

CHAPTER 8

Risk Management

IN GENERAL

The actuary, in recent years, has become a very dominant player in matters of risk management. The reasons are twofold:

1. Statutory requirements and the creation of the Enterprise Risk Management concept.
2. The natural evolution of actuaries to risk managers because of (a) ERISA, (b) self-funding and (c) new forms of funding (alternate risk transfer, risk retention groups, captive insurers, e.g.).

Some of the work-products provided by the actuary are directly and specifically useful with respect to risk management.

The topic is presented as follows:

- Alternate Risk Transfer
- Captive Insurer
- Risk Retention Groups
- Enterprise Risk Management.

ALTERNATE RISK TRANSFER

Introduction

A few decades ago, those seeking insurance protection exceeded those wishing to offer such. The practice of alternate risk transfer (ART) was invented as a solution. ART allows the (a) act of insuring to be modified to be the (b) act of investing. This resulted in (a) insurance capital (limited) to be replaced by (b) investment capital (unlimited). ART, in effect, converges the insurance and the financial markets.

ART is quite complex, new and not without perils to the players engaged therein. The topic is discussed under these headings:

- Risk Securitization
- Standardization and Trading
- Special Life Insurer Applications.

Risk Securitization

The primary ART activity is *risk securitization* which generally includes catastrophe bonds, *reinsurance sidecar* and *sidecar investments*. Trading in insurance risks has been very common for centuries. Insurance companies have a well-established reinsurance market. However, securitization has made a significant difference in the way the insurance risk is traded - by transforming it into a commodity and taking it to the capital market instead of the insurance market. The process of securitization converts a *relationship* into a *commodity*: Insurance contracts are relationships. When securitized, they become commodities that can be bought and sold in the marketplace.

Catastrophe Bond

A catastrophe risk bond is an innovative technique for securitizing the reinsurance risk. The values of these bonds are linked to particular catastrophic events such as earthquakes, hurricanes, or floods. In the event of a catastrophe, such catastrophe risk bond behaves much like a defaultable corporate bond. The default of a catastrophe risk bond occurs when a catastrophe of some degree occurs. Unlike corporate bonds, the default of a catastrophe risk bond has no correlation with underlying financial market variables such the interest rate levels or economic factors.. Consequently, the payments from a catastrophe risk bond cannot be well approximated by a portfolio of the ordinary types of securities that are traded in financial markets such as bonds or common stocks.

Reinsurance Sidecars

This is another way of expressing the term *quota-share reinsurance*. The quota-share reinsurer pays an amount called the *ceding commission* to compensate the ceding company for its expenses. The ceding commission typically includes a profit allowance which increases in proportion to the expected profitability of the business. These reinsurance treaties currently and traditionally provide ceding companies the ability to write more business than they could justify based on their own capital and to earn a certain amount of fee-based income (through the ceding commission). Quota-share reinsurers act as *insurance wholesalers*, allowing them to earn a return on capital without creating primary insurance distribution

Sidecar Investments

Investors are typically offered debt (generally in the form of bank loans), preferred stock and equity investments in the sidecar. Debt may be rated by the rating agencies. Most sidecar debt has been rated in the “BB” category (below investment grade) but some investment grade debt has been issued.

Standardization and Trading

This is a major activity of ART and includes (a) the funding of risk transfers, (b) transforming of reinsurers and (c) dual-triggers.

Funding of Risk Transfers

Examples of such funding includes (a) captives, and (b) financial reinsurance.

Captives. A separate section of this Chapter discusses captives.

Financial Reinsurance. Financial reinsurance in various forms (finite, surplus relief, funded letters of credit, etc.) consists of various approaches to reinsurance involving a very high level of prospective or retrospective premiums relative to the quantity of risk assumed. While such approaches involve risk finance as opposed to risk transfer, they are still generally referred as ART.

Transforming of Reinsurance

ART is often used to refer to activities through which reinsurers transform risks from the capital markets into insurance or reinsurance format. Such transformation can occur through the policy itself, or through the use of transformer reinsurance.

Dual-Triggers

This term describes the activity of the reinsurer when it takes capital market risks. The activity is also called a multiple-trigger risk assumption. An example would be where a corporation may desire protection against certain natural hazards, but may only need such protection if prices are low, in which case they would purchase a dual trigger derivative or reinsurance contract.

Special Life Insurance Applications

Life insurance companies have developed a very extensive battery of ART approaches including life insurance securitization, full recourse reserve funding, funded letters of credit, surplus relief reinsurance, administrative reinsurance and related approaches. Because life reinsurance is relatively more financial to begin with, there is less separation between the conventional and alternative risk transfer markets than in the property and casualty market. Over the last few years, insurance-linked securities are fast emerging as a new class by itself. Pioneering efforts of the market in general seems to be more inclined to accept new forms of risk-based financial instruments. Different forms of insurance risk based instruments are entering the market such as catastrophe, excess mortality, life insurance, embedded value, etc.

