expenses

This can be expressed as a margin

$$NUM = \frac{\text{premium income} - \text{policy expenses}}{\text{assets}}$$

Premium income must be large enough to pay operating expense and earn an acceptable return for shareholders (stock-owned) or policy holders (mutually-owned) firms

Typically NUI is too small to accomplish these objectives, so additional income is needed:

INVESTMENT INCOME

Sources of Premium Income

Life insurance premiums

Health insurance premiums

Annuity considerations

Annuity sales have increased dramatically as a source of premium income to life insurance companies

Annuities are sold as retirement vehicles to individuals and through group contracts

Shift in Business Lines at Life Companies From Balance Sheet of Life Insurers

Liabilities-Flow of Funds Basis

	4Q1975	4Q1985	4Q1995	4Q2005	3Q2006
Total Liabilities	267046	750807	1953924	4088425	4303527
Other Loans and Advances	0	0	512	11476	13107
	0.0	0.0	0.0	0.3	0.3
Life Insurance Reserves	158474	246507	536279	1039897	1059654
	59.3	32.8	27.4	25.4	24.6
Pension Reserves*	72349	260441	890646	2197371	2344956
	27.1	34.7	45.6	53.7	54.5
Taxes Payable	745	2470	11975	31632	34584
	0.3	0.3	0.6	0.8	0.8
Misc Liabilities	35478	241389	514512	808049	851226
	13.3	32.2	26.3	19.8	19.8

*Annuity reserves held by life insurance companies, excluding unallocated contracts held by private pensions funds, which are included in miscellaneous liabilities

Business Lines of Life Insurance Companies

A clear shift in business emphasis is evident from the dramatic change in relationship between types of reserves

- Pension fund reserves climbed faster than life insurance reserves
 - These are annuity reserves held by life insurance companies
 - Exclude unallocated contracts held by private pension funds included in misc liabilities

Life Insurer Reserves

Policy reserves
Reserves for deposit-type contracts
Asset valuation reserve
Interest maintenance reserve
Policy dividend reserve
Policy dividend accumulations

Depository Institutions Versus Life Insurers

Importance of revenue sources differ between the two groups

- For depository institutions the life blood is net interest income (NI) which can also be expressed as a margin

$$\text{NIM} = \frac{\text{interest income} - \text{interest expenses}}{\text{assets}}$$

NI must be large enough to pay noninterest expenses and provide a reasonable return to the shareholders

Typically, net interest income is inadequate, so additional revenue is needed:

FEE INCOME

These institutions have opposite key sources of income

Depository Institutions
Main source: net interest income
Supplemental: fee income

Life Insurers
Main source: net fee income
Supplemental: net investment income

Asset Management at Life Companies

For years, life insurers practiced simple maturity matching of assets and liabilities

- Liabilities (policy reserve) were long-term liabilities, so long-term assets (bonds) were acquired

This approach simple approach is no longer applicable, due to:

- Need to pursue return for performance related products
- Need for better liquidity management
- Interest rate risk

U.S. Risk-Based Capital Requirements

Risk-based capital requirements set in early 1990s

Four P/L insurer risk categories

- Investment or asset risk
- Credit risk, such as reinsurance
- Off-balance-sheet risk, such as separate accounts
- Underwriting risk, such as the loss ratio and reserve adequacy

Sum of risks by category weighted by importance of risk yield minimum capital requirements

Property and Casualty Insurance Companies

Types of Property and Casualty Insurance

Property: protection from financial loss associated with direct and indirect loss to property owned. Two broad types:

- Named peril
- All risk

Liability: protection against financial loss because of a claim of negligence

Marine: protection from losses related to transportation

- Ocean
- Inland

Property and Casualty Insurers

Policy duration is shorter than life insurance companies

Six months for many auto policies

One-year for most types of p/c policies

Probability of claim is higher and will likely be paid during the policy period

Effect: premium income must be invested for shorter period than life companies

Objective risk is greater

Income Analysis

Total premiums written	Net underwriting Income
- Unearned premium	+ Net Investment Income
= Earned premiums	+ Other misc income
- Losses incurred	= Operating income
- Operating expenses	+ Realized capital gains
- Policy Holders dividends	- Income tax
= Net underwriting gain (loss)	= Net income after tax
	- Dividends to stock holders
	= Addition to surplus

