



FN241: Session 1

Introduction to Risk Management and Insurance

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Bachelor of Economics, International Program

Thammasat University



Introduction to Course

| | |
|---------------------------|---|
| Number of credits: | 3 credits (3-0-6) |
| Lecture Time: | Tuesday and Thursday, 1.00 – 4.00 PM. |
| Lecture Venue: | Online via Facebook Group / Zoom / On demand videos |
| Instructor: | Dr. Winai Homsombat |
| | Email: winai.hom@mail.kmutt.ac.th |
| | Office hours: By appointment |

COURSE DESCRIPTION

Different types of risks and financial losses faced by individuals and organizations; types of damages, factors affecting risk management, principles of insurances, basic understanding of various kinds of insurance, customer selection, reinsurance, and insurance business management and control.

Prerequisites: Second-year student status

COURSE OBJECTIVES

1. Explore Insurance Industry and its determinants, products, rule and regulations in the users' perspective.
2. To enable students to understand framework, role, and function of financial department of business; goal and importance of financial risk management
3. To introduce the basic concept of financial risk management and insurance business including its roles in business world.
4. To equip students with analytical and problem-solving skills using appropriate computer software and its programming to solve basic risk management in finance world.
5. To provide students broad financial knowledge, corporate and investment, suffices for any business related functions

FN241 FACEBOOK GROUP



URL:
bit.ly/241fbgroup19

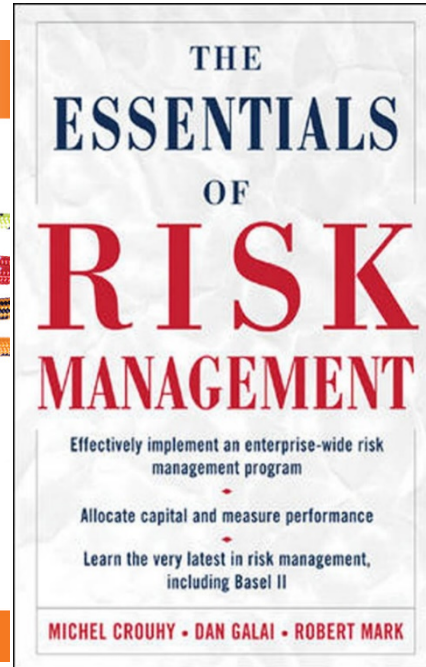
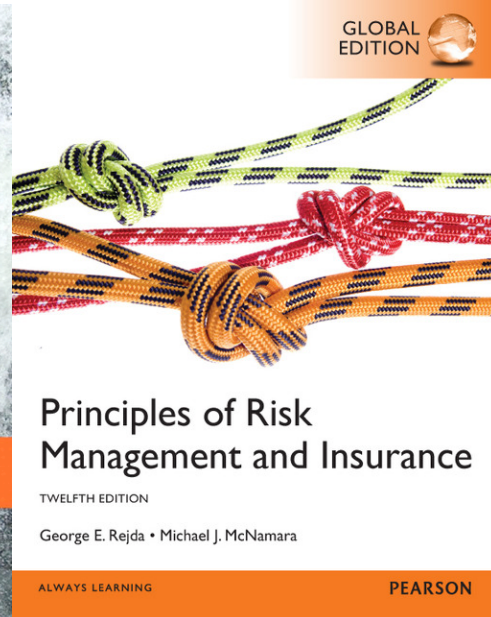
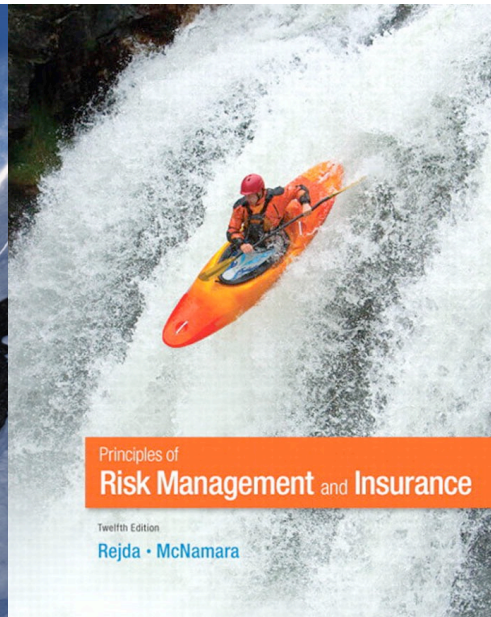
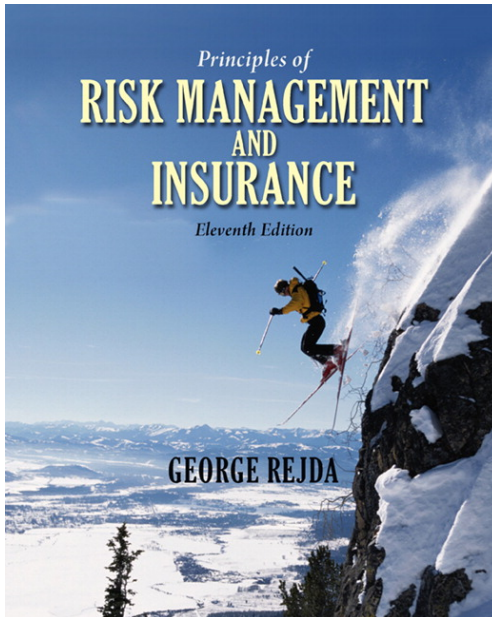
The screenshot shows the Facebook group interface. At the top is a blue cover photo with a shield icon containing a padlock. The text on the cover reads: "FN241 Risk Management and Insurance [Summer 2019]", "Dr. Winai Homsombat", "Bachelor of Economics, International Program", and "Thammasat University". To the right of the text are icons of a robotic arm, a server tower, and a gear mechanism. An "Edit" button is visible in the bottom right of the cover. Below the cover is the group title "FN241 Risk Management and Insurance [Summer 2019]" and the status "Private group · 1 member". A profile picture of a person and a green "+ Invite" button are on the right. At the bottom, there is a navigation bar with tabs for "About", "Discussion" (which is highlighted with a green underline), "Members", "Events", and "Media". Search and menu icons are located on the far right of the navigation bar.

