

## MASTER Economics Economics of risk and insurance

Contacts	Description	Information
Renaud BOURLES renaud.bourles@univ-amu.fr	Part of course. Code: PA-ME5BEC-BECCV26B	<a href="http://formations.univ-amu.fr">http://formations.univ-amu.fr</a> Department: Faculty of Economics and Management
Dominique HENRIET dominique.henriet@univ-amu.fr	Domain: Law, Economics, Management	<i>Last modification: 19/07/2018</i>

### CONTENT

The aim of this course is – in a first part – to present decision and contract theories in a risky context. In the second part, we apply it to insurance demand and show how individual behaviours aggregate in the insurance market and how prices form.

#### Course outline :

Chapter 1 - Risk and measures of risk (Dominique Henriet, 9h)

1. Assumptions on risk
2. Risk Analysis
  - 2.1 Cumulative Distribution function
  - 2.2 Stochastic dominance of degree 1
  - 2.3 Quantile Function and Value at Risk
3. Spread Analysis
  - 3.1 Expected Shortfall, Lorenz function
  - 3.2 Mean Preserving Concentration
  - 3.3 Measures based on the quantile function.
  - 3.4 Coherent risk measures
4. Second degree Stochastic dominance
  - 4.1 Mean preserving spread
5. Expected utility hypothesis
6. Dual criterion
7. Ambiguity

Chapter 2 – Insurance economics (Renaud Bourlès, 12h)

1. The single risk model
  - 1.1 Mossin's model
  - 1.2 Wealth effect
  - 1.3 Price effect
2. Product differentiation
  - 2.1 Introducing heterogeneity in Mossin's model
  - 2.2 Measuring the probability of damage : scoring methods
  - 2.3 Estimating scoring models
3. Unobservable criteria
  - 3.1 The adverse selection problem
  - 3.2 Self-selection : the Rothschild-Stiglitz model
  - 3.3 Equilibrium existence
4. Moral hazard
  - 4.1 Self-insurance and its consequences

- 4.2 Self-protection and moral hazard
- 4.3 Ex-post moral hazard : the case of insurance fraud
5. Extensions and exercises
  - 5.1 Extensions of Mossin's model
  - 5.2 Insurance demand and exogenous risk
  - 5.3 On the value of genetic information
  - 5.4 Genetic information and self-insurance
  - 5.5 Health risks and bidimensional utility
  - 5.6 Life insurance and savings
- Chapter 3 – Market & Counterparty Risk Management
  1. Risk Management in Banks
  2. Markets Risks
    - 2.1 Sensitivities
    - 2.2 Value at Risk (VaR)
    - 2.3 Limitations of the VaR
  - 2.4 Case Study
  3. Counterparty Risks
    - 3.1 Definition and key elements
    - 3.2 Potential Future Expose (PFE) and Expected Positive Exposure (EPE)
    - 3.3 Credit Valuation Adjustment (CVA)

### PROFESSIONAL SKILLS

- Know various measure of risk, their properties, advantages and limitations
- Know how to model behaviour under risk
- Understand how insurance products are priced

### BIBLIOGRAPHY

- Eeckhoudt L., C. Gollier and H. Schlesinger, 2005, Economic and Financial. Decisions under Risk, Princeton University Press
- Henriet, D. and Rochet, J.-C., "Microéconomie de l'assurance", Economica, 1990.
- Picard, P., "Economic Analysis of Insurance Fraud", Handbook of Insurance, 2nd edition, G.
- Schlessinger, H., "The Theory of Insurance Demand", Handbook of Insurance, G. Dionne. (ed), Kluwer, 2000.

## **MASTER Economics** **Economics of risk and insurance**

### **ORGANISATION**

The course is organized in 24h of lectures at Ecole Centrale Marseille and separated in three part. The first part on risk and risk measures, from a theoretical point of view, is taught by Dominique Henriot and last 9h. The second, on insurance economics, is taught by Renaud Bourlès and last 12h. Finally, the last part on practical risk management in banks is taught by Clément Depoutre. Handouts are provided.

### **FUNDAMENTAL PREREQUISITES**

Knowledge in probability and decision theories.

### **VOLUME OF TEACHINGS**

- Lectures: 24 hours

### **TRAINING**

#### **Master's degree: Economics**

- Quantitative finance and insurance

