Finance and Insurance: Converging or Diverging?

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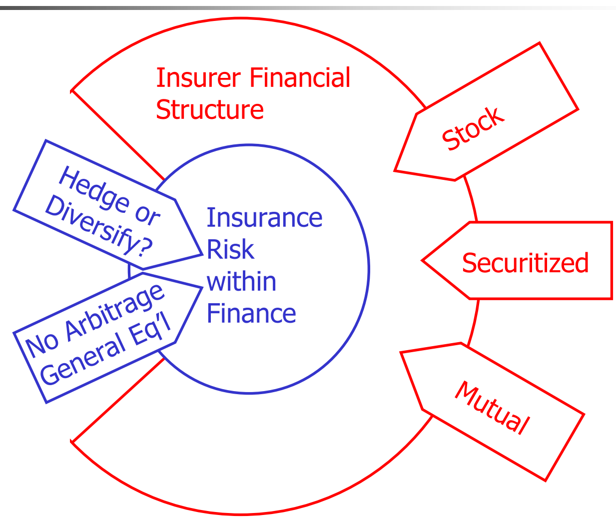
Overview



Mysteries - Paradigms

- Why do companies engage in earnings management?
- Why do insurance companies expect a reward for diversifiable risk?
- Why do stock companies buy insurance?

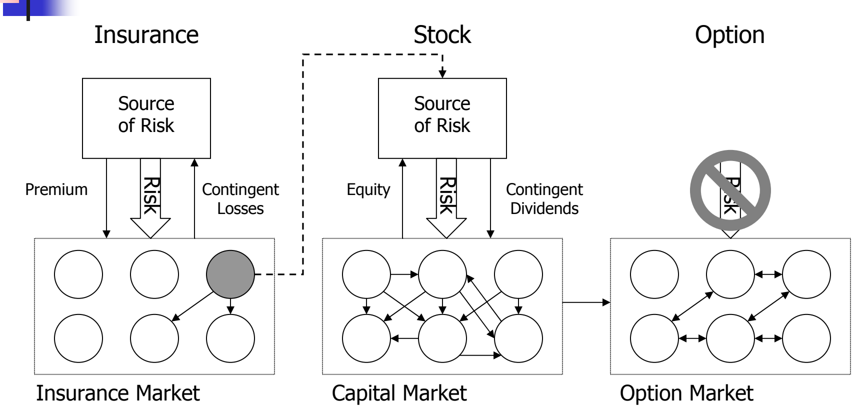
Mysteries - Structure

- Why do insurers write policies more cheaply than banks offer letters of credit?
- Why does capital still flow into an industry plagued by poor returns?
- Is the industry over or under capitalized?
- Is securitization the answer to all industry woes?

Mysteries - Humorous

- Why do insurers write policies their actuaries know will lose money?
- Is the insurance cycle inevitable?

Finance and Insurance



Finance and Insurance

Paradigm	**Capital Markets**	**Insurance Markets**
Risk and Return	Systematic risk	Price non-systematic risk
Diversification	CAPM, APT, CIR, Partial & General Equilibrium Models	Risk Bearing through pooling
Hedging	Options pricing, Comparables, No-arbitrage	Traditionally impossible, Reinsurance!
Comparables, Replication	Long/short positions, liquid, transparent markets, standardization	Insurable interest, unique products

Finance and Insurance
Comparison of Risk Bearing

Trade to Manage — Diversify to Manage

Hedge
Black-Scholes idealization
Adjust probabilities

Real world financial option

Dual-trigger financial/ insurance instrument

Diversify
Stock
Bond
Insurance
Cat Bond

No arbitrage
Comparables determine unique price

Efficient Market
Need general theory to determine unique price

Finance and Insurance
Complete Markets and Insurance

- **Complete Market**: every pattern of cash flows can be replicated by some portfolio of traded securities
- Insurance products are not redundant: they add to the set of available securities
- A redundant insurance contract would be redundant!
  - Insurance risk is residual, unhedgable risk
  - Insureds would hedge themselves and only insure residual risk
  - Insurance creates uncorrelated assets for investor/insured
- Cannot use no arbitrage pricing techniques to determine price of non-redundant securities
  - Need supply and demand; general equilibrium theory