CAPTIVE INSURER

Background

A captive insurance company is one formed by a business owner to insure the risks of the operating business. The operating business pays premiums to the captive, and the captive insures the risk of the operating business. A captive is much more than a different form of self-funding. It is the creation of a new insurance entity that has the potential to grow from being a mere captive into a full-blown insurance company seeking to profit from underwriting the risks of others. Captives are growing rapidly in popularity and dominance. Because of the unique features of our tax code, most captives are either (a) U.S. domiciled or (b) offshore-domiciled with U.S. parents.

Unique Tax Advantage

The ABC Company *may not* claim a deduction for the self-funded IBNR reserve; but *may* claim such deduction for a captive insurer even within the ABC economic family. Because of this advantage, captives have become a useful tool in corporate financial planning.

Development of the Captives

Several IRS rulings and court cases decided in the recent past have started to define situations in which captive arrangements would be practicable. More and more major U.S. are beginning corporations are beginning to show interest in captives. Currently the tax laws relating to captives have matured to the point that tax planners are now comfortable in knowing that premium payments to the captive would be deductible in appropriate instances. The captive business grew rapidly as even mid-sized and privately-held businesses started forming captives to manage their insurance risks. The number of captive domiciles also grew rapidly and today more than half of the U.S. states now have captive enabling legislation.

Fronted Captive

There are two basic captive formats

- Fronted
- Direct Writing.

Fronted

A fronted captive is a captive in partnership with a traditional insurance company that fronts the coverage and administrative services while ceding to the captive that part of the premium that corresponds to the captive's retained risk.

Direct

A direct writing captive is one that directly writes its own coverage. The captive self-funds the risk(s). Stop-loss coverage, if needed, is called reinsurance. Such is readily available.

International Environment

The Report of the European Union (so-called Solvency II Directive) is not friendly to captives. Solvency II calls for regulators to consider risk-based capital adequacy when evaluating the financial soundness of insurers. It also requires insurers to verify that risk management processes are adequate.

Department of Labor Involvement

The current trend is for captives to receive DOL exemptions where ERISA plans are to be covered. The major DOL standard that has continued to be upheld is that captives providing employee benefits must reside as a U.S. domicile. Captive-friendly states will license branches of captives based offshore. This allows the offshore captive's branch the ability to write employee benefit risk under the DOL guidelines, even though the risk may ultimately end up offshore. Also, many captives are licensed in one of the many states that have enabling laws.

Advantages of a Captive

The usual benefits are (a) claiming a tax deduction on advance funding, (b) reduced operating costs, (c) other tax deductions being allowed that are not permitted by self-funders and (d) structural and organizational advantages.

RISK RETENTION GROUP

Overview

A Risk Retention Group (RRG) is a funding mechanism that is owned by its members and spreads risk and results among such members. The Federal government passed the Liability Risk Retention Act in 1986 which allowed Risk Retention Groups to be licensed in one state but to operate in all state. RRGs only insure third party liability coverages.

RRGs are effectively exempt from state law except that the states can still collect premium and surplus taxes, force compliance with unfair claim settlement practices, and follow a few other requirements common to insurance companies. The states may not, however, dictate rates, coverages, forms, methods of operations or investment activities, loss control or claims, etc. RRGs can thus underwrite most types of general liability

policies, such as Errors & Omissions and Products Liability insurance, etc., but RRGs are not allowed to underwrite insurance relating to employees, such as workers' compensation, property insurance, and personal lines insurance such as auto insurance.

Expansion of RRGs

From the outset, stop-loss for workers's compensation was held to be a permissible risk for the RRG. It was an easy expansion for the regulators to hold that health plan stop-loss could also be a permissible risk for an RRG. The similarity between workers' compensation and health plan stop-loss and (b) the reimbursement nature of health care stop-loss made the expansion a reasonable regulatory matter.

When such coverage is offered, the pooling may or may not use a VEBA. Also, the regulation of such risk is not with the states or the DOL. Rather, such risk is regulated by the RRG law itself. Such expansion results in the merger so to speak of (a) life/health and (b) property/casualty practices.

State Abuses with the RRGs

Federal statutes require that groups that meet the licensing requirements of one state do not have to meet the licensing requirements or other regulations of other states in which they operate. However, some states are attempting to circumvent the federal law by overzealous regulation.

ENTERPRISE RISK MANAGEMENT

In General

Enterprise Risk Management (ERM) is a risk-based approach to managing an enterprise, integrating concepts of strategic planning, operations management and internal controls. ERM is evolving to address the needs of various shareholders, who want to understand the broad spectrum of risks facing complex organizations to ensure that they are appropriately managed. Regulators and debt-rating agencies have increased their scrutiny of the risk management processes of companies.