Cash Flow of P/C Insures

Cash inflow (revenue) less stable than life insurers

- This is a product of the underwriting cycle

Cash outflow less stable than life insurers

- No actuarial foundation of many of the claims
- Some experience foundation for auto claims

The Underwriting Cycle

This refers to the movement in premium income over time

- Phases
 - Soft market
 - Hard market
- Exaggerated by
 - Regulatory approval of premium increases
 - Unanticipated interest rate cycle
 - Ease of entry and exit by reinsurers
- Hard market was particularly severe in the mid-1980s for commercial liability insurers
 - Exaggerated by sizable damage awards
 - Effects of inflation on claims

Performance Evaluation of P/C Companies

$$\text{Loss Ratio} = \frac{\text{Loss Expenses}}{\text{Total Premiums Earned}}$$

$$\text{Expense Ratio} = \frac{\text{Operating Expenses}}{\text{Total Premiums Written}}$$

$$\text{Combined Ratio} = \text{Loss Ratio} + \text{Expense Ratio}$$

$$\text{Operating Ratio} = \text{Combined Ratio (after dividends)} \\ - \text{investment yield}$$

$$\text{Overall Profitability} = 100\% - \text{Operating Ratio}$$

P/C Insurer Ratios

$$\text{Loss Ratio} = \frac{\text{Loss Expenses}}{\text{Total Premiums Earned}}$$

Loss ratio >1, expenses greater than premiums

Loss ratio has changed over time

- 60% in 1951
- 80% in 1996
- 75% in 2003

Expense Ratio

$$\text{Expense Ratio} = \frac{\text{Operating Expenses}}{\text{Total Premiums Written}}$$

The lower the ratio, the more efficient insurers are in controlling expenses

Expense ratio has fallen over time

- 34% in 1951
- 26.2% in 1996
- 26.3% in 2003

Combined Ratio

$$\text{Combined Ratio} = \text{Loss Ratio} + \text{Expense Ratio}$$

Combined ratio >1,

- insurer has losses & expenses greater than premium income
- Income from investments required to cover difference

Combined ratio has increased over time

- 94.3% in 1951
- Since 1981, over 100%

Overall Profitability

$$\text{Operating Ratio} = \text{Combined Ratio (after dividends)} - \text{investment yield}$$

$$\text{Overall Profitability} = 100\% - \text{Operating Ratio}$$

1980s – 1990s

- Higher yields on stocks, higher interest rates increased investment yield to cover costs + losses
- Lower yields recently have led to low profitability and even losses in some years

Industry Developments

Risk retention groups

- Groups with similar exposure that pool and share losses

Purchasing groups

- Transfer risk to insurance companies but negotiate as a group

Claims-made liability insurance

- Covers only losses filed during the coverage period

Reserves and Capital

In the FOF data, *reserves* are classified as miscellaneous liabilities
There are two types of *reserves* at P/C companies

- Loss reserves
 - Funds set aside for claims that have been made but have not yet been paid
- Unearned premium reserves
 - Funds set aside for premiums paid in advance

Capital: to absorb losses if income is inadequate

- Stock companies: net worth
- Mutual companies: policy holders surplus

Reserves and Net Worth

Reserves account for most of the miscellaneous liabilities

Loss reserves

- Claims made but not yet paid
- Estimate of claims that will be made

Unearned premium reserve

- Presumes that service is rendered for one-half the premiums in a given year

Net worth

- Must be sufficient to absorb losses not covered by income

Insurance Regulation

Insurance Regulation

McCarran-Ferguson Act

- Federal government has right to regulate insurance industry, but will not exercise that right if states do an adequate regulatory job

Some efforts in the 1980s to argue that states were not doing an adequate job

- Skyrocketing premium
- Policy cancellation
- Frustration reflected in voter initiatives in California and NJ to roll back premiums

