

**ADVANCED INSURANCE ECONOMICS**

*Syllabus*

**Sprechstunde:** Wednesdays 11:00 – 12:00, or by appointment  
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**Course Description:** This course covers the basics of the economics of uncertainty with a focus on models of insurance theory. Since insurance studies the transfer and financing of various risks, the models we study are very adaptable to a variety of other settings in economics and finance. The course will mostly examine individual choice and insurance demand. The course uses as a foundation both basic probability theory and decision theory. Topics covered include rational insurance choice, the effects of multiple risks on decision making, how changes in risk affect behavior, optimal contract design, alternatives to insurance, and markets with incomplete information.

**Background Texts:** (On reserve in the Library)

Dionne, G., ed., (2000), *Handbook of Insurance*, Kluwer Academic Publishers, ISBN 0-7923-7870-9.

Eeckhoudt, L., C. Gollier and H. Schlesinger, *Economic and Financial Decisions under Risk*, 2005, Princeton University Press. ISBN 0691122156 (paperback edition).

Gollier, C. (2001), *The Economics of Risk and Time*, MIT Press, ISBN 0-262-07215-7.

Rees, R., and A. Wambach (2008), *The Microeconomics of Insurance*, Foundations and Trends in Microeconomics 4, Now Publishers, ISSN 1547-9846

**Review Articles:** (linked on line)

“Foundations of Probability Theory”  
[http://www.mathematik.uni-muenchen.de/~biagini/fin2/stochastic\\_basics.pdf](http://www.mathematik.uni-muenchen.de/~biagini/fin2/stochastic_basics.pdf)

“The Theory of Insurance Demand”  
<http://www.cba.ua.edu/~hschlesi/pdf/InsuranceDemand-DionneBook.pdf>

“Insurance Demand without the Expected-Utility Paradigm”  
<http://www.cba.ua.edu/~hschlesi/pdf/InsuranceDemand-DionneBook.pdf>

**Grades:**

Proseminar :

Oral examination at end of the lectures  
Mündliche Prüfung (in deutscher oder englischer Sprache)

Ph.D. :

A short paper about one of the “additional topics.”  
and a written take-home exam. (more details about both in class)

### **Course Outline (subject to change)**

0. Probability Spaces, Preference Functionals, Stieltjes Integrals
1. Expected Utility and Risk Aversion
2. Rational Insurance Purchasing
3. Insurance with Multiple Risks
4. Higher Order Risk Effects
5. Increases in Risk and Stochastic Dominance
6. Optimal Risk Sharing
7. First vs. Second Order Risk Aversion and Non-Expected Utility Theories
8. Self Protection and Alternative Risk Transfer
9. Adverse Selection and Ex Ante Moral Hazard

### **Possible Additional Topics**

Terrorism Risk (and Extremus)  
 Ex Post Moral Hazard and Insurance Fraud  
 Insurance with State-Dependent Preferences  
 Broker Compensation  
 D&O Liability Insurance  
 Longevity risk  
 Regulation of Insurance

### **Some additional readings (not mandatory)**

#### **1. Expected Utility and Risk Aversion**

Fishburn, P. (1989), "Retrospective on the Utility Theory of von Neumann and Morgenstern," *Journal of Risk and Uncertainty*.

Pratt, J. (1964), "Risk Aversion in the Small and in the Large," *Econometrica*.

Rabin, M. (2000), "Risk Aversion and Expected-Utility Theory: A Calibration Theorem," *Econometrica*.

Yaari, M. (1969), "Some Remarks on Measures of Risk Aversion and Their Uses," *Journal of Economic Theory*.

#### **2. Rational Insurance Purchasing**

Eeckhoudt, L. and C. Gollier (1999), "Insurance of Lower Probability Events," *Journal of Risk and Insurance*.

Hoy, M. and A. Robson (1981), "Insurance as a Giffen Good," *Economics Letters*.

Mossin, J. (1968), "Aspects of Rational Insurance Purchasing," *Journal of Political Economy*.

Schlesinger, H. (1981), "The Optimal Level of Deductibility in Insurance Contracts," *Journal of Risk and Insurance*.

### **3. Insurance with Multiple Risks**

- Doherty, N. and H. Schlesinger (1983), "Optimal Insurance in Incomplete Markets," *Journal of Political Economy*.
- Doherty, N. and H. Schlesinger (1990), "Rational Insurance Purchasing: Consideration of Contract Nonperformance," *Quarterly Journal of Economics*.
- Eeckhoudt, L. and M. Kimball (1992), "Background Risk, Prudence and the Demand for Insurance," in G. Dionne (ed.), *Contributions to Insurance Economics*, Kluwer.
- Gollier, C. and J. Pratt (1996), "Risk Vulnerability and the Tempering Effect of Background Risk," *Econometrica*.
- Kihlstrom, R., D. Romer and S. Williams (1981), "Risk Aversion with Random Initial Wealth," *Econometrica*.
- Nachman, D. (1982), "Preservation of 'More Risk Averse' Under Expectations," *Journal of Economic Theory*.
- Ross, S. (1981), "Some Stronger Measures of Risk Aversion in the Small and in the Large with Applications," *Econometrica*.

