Chapter 1

Introduction to Enterprise Risk Management and Insurance

Enterprise Risk Management

- Logical process used by firms to deal with multifaceted exposures to loss.
- Continuous process that identifies exposures and decides how to deal efficiently with them.
- Process that examines all risks collectively.
- Number of reasons:
  - Catastrophic Loss Events.
  - Corporate Financial Failures.
  - Shrinking Employee Benefits.

Risk – Classification

- Pure Risk - exposure that can result in a loss or no change (two possible outcomes).
- Speculative Risk - exposure that can result in a loss, no change, or gain (three possible outcomes).
Risk – Classification

- **Diversifiable Risk** – financial losses of a few members are spread across a much larger number of the group: “Risk Pooling.”
- **Non-Diversifiable Risk** – cannot be spread, but affects all members.

Spreading Risk

<table>
<thead>
<tr>
<th>Number of the event</th>
<th>Probability</th>
<th>Standard Deviation</th>
<th>Value</th>
<th>Coefficient of Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0.000</td>
<td>0.977</td>
<td>0.5394</td>
<td>0.3</td>
</tr>
<tr>
<td>100</td>
<td>0.000</td>
<td>0.977</td>
<td>5.7099</td>
<td>5.4666</td>
</tr>
<tr>
<td>1,000</td>
<td>0.000</td>
<td>0.977</td>
<td>53.944</td>
<td>32.0795</td>
</tr>
<tr>
<td>10,000</td>
<td>0.000</td>
<td>0.977</td>
<td>539.44</td>
<td>320.7950</td>
</tr>
<tr>
<td>100,000</td>
<td>0.000</td>
<td>0.977</td>
<td>5,394.4</td>
<td>3,207.9500</td>
</tr>
<tr>
<td>1,000,000</td>
<td>0.000</td>
<td>0.977</td>
<td>53,944.4</td>
<td>32,079.500</td>
</tr>
</tbody>
</table>

Spreading Risk
Insurance works well when:

- Many individuals purchase
  - Paying relatively small premium amounts
- Few people collect
  - Keeps rates affordable
  - Losses can be large

Risk – Classification

**TABLE 1-1 Some Diversifiable and Non-Diversifiable Risks**

<table>
<thead>
<tr>
<th>Diversifiable Risk</th>
<th>Non-Diversifiable Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure risk (insurer risk pool)</td>
<td>Unemployment</td>
</tr>
<tr>
<td>Speculative risk (investment portfolio)</td>
<td>Flood</td>
</tr>
<tr>
<td>Building fire</td>
<td>(Failed) launch of new product</td>
</tr>
<tr>
<td>Auto accident</td>
<td>Economic recession</td>
</tr>
<tr>
<td>Changes in input prices (corn, gas)</td>
<td>Global inflation</td>
</tr>
</tbody>
</table>

Risk – Classification

- **Risk Aversion** – firms and individuals prefer to take less risk rather than more.
- **Risk-Return Trade-Off** – if taking more risk, firms and individuals expect a higher return.
### Attitudes Toward Risks

- **Risk averse** refers to shying away from risks and preferring to have as much security and certainty as is reasonably affordable.
- **Risk seeker** is someone who will enter into an endeavor as long as a positive long run return on the money is possible, however unlikely.
- **Risk neutral** attitude is seen when one’s risk preference lies between the extremes of risk averse and risk seeking.

### Benefits Compared to No Insurance

- Stability of families.
- Aids planning ability to businesses.
- Facilitates credit transactions.
- Anti-monopoly device.
- Reduces credit costs.
- Increases capital efficiency.

### Social or Private?

- Insurance is a financial agreement in which an individual pays a premium to transfer the financial consequences to a risk pool.
- **Social** — administered and funded by governmental bodies.
- **Private** — independently owned and operated.
Employee Benefit Plans

- Nonwage compensation provided by firms as a protection from a number of personal pure risks:
  - Health.
  - Life.
  - Disability.
  - Retirement.

Risk Management Process

**FIGURE 1-1 Steps in the Risk Management Process**

- Establish the Goals of the Risk Management Function
- Identify Potential Loss Exposures
- Measure Potential Loss Exposures
- Choose Risk Handling Techniques
- Implement Techniques and Monitor Effectiveness
### Identify Potential Loss Exposures

- Property Risks.
- Liability Risks.
- Human Resource Risks.
- Indirect Losses.

### Measure Potential Loss Exposures

- Frequency of the loss.
- Severity of the loss.