Insurance Regulation

Each state regulates insurance through state insurance commissioners

Areas

- Solvency regulation
- Market regulation
- Market regulation

Solvency Regulation

Capital standards are the key element in solvency regulation

- Both Life and P/C companies now have risk-based capital standards

Solvency monitoring is conducted through examinations

Intervention and guaranty funds

- Actions against troubled companies
 - Actions to prevent deterioration to insolvent
 - Actions to conserve, rehabilitate, reorganize or liquidate company
- State guaranty associations
 - To protect policy holders, claimants and beneficiaries in event of insolvency

Market Regulations

Policy language:

- The policy is a contract

Products must be approved

Market practices

- Sales and underwriting activities must conform to minimum standards
- Assures claims are handled according to contract

Rates

- Specifics vary from state to state
- Laws typically require that rates not be inadequate, excessive or discriminatory

Market Regulations

Rates: P/C companies

- Rates must be approved
- Companies often rates filed by advisory organizations (e.g., ISO)

Rates: Life companies

- Rates are not regulated.
- Policy benefits must be commensurate with premiums
Standards set to assure sufficient reserves to cover future claims. For life companies, this amounts to floors on premiums

Insurance Regulation

Potential for widely different rule among states

National Association of Insurance Commissioners (NAIC)
tries to minimize this possibility

NAIC Support Of State Regulatory Effort

- Maintain insurance database and computer network linking insurance departments
- Analyze and inform regulators as to the financial condition of insurance companies
- Coordinate examinations and regulatory actions with respect to troubled companies
- Establish and certify states' compliance with minimum financial regulation standards
- Provide financial, reinsurance, actuarial, legal, computer, and economic expertise to insurance departments
- Value securities held by insurers
- Analyze and list accounting rules for insurers
- Conduct education and training programs for insurance departments
- *Develop model laws and coordinate regulatory policy on significant insurance issues*
- Conduct research and provide information on insurance and its regulation

Source: Robert W. Klein, "Structural Change and Regulatory Response in the Insurance Industry," NAIC

Model Laws, Regulations and Guidelines

Proposals made by NAIC with in important areas of the insurance business

Prepared by taskforces and subcommittees utilizing insurance commissioners, the NAIC legal staff

When adopted by NAIC, states may adopt the proposals outright or modify them to meet local conditions

Some models are deemed essential for effective solvency regulation

The models or substantially equivalent laws must be adopted by states seeking formal NAIC accreditation

Balance Sheets

Asset Management Considerations

Life Insurers

- Correct estimates of risk essential
 - Default risk
 - Interest rate risk

P/C Insurers

- Increasingly using immunization techniques
 - Interest rate risk
 - Credit risk
 - Match cash inflows with estimated cash outflows

Insurance Company Balance Sheets

Life Insurer versus P/C Insurer Assets

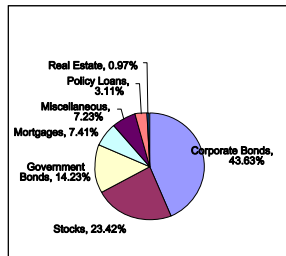
- Life insurance is long-term so financial assets are long term
- P/C insurers hold munis unlike life insurers
- P/C hold shorter-term securities since claims are unexpected (greater liquidity risk)

P/C insurers Liabilities & Equity

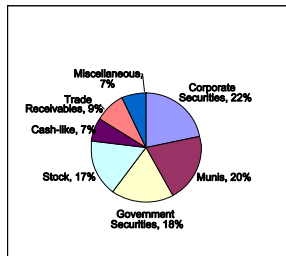
- Hold less reserves
- Accrue tax payments since they must pay taxes
- Have much more equity relative to assets

Life and P/C Insurers Comparison of Assets

Life Insurers

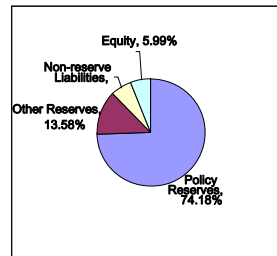


P/C Insurers



Life & P/C Insurers Comparison of Liabilities & Equity

Life Insurers



P/C Insurers