Tentative Teaching Schedule

| Session | Topics |
|-----------|--|
| 1 | Introduction to Course Introduction to Risk Management and Insurance |
| 2 – 3 | Introduction to Enterprise Risk Management (ERM) |
| 4 | Insurance Mechanism |
| 5 | Legal Principles |
| 6 | Life Insurance: Basic Concepts |
| 7 | Mid-term project presentation |
| 8 | MID-TERM EXAMINATION (THURSDAY, JULY 2, 2020: 1.00 – 3.00 PM) |
| 9 – 10 | Life Insurance: Types of Life Insurance |
| 11 | Buying Life Insurance |
| 12 | Analysis of Insurance Contracts |
| 13-14 | Introduction to Financial Risk Management |
| 15 - 16 | Final Project Presentation |
| 17 | FINAL EXAMINATION (TUESDAY, AUGUST 4, 2020: 1.30 – 4.30 PM) |

Course Requirements and Materials

- George, E. Rejda, and Michael McNamara, “Principals of Risk Management and Insurance”, Pearson; 12th Edition (2013).
- Crouhy, Michel, Dan Galai, and Robert Mark, “The Essentials of Risk Management”, McGraw-Hill Education: 2nd Edition (2014)



Course Assessment

| | | |
|---------------------|-----|---|
| Assignment and quiz | 20% | |
| Term project | 20% | |
| Presentation | 10% | |
| MID-TERM EXAM* | 20% | (THURSDAY, JULY 2, 2020: 1.00 – 3.00 PM) |
| FINAL EXAM | 30% | (TUESDAY, AUGUST 4, 2020: 1.30 – 4.30 PM) |

Note:

- *Mid-term examination format is set as take-home examination or assignment. Details will be informed later.*
- *There are term project and presentation in the last 2 sessions. Your project must incorporate key concept of risk management and insurance into the analysis. Details will be discussed later in class.*

Outline

- Insurance vs. Finance
- Risk in Our Society
- Insurance and Risk



Insurance vs. Finance

Actuarial Science Meets Financial Economics

Buhlmann's classifications of actuaries

Actuaries of the first kind - Life

Deterministic calculations

Actuaries of the second kind - Casualty

Probabilistic methods

Actuaries of the third kind - Financial

Stochastic processes

Similarities

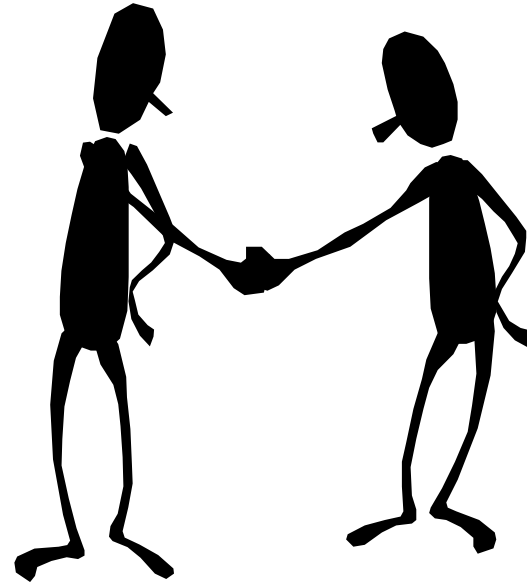
Both Actuaries and Financial Economists:

