

Topic 2d Insurance Companies

A Class of Contractual Saving Institutions

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Contractual Saving Institutions: Insurance Companies

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.

- In 1995, 65.4 million Americans were covered by pension plans with life insurance companies.

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 and property/casualty insurance companies. A later 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

Health Insurance

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 by Insurers

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

Size

Here, too, large organizations dominate the field

Life: Prudential Insurance Co of America

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

Product Evolution

(Continued)

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

Purchases of Life Insurance

(millions of dollars)

	1985	1995
<i>Total</i>	1231,169	1,600,373
Individual	911,666	1,101,349
Group	319,503	499,024

Within the total purchased, performance-based policies were:

<i>Total</i>	305,066	338,513
Variable	8,333	9,959
Universal	289,926	244,924
Variable Universal	6,807	83,630

Source: ACLI

Life Insurance in Force in the US

(millions of dollars)

	1985	1995
<i>Total</i>	6,053,107	12,576,677
Ordinary	3,247,289	7,547,537
Group	2,561,595	4,777,912
Industrial	28,250	19,977
Credit	215,973	231,251

Within the total purchased, performance-based policies were:

<i>Total</i>	598,716	2,655,494
Variable	29,055	72,677
Universal	563,609	2,171,598
Variable Universal	6,052	411,219

Source: ACLI

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: 1998

Revenue	
• Premium payments	67%
• Net investment earnings and other income	33%
Expenses	
• Benefits payments	60%
• Addition to policy reserve	25%
• Operating expenses	11%
• Commissions	
• Office Expenses	
Taxes	2%
Net income	
Dividends to stockholders for stock-owned firms	2%
*Addition to capital	
Source: ACLI	

Sources of Premium Income

Life insurance premiums
Health insurance premiums
Annuity considerations

Shifts in Business Lines at Life Insurance Companies

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

The Balance Sheet of Life Insurers *Assets-Flow of Funds Basis*

	Share of Total Assets						
	1989Q4	1999Q4	2000Q2	Growth 1989 to 1999	1989Q4	1999Q4	2000Q2
Assets	\$1,245,524	\$3,067,922	\$3,151,865	146.3	100.0	100.0	100.0
US Govt Sec	\$153,761	\$287,119	\$287,949	86.7	12.3	9.4	9.1
Treas Sec	\$52,917	\$62,751	\$59,743	18.6	4.2	2.0	1.9
Agency Sec	\$100,844	\$224,368	\$228,206	122.5	8.1	7.3	7.2
muni	\$9,028	\$20,077	\$20,438	122.4	0.7	0.7	0.6
corp/bond	\$511,045	\$1,173,230	\$1,198,217	129.6	41.0	38.2	38.0
policy loans	\$57,439	\$99,038	\$99,702	72.4	4.6	3.2	3.2
mortgages	\$254,214	\$230,787	\$231,110	-9.2	20.4	7.5	7.3
corp eq	\$91,754	\$964,518	\$1,007,447	951.2	7.4	31.4	32.0
all other assets	\$168,283	\$293,153	\$307,002	74.2	13.5	9.6	9.7

The Balance Sheet of Life Insurers *Liabilities-Flow of Funds Basis*

	Share of Total Liabilities						
	1989Q4	1999Q4	2000Q2	Growth 1989 to 1999	1989Q4	1999Q4	2000Q2
Liabilities	\$1,185,859	\$2,882,756	\$2,955,131	143.1	100.0	100.0	100.0
Other loans and advances	\$0	\$3,200	\$2,746	0.0	0.0	0.1	0.1
Life reserves	\$342,844	\$748,903	\$766,898	118.4	28.9	26.0	26.0
Pension reserves	\$495,495	\$1,336,801	\$1,365,498	169.8	41.8	46.4	46.2
Taxes payable	\$4,755	\$18,872	\$19,767	0.4	0.4	0.7	0.7
Misc	\$342,765	\$774,980	\$800,222	126.1	28.9	26.9	27.1

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
- Pension fund reserves rose from 42% of liabilities in 1989 to 46% in 1999

Pension fund management is a major and in some cases the major business of life companies

Policy Reserves and Reserves

Policy reserves:

- present value of expected benefits net of the present value of expected premiums and expected investment income

Dividend reserves

Asset valuation reserves

Interest maintenance reserves

Performance Measures

Net Underwriting Income for Life Companies

NUI = premium income less policy expenses

This can be expressed as a margin

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

Policy expenses =

all benefits + additions to policy reserve + operating expenses

Performance

Continued

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

Depository Institutions Versus Life Insurers

Importance of revenue sources differ between the two groups

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

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

NII 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

Depository Institutions Versus Life Insurers

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

Assert Management

Continued

Between 4Q1985 and 4Q1995, holding of equities jumped 210% versus 158% for total assets

- This raised equity as a share of financial assets from 35.2% to 42.3%

Why?

