Module 3: Introduction to Insurance

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Module 3: An Introduction to Insurance

Unit 2: The Nature of Insurance

Case Study 01: *The Law of Large Numbers*

The Law of Large Numbers

Availability of only small data sources (or sometimes none at all) is troublesome because most estimation techniques rely on numerous observations for accuracy. The benefit of many observations is well stated by the law of large numbers, an important statistical doctrine for the successful management of risk and the basic foundation for the existence of insurance in society.

The law of large numbers holds that, as a sample of observations increases in size, the relative variation about the mean declines. An example is given in Section 6.5 "Appendix: More Exposures, Less Risk". The important point is that, with larger samples, we feel more confident in our estimates.

If it were not for the law of large numbers, insurance would not exist. A risk manager (or insurance executive) uses the law of large numbers to estimate future outcomes for planning purposes. The larger the sample size, the lower the relative risk, everything else being equal. The pooling of many exposures gives the insurer a better prediction of future losses. The insurer still has some risk or variability around the average. Nevertheless, the risk of an insurer with more exposures is relatively lower than that of an insurer with fewer exposures under the same expected distribution of losses, as presented in Section 6.5 "Appendix: More Exposures, Less Risk".The importance of the large number of exposures often prompts the question, What can smaller insurers do to reduce the uncertainty in predicting losses?

Smaller insurers use the sharing of data that exists in the insurance industry. One such data collection and statistical analysis organization is the Insurance Services Office (ISO). In addition to being a statistical agent, this organization provides the uniform policy forms for the property/casualty industry (a small sample of these policies are in the appendixes at the end of the text). The ISO is both a data collection agent and an advisory organization to the industry on matters of rates and policy forms.

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Unit 2: The Nature of Insurance

Case Study 02: ***Fitting into a Lower Risk-Exposure Pooling Group***

Fitting into a Lower Risk-Exposure Pooling Group

Your insurance company relies on the information you provide. Your obligation to the insurance company is not only to provide correct information, but also to provide complete information in order to be placed with your appropriate risk pooling group. The similar exposure in the pooling group is essential for the risk to be insurable, as you saw in this unit.

Because automobile insurance is an issue of great concern to most students, it is important to know how to handle the process of being placed in the appropriate risk pool group by an insurer. What do you need to tell the insurance agent when you purchase automobile insurance? The agent, usually the first person you talk to, will have routine questions: the make and model of the automobile, the year of manufacture, the location (where the car is parked overnight or garaged), and its usage (e.g., commuting to work). The agent will also ask if you have had any accidents or traffic violations in the past three to five years.

You might be tempted to tell the agent that you keep the automobile at your parents' home, if rates there are cheaper. You may also be tempted to tell the agent that you have not had any traffic violations, when actually you have had three in the past year. Certainly, your insurance premium will be lower if the agent thinks you have a clean record, but that premium savings will mean very little to you when the insurer notifies you of denial of coverage because of dishonesty. This occurs because you gave information that placed you in the wrong risk pool and you paid the wrong premiums for your characteristics.

Safe driving is the key to maintaining reasonable auto insurance premiums because you will be placed in the less risky pool of drivers. The possibility of being placed in a high-risk pool and paying more premiums can be reduced in other ways, too:

- Avoiding traffic violations and accidents helps reduce the probability of loss to a level that promotes the economic feasibility of premiums.
- Steering clear of sports cars and lavish cars, which place you in a group of similar (homogeneous) insureds. Furthermore, a car that is easily damaged or expensive to repair will increase your physical damage premiums.
- Costs can be reduced further if you use your car for pleasure only instead of driving to and from work. Riding the bus or in a friend's car will lower the probability of an accident, making you a more desirable policyholder. Living outside the city limits has a similar effect.
- Passing driving courses, maintaining a grade point average of at least B, and not drinking earn discounts on premiums.

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Unit 3 – Part 2: Ideal Requisites for Insurability - Part 2

Case Study 03: ***Who Should Insure against Megacatastrophes?***

Who Should Insure against Megacatastrophes?

The incredible losses from hurricanes Wilma, Rita, and Katrina, including the breached levees in low-lying New Orleans and the subsequent bungled inaction by local, state, and federal authorities, opened a major public debate in the United States. On one level (which is not the focus of this text), the dialogue focused on who should have been first responder and what processes can be put in place to ensure that history does not repeat itself. The second topic of the debate (which we will focus on) was who should pay for such disasters in the future. The economic loss of Katrina and its aftermath was estimated to surpass $100 to $150 billion, large portions of which were not insured. As you will learn in Chapter 1 "The Nature of Risk: Losses and Opportunities", flood is insured only by the federal government through the National Federal Insurance Program, and the coverage limits are low, at $250,000. Many flooded homes and businesses in Louisiana and Mississippi did not carry this insurance. Even if they carried the coverage, the limits prevented recovery of their true property values. Residents had to resort to other assistance programs, some from the Federal Emergency Management Agency (FEMA).