Are mathematically inclined

Address monetary issues

Incorporate risk into calculations

Use specialized languages



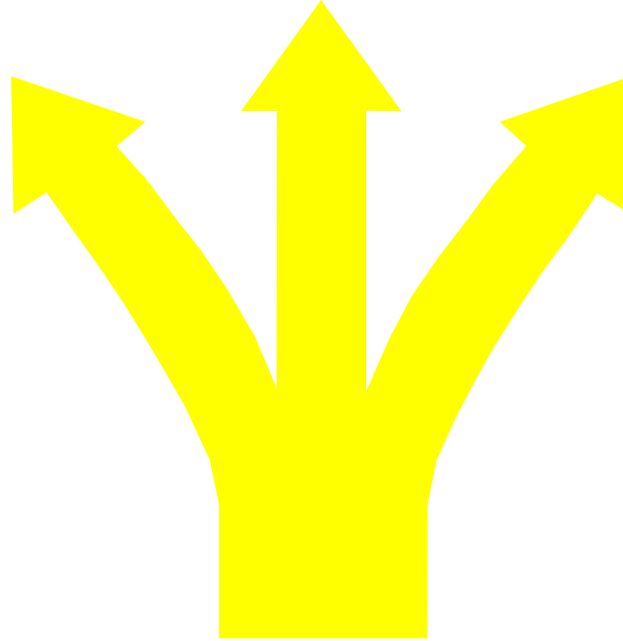
Different Approaches

Risk

Interest Rates

Profitability

Valuation



Risk

Insurance

Pure risk - Loss/No loss situations

Law of large numbers

Finance

Speculative risk - Includes chance of gain

Portfolio risk

Interest Rates

Insurance

One dimensional value

Constant

Conservative

Finance

Multiple dimensions

Market versus historical

Stochastic

Profitability

Insurance

Profit margin on sales

Worse yet - underwriting profit margin that ignores investment income

Finance

Rate of return on investment

Valuation

Insurance

Statutory value

Amortized values for bonds

Ignores time value of money on loss reserves

Finance

Market value

Difficulty in valuing non-traded items



Risk in Our Society

Key concept ...

- Meaning of Risk
- Chance of Loss
- Peril and Hazard
- Basic Categories of Risk
- Types of Pure Risk
- Methods of Handling Risk

Meaning of Risk

- **Risk**: Uncertainty concerning the occurrence of a loss
- **Objective Risk vs. Subjective Risk**
 - **Objective risk** is defined as the relative variation of actual loss from expected loss
 - It can be statistically calculated using a measure of dispersion, such as the standard deviation
 - **Subjective risk** is defined as uncertainty based on a person's mental condition or state of mind
 - Two persons in the same situation may have different perceptions of risk
 - High subjective risk often results in conservative behavior

Chance of Loss

- Chance of loss: The probability that an event will occur
- **Objective Probability vs. Subjective Probability**
 - Objective probability refers to the long-run relative frequency of an event assuming an infinite number of observations and no change in the underlying conditions
 - It can be determined by deductive or inductive reasoning
 - Subjective probability is the individual's personal estimate of the chance of loss
 - A person's perception of the chance of loss may differ from the objective probability

Peril and Hazard

- A peril is defined as the cause of the loss
 - In an auto accident, the collision is the peril
- A hazard is a condition that increases the chance of loss
 - Physical hazards are physical conditions that increase the chance of loss (icy roads, defective wiring)
 - Moral hazard is dishonesty or character defects in an individual, that increase the chance of loss (faking accidents, inflating claim amounts)
 - Morale Hazard is carelessness or indifference to a loss because of the existence of insurance (leaving keys in an unlocked car)
 - Legal Hazard refers to characteristics of the legal system or regulatory environment that increase the chance of loss (large damage awards in liability lawsuits)

Basic Categories of Risk

- **Pure and Speculative Risk**

- A pure risk is one in which there are only the possibilities of loss or no loss (earthquake)
- A speculative risk is one in which both profit or loss are possible (gambling)