### Beginning Steps: Communication and Identification

- **Risk mapping**: Charting entire spectrums of risk, not individual risk “silos” from each separate business unit.
- Risk identification and estimates of frequency and severity
- Plotting the risk map
Risk Handling Techniques

- Loss control – reduce the frequency and/or severity.
- Loss transfer – (contractual) arrangement to transfer risk to party that is best at mitigating, controlling, or bearing it.
- Loss financing – arrangement to pay for future costs.

Loss Control - Reduction

Always engage in, if beneficial

- Loss Reduction:
  - Steps designed to reduce the frequency and/or severity.
  - Take steps to reduce the damage before and after a loss.
### Loss Transfer

<table>
<thead>
<tr>
<th>Hold harmless agreements</th>
<th>- transfer of risk through a contract.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hedging</td>
<td>- take equal but opposite position on an even based on chance.</td>
</tr>
<tr>
<td>Financial risk management</td>
<td>- techniques to deal with interest rate, currency value, and crop price changes.</td>
</tr>
<tr>
<td>Leases</td>
<td>- transfers risk of obsolescence.</td>
</tr>
</tbody>
</table>

### ERM – Integrated Framework

<table>
<thead>
<tr>
<th>Top-Down Corporate Focus</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad Scope of Loss Exposures</td>
<td></td>
</tr>
<tr>
<td>Portfolio Perspective for Diversification Opportunities</td>
<td></td>
</tr>
<tr>
<td>Systematic Process of Risk Identification, Assessment, and Treatment</td>
<td></td>
</tr>
</tbody>
</table>
Reputation

- Reputation is a valuable asset
  - Value of reputation is PV of cash flows earned when you continue to perform as promised
  - Cost of lost reputation is the PV of higher costs/lost revenue when firms are discovered to have cheated their investors, suppliers, employees, or customers.
  - Counterparties stop doing business with the firm, or change the terms with which they are willing to continue to do business with the firm.
- Reputation is difficult to build, easy to damage
- Risks to reputation are important strategic risks

What deters fraud: Three legs of a stool...

1. Regulations and regulators
2. Personal ethics and integrity
3. Market forces
   - Repeat contracting and reputation

Obvious once you point it out, but underappreciated

Xerox’s cumulated market-adjusted returns
January 1997 – December 2006

- 12/99: Xerox announces before closing earnings will be short of projections
- 12/28, 12/30: Xerox pulls full-year 2000 earnings will be short of projections
- 3/26/07: SEC claims formal investigation
- 4/10-12/02: Wells Notice; SEC files civil complaint
- 3/26/07: SEC enforcement action concluded
- 1/1/97: Violation period begins
Chapter 1  Page 10

Xerox’s reputation loss...

- Price inflation during the violation period: $16.864b
- Readjustment (back to $15.725b) = 23% of loss
- Loss due to legal penalties = $0.523b = 10% of loss
- Reputation loss = $3.33b = 67% of loss
- Hypothetical value without the short-term inflation from cooking the books
- Actual price path

Xerox’s experience is close to the norm:

- Legal headaches are relatively small
- This is the larger part of the story

Source: Karpoff, Lee, and Martin (Journal of Financial and Quantitative Analysis, 2008)

Fines

- 3%

Class actions

- 6%

Readjustment

- 25%

Reputation loss

- 66%

Legal headaches are relatively small

This is the larger part of the story

Xerox’s experience is close to the norm:

Source: Karpoff, Lee, and Martin (Journal of Financial and Quantitative Analysis, 2008)
Product recalls

- Direct cost = 23%
- Reputation loss = 77%

Sources: Jarrell and Peltzman (JPE 1985), Rubin, Murphy, and Jarrell (Regulation 1988), Barber and Darrough (JPE 1990)

Frauds of private parties

- Direct cost = 7%
- Reputation loss = 93%

Sources: Karpoff and Lohr (JLE 1993), Alexander (JLE 1999), Murphy, Shrieves, and Tibbs (JFQA 2009)

Airplane crashes (when airline bears some blame)

- Direct cost = 38%
- Reputation loss = 62%

Sources: Chalk (Econ Inq. 1980), Mitchell and Maloney (JLE 1989), Bowman and Zimmerman (JPE 1988)
Environmental violations

Direct cost = 100%
Reputation loss = 0%

Sources: Klassen and McLaughlin (Mgmt. Sci. 1996), Karpoff, Lott, and Wehrly (JAE 2005)

Why is reputation important for some types of misconduct and not for others?

- Product recalls, frauds
  - Firm has repeat business with harmed parties, or potentially harmed parties
  - Customers, suppliers, employees change the terms of contract to reflect the higher probability that they will be harmed

- Environmental violations
  - Harmed parties do not in general do business with the firm
  - Parties with whom the firm does business suffer little or no direct harm
  - Customers, suppliers, employees have no incentive to change the terms of contract