Finance and Insurance
Comparison of Pricing Methods

- Redundant securities can be replicated as a package of other securities
  - Can be hard to determine replicating package
  - Black-Scholes solved packing problem for stock options
- No arbitrage: price of a package is sum of prices of pieces
- If replicating package is unique then price uniquely determined
  - Black-Scholes packaging is unique
- Replicating “Pricing Factory” can make price of redundant securities independent of supply and demand
- Contrast to Actuarial Pricing
  - No consensus on risk and profit loads
  - Numerous risk-load approaches used in industry
  - Searching for general equilibrium theory
- Actuarial pricing is equivalent to stock pricing, not option pricing

Finance and Insurance
Market Pricing for Cat Bonds

- Pricing Cat Bonds
  - Relationship to corporate bond pricing and to insurance pricing
  - (In-)Consistency with financial theories
- Issue of skewness in asset returns
  - Greed: Positive skewness is perceived as good
  - Fear: Negative skewness is perceived as bad
- Insurance returns are negatively skewed
  - You do well, you do OK
  - You do badly, you do really badly
- Most asset returns are symmetric or positively skewed
- Mainstream finance would suggest either CAPM or adjusted probability approach
- Wang's adjusted probability framework helps reconcile two pricing paradigms

Finance and Insurance
Earnings Management

- Consistent earnings often stated management goal
- Is goal consistent with financial theory?
  - CAPM ignores non-systematic risk
  - Lower cost of capital? Internal capital?
  - Tax
- Types of earnings management
  - Demonstrate actual earnings more effectively
  - Match one-time expense and gains
  - Misleading investors on source or level of income
  - Hide true risk?
- Does requirement to "book to best estimate" increase insurance industry cost of capital?

Financial Structures
Insurer Risk Considerations

- Costs of financial distress
  - Rating essential
    - Higher price for more secure product
    - Cost of credit
  - Capital: expensive to replace
    - Asymmetric information in new equity issues
    - Insurer reluctance to release proprietary information
    - Easy to change risk portfolio
    - High costs and taxation discourage dividends
    - Regulation
- Costs of volatility of results
  - Concave tax schedules
  - Hard for analysts to track true performance
  - Prevents company from investing in profitable business opportunities
  - Capital: an expensive way to manage risk
    - Double taxation of investment earnings
    - Lower ROE
    - Perils of corporate bloat, owner-manager agency problem

Financial Structures
Insurance Company Structure

Owners, policyholders, and managers have different goals and objectives

Managers
- Increases probability of insolvency - costly to managers
- Decreases free cash
- Proportionately increases any fixed management ownership

Owners

Leverage?

Policyholders
- Owners have call on residual value
- Risky investments more valuable to owners

Lloyds

Mutual

Optimal capital structure a trade-off between benefits of increased leverage to minimize owner-manager conflict, and decreased leverage to minimize owner-policyholder conflict

Financial Structures
Insurance Company Structure

Stock

Where is Securitized solution?

Mutual

- Hard-to-quantify risk
- Uw discretion vital
- Potentially difficult for owners to track and control uw actions
- Sophisticated and knowledgeable policyholders

Helps minimize owner-manager conflicts

Stock Insurance Companies

Owners and manager interests more effectively aligned

- Easy-to-quantify risk
- Little/no need for uw discretion
- Easy for owners to track and control uw actions
- Important because mechanisms available for owners to control managers more limited

Solves owner-policyholder conflicts

Mutual Insurance Companies

Merge owners and policyholders
Good for less sophisticated pol'holders

Financial Structures
Insurance Company Structure

- Mutual companies more common in personal lines, WC
- Stock companies more common in commercial and specialty lines
- Where does securitized solution fit?
  - "UW and done" approach divorces uw decision from results
  - Does not appear to solve owner-manager conflict or owner-policyholder conflict
- Cat bonds involve very little or no underwriting judgment
  - Minimize potential owner-manager conflict
  - Similar to mutual fund structure
  - Short-tailed claim settlement (until Northridge)