- **Fundamental and Particular Risk**

- A fundamental risk affects the entire economy or large numbers of persons or groups (hurricane)
- A particular risk affects only the individual (car theft)

- **Enterprise Risk**

- Enterprise risk encompasses all major risks faced by a business firm, which include: pure risk, speculative risk, strategic risk, operational risk, and financial risk

Example: The 10 Most Costly Hurricanes in the United States (\$ millions)

| Rank | Date | Location | Hurricane | Estimated insured loss ^a | |
|------|-------------------------|--|-----------|-------------------------------------|------------------------------|
| | | | | Dollars When Occurred | In 2005 Dollars ^b |
| 1 | Aug. 25–29, 2005 | AL, FL, GA, LA, MS, TN | Katrina | \$40,600 | \$40,600 |
| 2 | Aug. 23–24, 25–26, 1992 | FL, LA, MS | Andrew | 15,500 | 21,576 |
| 3 | Oct. 24, 2005 | FL | Wilma | 10,300 | 10,300 |
| 4 | Aug. 13–15, 2004 | FL, NC, SC | Charley | 7,475 | 7,728 |
| 5 | Sep. 16–21, 2004 | AL, FL, GA, OH, PA, NY, NC, 8 other states | Ivan | 7,110 | 7,351 |
| 6 | Sep. 17–18, 21–22, 1989 | U.S. Virgin Islands, PR, GA, SC, NC, VA | Hugo | 4,195 | 6,607 |
| 7 | Sep. 20–26, 2005 | AL, AR, FL, LA, MS, TN, TX | Rita | 5,000 | 5,000 |
| 8 | Sep. 5, 2004 | FL, GA, SC, NC, NY | Frances | 4,595 | 4,751 |
| 9 | Sep. 15–25, 2004 | PR, FL, PA, GA, SC, NY | Jeanne | 3,440 | 3,557 |
| 10 | Sep. 21–28, 1998 | PR, U.S. Virgin Islands, AL, FL, LA, MS | Georges | 2,900 | 3,475 |

^aProperty coverage only.
^bAdjusted to 2005 dollars by the Insurance Information Institute.

SOURCE: ISO; Insurance Information Institute, *Insurance Factbook*.

Types of Pure Risks

- Personal risks involve the possibility of a loss or reduction in income, extra expenses or depletion of financial assets:
 - Premature death of family head
 - Insufficient income during retirement
 - Most workers are not saving enough for a comfortable retirement
 - Poor health (catastrophic medical bills and loss of earned income)
 - Involuntary unemployment

Example: Reported Total Savings and Investments among Those Responding, by Age

(not including value of primary residence or defined benefit plans)

| | Worker Age Group | | | | | |
|---------------------|------------------|------------|------------|------------|----------|--------------|
| | All Workers | Ages 25-34 | Ages 35-44 | Ages 45-54 | Ages 55+ | All Retirees |
| Less than \$10,000 | 39% | 54% | 34% | 31% | 36% | 30% |
| \$10,000-\$24,999 | 14 | 19 | 15 | 13 | 6 | 12 |
| \$25,000-\$49,999 | 12 | 11 | 14 | 14 | 8 | 14 |
| \$50,000-\$99,999 | 12 | 7 | 16 | 12 | 12 | 11 |
| \$100,000-\$149,999 | 5 | 1 | 7 | 5 | 7 | 7 |
| \$150,000-\$249,999 | 6 | 3 | 5 | 10 | 5 | 6 |
| \$250,000-\$499,999 | 6 | 1 | 5 | 8 | 13 | 12 |
| \$500,000 or more | 6 | 4 | 4 | 8 | 13 | 10 |

SOURCE: Employee Benefit Research Institute, "Will More of Us Be Working Forever? The 2006 Confidence Survey," *EBRI Issue Brief*, No. 292, Figure 3, April 2006.

Types of Pure Risks

- **Property risks** involve the possibility of losses associated with the destruction or theft of property:
 - Physical damage to home and personal property from fire, tornado, vandalism, or other causes
- **Direct loss vs. indirect loss**
 - A direct loss is a financial loss that results from the physical damage, destruction, or theft of the property, such as fire damage to a restaurant
 - An indirect loss results indirectly from the occurrence of a direct physical damage or theft loss, such as lost profits due to inability to operate after a fire

Types of Pure Risks

- Liability risks involve the possibility of being held liable for bodily injury or property damage to someone else
 - There is no maximum upper limit with respect to the amount of the loss
 - A lien can be placed on your income and financial assets
 - Defense costs can be enormous



Insurance and Risk

Key concept ...