In business, ERM includes the methods and processes used by organizations to manage risks related to the achievement of their objectives.

ERM provides a framework for risk management, which typically involves identifying particular events or circumstances relevant to the organization's objectives (risks and opportunities), assessing them in terms of likelihood and magnitude of impact, determining a response strategy, and monitoring progress. By identifying and proactively

addressing risks and opportunities, business enterprises protect and create value for their stakeholders, including owners, employees, customers, regulators, and society overall.

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Implementing a Program

Such implementation involves a broad range of corporate functions; the Program must also be prepared to meet a host of challenges.

Corporate Functions

- Strategic Planning – Identifies external threats and competitive opportunities, along with strategic initiatives to address them.
- Marketing – understands the target customer to ensure product/service alignment with customer requirements.
- Compliance and Ethics – monitors compliance with code of conduct and directs fraud investigations.
- Accounting/Financial compliance – directs the Sarbanes-Oxley Section 302 and 404 assessment which identifies financial reporting risks.
- Law Department – manages litigation and analyzes emerging legal trends that may impact the organization.
- Insurance – ensures the proper insurance coverage for the organization
- Treasury – ensures cash is sufficient to meet business needs, while managing risk related to commodity pricing or foreign exchange.
- Operational Quality Assurance – verifies operational output is within tolerances.
- Operations Management – ensures the business runs day-to-day and that related barriers are surfaced for resolution.
- Credit – ensures any credit provided to customers is appropriate to their ability to pay.
- Customer Service – ensures customer complaints are handled promptly and root causes are reported to operations for resolution.
- Internal Audit – evaluates the effectiveness of each of the above risk functions and recommends improvements.

Challenges

- Identifying executive sponsors for ERM.
- Establishing a common risk language or glossary.
- Describing the entity's risk appetite (i.e., risks it will and will not take)

- Identifying and describing the risks in a *risk inventory*.
- Implementing a risk-ranking methodology to prioritize risks within and across functions.
- Establishing a risk committee and or Chief Risk Officer (CRO) to coordinate certain activities the risk functions.
- Establishing ownership for particular risks and responses.
- Demonstrating the cost-benefit of the risk management effort.
- Developing action plans to ensure the risks are appropriately managed.
- Developing consolidated reporting for various stakeholders.
- Monitoring the results of actions taken to mitigate risk.
- Ensuring efficient risk coverage by internal auditors, consulting teams, and other evaluating entities.
- Developing a technical ERM framework that enables secure participation by third parties and remote employees.

Internal Audit

Internal auditors typically perform an annual risk assessment of the enterprise, to develop a plan of audit engagements for the upcoming year. This plan is updated at various frequencies in practice. This typically involves review of the various risk assessments performed by the enterprise, consideration of prior audits, and interviews with a variety of senior management. It is designed for identifying audit projects; it is designed to not to identify, prioritize, or manage risks directly for the enterprise.

ERM Frameworks

Traditional

There is more than one such framework. The COSO (Committee of Sponsoring organizations) framework is the most common. This framework essentially is in four parts:

Avoidance

Eliminating or reducing those activities that give rise to risk.

Reduction

Acting so as to reduce the likelihood or impact related to the risk.

Risk Share

Transferring some, or all of the risk, to others.

Acceptance

Do nothing and accept the risk as a business decision.

Monitoring is done by the employer's internal control operation.

COSO

The framework has eight components and four objectives:

Components

1. Internal Environment
2. Objective Setting
3. Event Identification
4. Risk Assessment
5. Risk Response
6. Control Activities
7. Information and Communication
8. Monitoring.

Objectives

1. **Strategy** – high-level goals, aligned with, and supporting, the organization’s mission.
2. **Operations** – effective and efficient use of resources.
3. **Financial Reporting** – reliability of operational and financial reporting.
4. **Compliance** – compliance with applicable laws and regulations.

The Committee of Sponsoring Organizations was an industry study and advisor group.

Casualty Actuary Society

This actuarial group defined ERM as “the discipline by which an organization in any industry assesses, controls, exploits, finances, and monitors risks from all sources for the purpose of increasing the organization’s short-range and long-term value to its stakeholders.” Two types of risk-related dimensions were considered: Risk type and risk management.

Risk Type

1. **Hazard Risk**
Liability Torts, Property Damage, Natural Catastrophe, Wars or acts of War.
2. **Financial Risk**
Pricing Risk, Asset Risk, Currency Risk, Liquidity Risk.
3. **Operational Risk**
Customer Satisfaction, Product Failure, Integrity, Reputational Risk
4. **Strategic Risks**
Competition, Social Trend, Capital Availability.