The unprecedented economic loss is at the heart of the debate. Who should insure against such megacatastrophes in the future? The Insurance Information Institute (III) provided a summary of the proposals that were put forward during the public dialogue about how large-scale natural catastrophes should be managed in the post-9/11 era. The following are two main viewpoints:

1. Because the private industry cannot insure mega losses that are fundamentally uninsurable, the federal government should be the ultimate insurer. The federal government is already the national flood insurer and has been providing the terrorism stopgap coverage under the Terrorism Risk Insurance Act (TRIA). It makes sense that uninsurable risks be mitigated by the government. The insurance commissioners of Florida, California, and New York proposed a national catastrophe fund. Others suggested amendment to the federal tax code for insurers' reserves. The idea is that coverage would still be provided by insurers, but states would create pools, and above them, a third layer would be provided for national megacatastrophes by the federal government. Involvement by the federal government in case of large-scale losses has elements of the Terrorism Risk Insurance Act that was extended until the end of 2014.

2. Because we are living in a free market economy, the private sector is best suited to handle any disaster, large or small. The idea is to have less government, with relaxed regulation and taxation. The creativity of the private sector should prevail. The government should not compete with private insurance and reinsurance markets. In this scenario, insurers have more capacity and thus more actuarially sound predictions to set appropriate rates. To prove the point, the industry was able to sustain both 9/11 and Katrina (except that the industry has not been responsible for the flood damages). If the private industry takes over all potential mega losses, there does need to be great improvement, however, in catastrophe modeling. The industry will have to diversify and utilize the capital markets (seeChapter 3 "Risk Attitudes: Expected Utility Theory and Demand for Hedging" about CAT bonds). It is predicted that the industry will ensure high-quality loss control in areas with potential disasters through building codes, strengthening of levees, and utilization of all possible disaster management techniques.

Questions for Discussion

1. Because large-scale human-made and natural disasters are not controllable by insurers, should the government pay for damages?

2. Because insurance is the business of insurers, should they handle their problems without being subsidized by taxpayers? What would be the outcome in terms of safety and loss controls?

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Unit 4 – Part 1: Types of Insurance and Insurers - Part 1

Case Study 04: ***Lloyd's of London: A Global Insurance Exchange***

Lloyd's of London: A Global Insurance Exchange

Lloyd's of London is the oldest insurance organization in existence; it started in a coffeehouse in London in 1688. Lloyds conducts a worldwide business primarily from England, though it is also licensed in Illinois and Kentucky. It maintains a trust fund in the United States for the protection of insureds in this country. In states where Lloyd's is not licensed, it is considered a nonadmitted insurer. States primarily allow such nonadmitted insurers to sell only coverage that is unavailable from their licensed (admitted) insurers. This generally unavailable coverage is known as excess and surplus lines insurance, and it is Lloyd's primary U.S. business.

Lloyd's does not assume risks in the manner of other insurers. Instead, individual members of Lloyd's, called Names, accept insurance risks by providing capital to an underwriting syndicate. Each syndicate is made up of many Names and accepts risks through one or more brokers. Surplus lines agents—those who sell for excess and surplus lines insurers—direct business to brokers at one or more syndicates.Syndicates, rather than Names, make the underwriting decisions of which risks to accept. Various activities of Lloyd's are supervised by two governing committees—one for market management and another for regulation of financial matters. The syndicates are known to accept exotic risks and reinsure much of the asbestos and catastrophic risk in the United States. They also insure aviation.

The arrangement of Lloyd's of London is similar to that of an organized stock exchange in which physical facilities are owned by the exchange, but business is transacted by the members. The personal liability of individual Names has been unlimited; they have been legally liable for their underwriting losses under Lloyd's policies to the full extent of their personal and business assets. This point is sometimes emphasized by telling new male members that they are liable "down to their cufflinks" and for female members "down to

their earrings.” In addition to Names being required to make deposits of capital with the governing committee for financial matters, each Name is required to put premiums into a trust fund that makes them exclusively encumbered to the Name’s underwriting liabilities until the obligations under the policies for which the premiums were paid have been fulfilled. Underwriting accounts are audited annually to ensure that assets and liabilities are correctly valued and that assets are sufficient to meet underwriting liabilities. Normally, profits are distributed annually. Following losses, Names may be asked to make additional contributions. A trust fund covers the losses of bankrupt Names. A supervisory committee has authority to suspend or expel members.

Seldom does one syndicate assume all of one large exposure; it assumes part. Thus, an individual Name typically becomes liable for a small fraction of 1 percent of the total liability assumed in one policy. Historically, syndicates also reinsured with each other to provide more risk sharing. The practice of sharing risk through reinsurance within the Lloyd’s organization magnified the impact of heavy losses incurred by Lloyd’s members for 1988 through 1992. Losses for these five years reached the unprecedented level of $14.2 billion. Reinsurance losses on U.S. business were a major contributor to losses due to asbestos and pollution, hurricanes Hugo and Andrew, the 1989 San Francisco earthquake, the Exxon *Valdez* oil spill, and other product liabilities.