- Definition and Basic Characteristics of Insurance
- Requirements of an Insurable Risk
- Insurance vs. Gambling
- Insurance vs. Hedging
- Types of Insurance

Definition of Insurance

Insurance is the **pooling** of **fortuitous losses** by transfer of such risks to insurers, who agree to **indemnify** insureds for such losses, to provide other pecuniary benefits on their occurrence, or to render services connected with the risk

Basic Characteristics of Insurance

- **Pooling of losses**

- Spreading losses incurred by the few over the entire group
- Risk reduction based on the Law of Large Numbers

- **Payment of fortuitous losses**

- Insurance pays for losses that are unforeseen, unexpected, and occur as a result of chance

- **Risk transfer**

- A pure risk is transferred from the insured to the insurer, who typically is in a stronger financial position

- **Indemnification**

- The insured is restored to his or her approximate financial position prior to the occurrence of the loss

Requirements of an Insurable Risk

1) Large number of exposure units

- to predict average loss

2) Accidental and unintentional loss

- to control moral hazard
- to assure randomness

3) Determinable and measurable loss

- to facilitate loss adjustment
 - insurer must be able to determine if the loss is covered and if so, how much should be paid.

Requirements of an Insurable Risk

4) No catastrophic loss

- to allow the pooling technique to work
- exposures to catastrophic loss can be managed by:
 - dispersing coverage over a large geographic area
 - using reinsurance
 - catastrophe bonds

5) Calculable chance of loss

- to establish an adequate premium

Requirements of an Insurable Risk

6) Economically feasible premium

- so people can afford to buy
- Premium must be substantially less than the face value of the policy

Based on these requirements:

- Most personal, property and liability risks can be insured
- Market risks, financial risks, production risks and political risks are difficult to insure

Example: Risk of Fire as an Insurable Risk

| <i>Requirements</i> | <i>Does the risk of fire satisfy the requirements?</i> |
|--------------------------------------|--|
| 1. Large number of exposure units | |
| 2. Accidental and unintentional loss | |
| 3. Determinable and measurable loss | |
| 4. No catastrophic loss | |
| 5. Calculable chance of loss | |
| 6. Economically feasible premium | |

Example: Risk of Unemployment as an Insurable Risk

| <i>Requirements</i> | <i>Does the risk of unemployment satisfy the requirements?</i> |
|--------------------------------------|--|
| 1. Large number of exposure units | |
| 2. Accidental and unintentional loss | |
| 3. Determinable and measurable loss | |
| 4. No catastrophic loss | |
| 5. Calculable chance of loss | |
| 6. Economically feasible premium | |

Adverse Selection and Insurance

- Adverse selection is the tendency of persons with a higher-than-average chance of loss to seek insurance at standard rates
- If not controlled, adverse selection result in higher-than-expected loss levels
- Adverse selection can be controlled by:
 - careful underwriting (selection and classification of applicants for insurance)
 - policy provisions (e.g., suicide clause in life insurance)

Insurance vs. Gambling

Insurance

- Insurance is a technique for handling an already existing pure risk
- Insurance is socially productive:
 - both parties have a common interest in the prevention of a loss

Gambling

- Gambling creates a new speculative risk
- Gambling is not socially productive
 - The winner's gain comes at the expense of the loser

Insurance vs. Hedging

Insurance

- Risk is transferred by a contract
- Insurance involves the transfer of insurable risks
- Insurance can reduce the objective risk of an insurer through the Law of Large Numbers

Hedging

- Risk is transferred by a contract
- Hedging involves risks that are typically uninsurable
- Hedging does not result in reduced risk

Types of Insurance

- Private Insurance
 - Life and Health
 - Property and Liability
- Government Insurance
 - Social Insurance
 - Other Government Insurance

Example: Several types of risk are present in the American economy. For each of the following, identify the type of risk that is present. Explain your answer.

- 1) The Department of Homeland Security alerts the nation of a possible attack by terrorists.
- 2) A house may be severely damaged in a fire.
- 3) A family head may be totally disabled in a plant explosion.
- 4) An investor purchases 100 shares of Microsoft stock.
- 5) A river that periodically overflows may cause substantial property damage to thousands of homes in the floodplain.
- 6) Home buyers may be faced with higher mortgage payments if the Federal Reserve raises interest rates at its next meeting.
- 7) A worker on vacation plays the slot machines in a casino.



QUESTION?