Financial Structures
Grim State of Industry

- Concentration of bad news in commercial insurance
- Asbestos
- Terrorism
- Low investment returns and bond defaults
- Medical cost inflation
- Three straight yearly declines in total industry surplus
- Adjust industry picture for AIG and Berkshire
  - Over 50% of total P/C insurance market capitalization
- Post-9/11 market should have been ripe for securitized solutions

Financial Structures
9/11: Capital Market Reaction

- Securitization advocates had great expectations
- Market disappointed
- Reaction swift and consistent

Group	Capital Raised	9/11 Loss	Net New Capital	Pct Total
Bermuda Startups	6.3B	0.0	6.3	58%
Existing Bermuda Cos.	3.5	1.8	1.7	16%
North American Cos.	2.3	1.1	1.2	11%
Lloyds/London	1.0	0.1	0.9	8%
Other	2.4	1.7	0.7	6%
Total	**15.5**	**4.7**	**10.8**	**100%**

All amounts in $B
Source: IBNR Weekly 1/6/2002

Financial Structures
9/11: Capital Market Reaction

- Investors utilizing Bermuda companies and start-ups, rather than existing US-based P/C companies
  - No A & E hang-over
  - No reserve development on prior years
  - Tax and accounting benefits
  - New shells a "clean play" for investors to "flip"
  - 75% of net capital went to Bermuda
- Securitized solution not suited to opportunistic writings and exercise of underwriting judgment
  - Even stock startups had some difficulty "putting capital to work"
  - Underwriting and technical talent greater constraint than capital

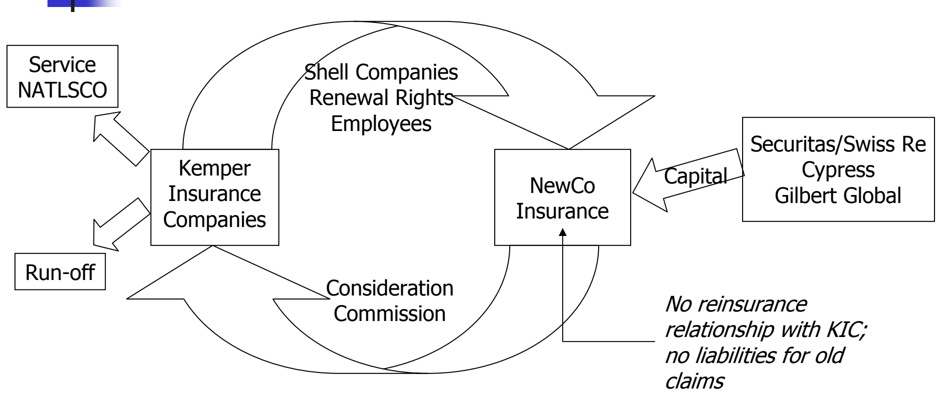
Financial Structures
Subsequent Market Reaction

- Several successful IPOs in last six months
  - Endurance Specialty Holdings (ENH)
  - Montpelier Re (MRH)
  - Platinum Underwriters Holdings (PTP) = old St. Paul
  - AXIS announces IPO for $517M, March 2003
- Bermuda insurers bucking trend in current unfavorable IPO environment
- Existing companies with deep pocket parents getting contributions
  - CNA
  - Zurich
  - American Re
  - Fireman's Fund
- Premier brands able to raise capital
  - Travelers
  - AIG
  - Chubb

Financial Structures
Kemper

- Experience in 2001-03 confirms investor fear of legacy risks
- Financial flexibility limited by mutual company structure
- Strong current accident year operating performance
- First major insurance entity to voluntarily cease underwriting activities
- RBC correctly picked up problems

Financial Structures
Kemper



Conclusions

- Insurers should look at returns and pricing in financial services
- Securitization does not provide compelling solutions to any existing insurance problem
- Stock insurance company remains ideal way to securitize risk
  - Insurance company function is to bear hard-to-quantify, residual risk
- Asbestos could kill legacy companies without deep-pocket parents
- Perceived convergence with financial institutions barometer of market?

References and Links

- Links and references are available on my web site, along with a copy of this presentation:

http://www.mynl.com/pptp/maf2003.html

- Please email any comments on this presentation to steve@mynl.com