The massive losses wiped out the fortunes of many Names. In 1953, Lloyd’s consisted of 3,400 Names, most of whom were wealthy citizens of the British Commonwealth. By 1989, many less wealthy, upper- middle-class people had been enticed to become Names with unlimited liability, pushing the total number of Names to an all-time high of 34,000 in 400 syndicates. By mid-1994, only about 17,500 Names and 178 underwriting syndicates (with just ninety-six accepting new business) remained. As a result of the mammoth total losses (and bankruptcy or rehabilitation for many individual members), Lloyd’s had reduced underwriting capacity and was experiencing difficulty in attracting new capital. What started in a coffeehouse was getting close to the inside of the percolator.Among Lloyd’s reforms was the acceptance of corporate capital. By mid-1994, 15 percent of its capital was from twenty-five corporations that, unlike individual Names, have their liability limited to the amount of invested capital.

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Unit 4 – Part 2: Types of Insurance and Insurers - Part 2

Case Study 05: US State and Federal Insuring Organizations

US State and Federal Insuring Organizations

State Insuring Organizations

- All states administer unemployment compensation insurance programs. All states also have guaranty funds that provide partial or complete coverage in cases of insurance company failure from all insurers in the market. This ensures that the results of insolvencies are not borne solely by certain policyowners. Covered lines of insurance and maximum liability per policyowner vary by state. Financing is provided on a postloss assessment basis (except for preloss assessments in New York) by involuntary contributions from all insurance companies licensed in the state. An insurer's contributions to a particular state are proportionate to its volume of business in the state. No benefits are paid to stockholders of defunct insurers. The funds are responsible for the obligations of insolvent companies owed to their policyowners.

- Eighteen states have funds to insure worker's compensation benefits. Some funds are monopolistic, while others compete with private insurers.

- Several states provide temporary nonoccupational disability insurance, title insurance, or medical malpractice insurance. Many states provide medical malpractice insurance (discussed in upcoming chapters) through joint underwriting associations (JUAs), which provide coverage to those who cannot obtain insurance in the regular markets. The JUAs are created by state legislation. If a JUA experiences losses in excess of its expectations, it has the power to assess all insurers that write liability insurance in the state. However, rates are supposed to be set at a level adequate to avoid such assessments. Some states

have also created JUAs for lawyers and other groups that have had difficulty finding insurance in the private market.

- Seven states along the Atlantic and Gulf coasts assure the availability of property insurance, and indirect loss insurance in some states, to property owners of coastal areas exposed to hurricanes and other windstorms. Insurance is written through beach and windstorm insurance plans that provide coverage to those who cannot obtain insurance in the regular markets, especially in areas prone to natural catastrophes and hurricanes. Compliance with building codes is encouraged for loss reduction.

- The state of Maryland operates a fund to provide automobile liability insurance to Maryland motorists unable to buy it in the private market. The Wisconsin State Life Fund sells life insurance to residents of Wisconsin on an individual basis similar to that of private life insurers.

In recent years, several states have created health insurance pools to give uninsurable individuals access to health insurance. Coverage may be limited and expensive.

Federal Organizations

- The Social Security Administration, which operates the Social Security program, collects more premiums (in the form of payroll taxes) and pays more claims than any other insurance organization in the United States. The Federal Deposit Insurance Corporation insures depositors against loss caused by the failure of a bank. Credit union accounts are protected by the National Credit Union Administration. The Securities Investor Protection Corporation covers securities held by investment brokers and dealers.

- The Federal Crop Insurance Corporation provides open-perils insurance for farm crops. Policies are sold and serviced by the private market. The federal government provides subsidies and reinsurance.

- The Federal Crime Insurance Program covers losses due to burglary and robbery in both personal and commercial markets.

- Fair Access to Insurance Requirements (FAIR) plans have been established in a number of states under federal legislation. They are operated by private insurers as a pool to make property insurance available to applicants who cannot buy it in the regular market. Federal government reinsurance pays for excessive losses caused by riots and civil disorder.

- The National Flood Insurance Program provides flood insurance through private agents in communities that have met federal requirements designed to reduce flood losses. (See Chapter 1 "The Nature of Risk: Losses and Opportunities" for a description of the federal flood insurance.)

- The Veterans Administration provides several programs for veterans. Several federal agencies insure mortgage loans made by private lenders against losses due to borrowers failing to make payments. The Pension Benefit Guaranty Corporation protects certain retirement plan benefits in the event the plan sponsor fails to fulfill its promises to participants. The Overseas Private Investment Corporation (OPIC) protects against losses suffered by U.S. citizens through political risks in underdeveloped countries.