- State laws have been liberalized regarding holding of equity
- Cash flow needs are more variable which increases attractiveness of equities
- Corporations can exempt 80% of dividend received from taxable income
- Long duration of equity is attractive for duration matching immunization strategies

Assert Management

Continued

Interest rate risk management has given rise to more sophisticated forms of asset management

Managers now attempt to implement various forms of immunization

- The purpose is to neutralize effects of changes in interest rates upon the portfolio
 - Action is used with "separate" accounts
- It involves
 - Specialized form of duration matching of the assets and liabilities
 - Financial futures and options
 - Insurance related futures

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

Property and Casualty Insurance

Total premiums written	Net underwriting Income
- Unearned premium	+ Net Investment Income earned
= Earned premiums	+ Other misc income
- Losses incurred	+ Finance/service charges
- Loss Adjustment Expense Incurred	= Operating income
- Other underwriting expense (Operating expenses)	+ Realized capital gains
- Policy Holders dividends	- Income tax
= Net underwriting gain (loss)	= Net income after tax

Cash Flow of P/C Insurers

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 Measures

Net Underwriting Income P/C Companies

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

Policy expenses =

all loss expenses and operating expenses

Performance Measures

Combined Ratio

Combined ratio =

Loss ratio

Loss expenses / total earned premiums

+ Expense ratio

Operating expense / total premiums written

Overall Profitability (Operating ratio) =

100% - (combined ratios + investment yield)

where

Investment yield = investment revenue / earning assets

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

P/C Insurers Balance Sheet

	Share of Total Assets						
	1989Q4	1999Q4	2000Q2	Growth 1989 to 1999	1989Q4	1999Q4	2000Q2
Total Assets	\$503,048	\$889,721	\$884,163	76.9	100.0	100.0	100.0
US Govt Sec	\$97,007	\$141,793	\$140,042	46.2	19.3	15.9	15.8
Treas Sec	\$71,000	\$62,499	\$61,222	-12.0	14.1	7.0	6.9
Agency Sec	\$26,007	\$79,294	\$79,820	204.9	5.2	8.9	8.9
Muni Sec	\$134,766	\$201,168	\$197,466	49.3	26.8	22.6	22.3
Corp /Fgn Bond	\$79,311	\$186,564	\$184,447	135.2	15.8	21.0	20.9
Comm Mort	\$6,460	\$2,025	\$2,685	-68.7	1.3	0.2	0.3
Corp Eq	\$84,005	\$209,292	\$197,080	149.1	16.7	23.5	22.3
All other assets	\$101,500	\$148,878	\$162,443	46.7	20.2	16.7	18.4
	Share of Total Liabilities						
	1989Q4	1999Q4	2000Q2	Growth 1989 to 1999	1989Q4	1999Q4	2000Q2
Total Liabilities	\$372,767	\$563,436	\$569,610	51.1	100.0	100.0	100.0
Taxes payable	\$2,909	\$13,767	\$14,296	373.3	0.8	2.4	2.5
Misc	\$369,858	\$549,669	\$555,314	48.6	99.2	97.6	97.5

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

Net Worth or Policy Holders Surplus

	1996	1997	% Change
Prior Year-End Surplus	\$230.0	\$255.5	11.1%
Operating Income (Loss)	20.8	34.7	66.6
Realized Capital Gains (Losses)	9.2	10.7	15.8
Federal Income Taxes (Credit)	5.6	9.8	73.8
Net Income After Taxes	24.4	35.6	45.7
Dividends to Stockholders	(9.0)	(11.2)	24.7
New Funds	4.5	2.7	-40.7
Unrealized Capital Gains (Losses)	13.3	29.5	121.9
Miscellaneous Surplus Changes	(7.7)	(1.9)	-75.6
Change in Year-End Surplus ²	5.5	54.7	114.3
Year-End Surplus	\$255.5	\$310.2	21.4%

Source: <http://www.iso.com>

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

- 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

Market Regulations

Health

- Some state require prior approval of rates
- Most utilize a file and use system
- Some states have no review
- Blue Cross-Blue Shield rates must be approved
- States set minimum loss ratios for Medicare supplement

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

Important Areas In Recent Years

Risk-based capital
Asset valuation reserves
Interest maintenance reserves
Investment model law

Competition With Depository Banks

Sales of annuities by banks

Sales of insurance products (other than credit insurance) by banks

- Supreme court upheld National Bank Act that permits national banks in cities with a population of less than 5000 to sell insurance
- OCC has since issued guidelines on this issue for banks