Risk Management

1. **Establishing Context**
This includes an understanding of the current conditions in which the organization operates on an internal, external and risk management context.

2. **Identifying Risks**

This includes the documentation of the material threats to the organization's achievement of its objectives and the representation of areas to the organization may exploit for competitive advantage.

3. **Analyzing and Measuring the Risk**

This includes the calibration and, if possible, the creation of probability distributions of outcomes for each material risk.

4. **Integrating the Risk**

This includes the aggregation of all risk distributions, reflecting correlations and portfolio effects, and the formulation of the results in terms of impact on the organization's key performance metrics.

5. **Assessing and Prioritizing the Risks**

This includes the determination of the contribution of each risk to the aggregate risk profile, and appropriate prioritization.

6. **Treating and Exploiting the Risks**

This includes the development of strategies for controlling and exploiting the various risks.

7. **Monitoring and Reviewing**

This includes the continual measurement and monitoring of the risk environment and the performance of the risk management strategies.

Current Developments

In General

The importance of risk management is becoming recognized more and more. Properly managed, risk will drive growth and opportunity.

Sarbanes-Oxley Act

This Act requires that publicly-traded U.S. Companies use some kind of control framework in performing risk assessments. One such control framework is that promulgated by the Committee of Sponsoring Organizations (COSO) of the Treading Commission. The COSO framework included a risk assessment element. Further impetus to the performance of risk assessments has come from the SEC.

New York Stock Exchanges (NYSE)

The NYSE requires the Audit Committee of each of its members to review policies with respect to risk assessment and risk management.

Corporate Debt Rating Agencies

The major debt rating agencies will be actively seeking information on the subject information or the subject employer's activities with respect to ERM.

Global Aspects of Enterprise Risk Management

The end result is that all of the actuarial organizations world wide will agree on one professional standard for all enterprise risk managers. The goals that the international bodies seek are as follows:

- The urgent development of a framework to facilitate the award of a designation denoting a common level of education achievement in the field of enterprise risk management;
- The implementation of appropriate educational and examination arrangements,
- The development and adoption of agreed joint educational due-diligence criteria and processes to support recognition of the designation by all participating organizations;
- The recognition and promotion of the educational achievement of holders of the designation by all participating organizations.

Response of the Actuaries

The activities of three actuarial organizations are reviewed:

1. Casualty Actuarial Society
2. Society of Actuaries
3. Institute and Faculty of Actuaries.

Casualty Actuarial Society

This Society issued a report that set forth the evolution, rationale, definitions, and frameworks for ERM from the casualty actuarial perspective, and also included a vocabulary, conceptual and technical foundations, actual practice and applications, and case studies. The society is active in the development of a global ERM designation.

Society of Actuaries

This Society has developed the Chartered Enterprise Risk Analyst (CERA) credential in response to the growing field of enterprise risk management. This is the first new professional credential to be introduced by the SOA since 1949. A CERA studies how various risks, including operational, investment, strategic, and reputational combine to affect organizations. CERAs work in environments beyond insurance, reinsurance and the consulting markets, including broader financial services, energy, transportation, media, technology, manufacturing and healthcare. This new professional designation encompasses the most comprehensive and rigorous demonstration available in the field of enterprise risk management. CERAs possess the unique ability to anticipate, identify,

quantify and optimize risk to bring about creative solutions to complex financial challenges facing business and society. In an increasingly complex and fast changing business environment, organizations are using risk management professionals with knowledge of the dynamics of risk

Institute and Faculty of Actuaries

This organization represents the actuaries in the United Kingdom. Enterprise Risk Management was adopted as one of the six actuarial practice areas, reflecting the increased recognition of actuaries as leading professionals in the ERM field. The primary areas of interest include the following:

- Education
- Career Support and Development
- Research
- External Relations.

Corporate Acceptance

Corporations are increasingly using ERM for its intended purpose. Learning lessons to date include the following:

- Adopting ERM is proving to be a significant challenge.
- Company size is a significant factor.
- European insurers are better positioned to use ERM than are others.
- ERM is influencing important strategic decisions.
- Economic capital standards are gaining ground.
- Operational risk remains a weak spot.

Essence of Enterprise Risk Management

The seven basic truths to be embraced and practiced by the ERM actuary are these:

1. The actuary must grasp both the risk and the investment elements with equal vigor.
2. Insurance products are becoming investment vehicles and vice versa.
3. A valuation and pricing should not only provide answers but also measures of uncertainties.
4. Valuing interest is equal in significance to valuing the risk.
5. Stochastic simulation models are essential.
6. Actuaries must embrace investments as a risk and also must embrace risk as an investment.
7. All corporate managers must subscribe to the wisdom and necessity of risk management.