### **4. Higher Order Risk Effects**

- Caballe, J. and A. Pomansky (1996), "Mixed Risk Aversion," *Journal of Economic Theory*.
- Eeckhoudt, L. and H. Schlesinger (2006), "Putting Risk in its Proper Place," *American Economic Review*.
- Eeckhoudt, L., B. Rey and H. Schlesinger (2007), "A Good Sign for Multivariate Risk Taking," *Management Science*.
- Kimball, M. (1990), "Precautionary Savings in the Small and in the Large," *Econometrica*.
- Kimball, M. (1993), "Standard Risk Aversion," *Econometrica*.

### **5. Increases in Risk and Stochastic Dominance**

- Athey, S. (2002), "Monotone Comparative Statics under Uncertainty," *Quarterly Journal of Economics*.
- Eeckhoudt, L., C. Gollier and H. Schlesinger (1996), "Changes in Background Risk and Risk-Taking Behavior," *Econometrica*.
- Ekern, S. (1980), "Increasing Nth-Degree Risk," *Economics Letters*.
- Fei, W. and H. Schlesinger (2008), "Precautionary Insurance Demand with State-Dependent Background Risk," *Journal of Risk and Insurance*.
- Gollier, C. (1995), "The Comparative Statics of Changes in Risk Revisited," *Journal of Economic Theory*.

Jindapon, P. and W. Neilson (2007), "Higher-Order Generalizations of Arrow-Pratt and Ross Risk Aversion: A Comparative Statics Approach," *Journal of Economic Theory*.

Menezes, C., C. Geiss and J. Tressler (1980), "Increasing Downside Risk," *American Economic Review*.

Rothschild, M. and J. Stiglitz (1970), "Increasing Risk: I: A Definition," *Journal of Economic Theory*.

Rothschild, M. and J. Stiglitz (1971), "Increasing Risk II: Its Economic Consequences," *Journal of Economic Theory*.

## **6. Optimal Risk Sharing**

Gollier, C. and H. Schlesinger (1996), "Arrow's Theorem on the Optimality of Deductibles: A Stochastic Dominance Approach," *Economic Theory*.

Karni, E. (1992), "Optimal Insurance: A Nonexpected Utility Analysis," in G. Dionne (ed.), *Contributions to Insurance Economics*, Kluwer.

Mahul, Olivier and Brian D. Wright (2004), "Implications of Incomplete Performance for Optimal Insurance," *Economica*

Raviv, A. (1979), "The Design of an Optimal Insurance Policy," *American Economic Review*.

Zilcha, I. and S. H. Chew (1990), "Invariance of the Efficient Sets when the Expected Utility Hypothesis is Relaxed," *Journal of Economic Behavior and Organization*.

## **7. First- vs. Second-Order Risk Aversion and Non-Expected Utility Theory**

Braun, M. and A. Muermann (2004) "The Impact of Regret on the Demand for Insurance", *Journal of Risk and Insurance*.

Doherty, N. and L. Eeckhoudt (1995), "Optimal Insurance without Expected Utility: The Dual Theory and the Linearity of Insurance Contracts," *Journal of Risk and Uncertainty*.

Gilboa, I., and D. Schmeidler (1989), "Maxmin Expected Utility with a Non-Unique Prior", *Journal of Mathematical Economics*.

Kahneman, D. and A. Tversky (1992), "Advances in Prospect Theory: Cumulative Representation of Uncertainty," *Journal of Risk and Uncertainty*.

Kőszegi, B. and M. Rabin (2006) "A Model of Reference-Dependent Preferences", *Quarterly Journal of Economics*.

Machina, M. (1995), "Non-Expected Utility and the Robustness of the Classical Insurance Paradigm," *Geneva Papers on Risk and Insurance Theory*.

- Meyer, J. (1987), "Two-Moment Decision Models and Expected Utility Maximization," *American Economic Review*
- Segal, U. and A. Spivak (1990), "First Order vs. Second Order Risk Aversion," *Journal of Economic Theory*.
- Sinn, H.-W. (1980), *Ökonomische Entscheidungen bei Ungewißheit*, Mohr: Tübingen.
- Starmer, C. (2000), "Development in Non-Expected Utility Theory: The Hunt for a Descriptive Theory of Choice under Risk," *Journal of Economic Literature*.
- Yaari, M. (1987), "The Dual Theory of Choice under Risk," *Econometrica*.

### **8. Self-Protection and Alternative Risk Transfer**

- Briys, E. and H. Schlesinger (1990), Risk-Aversion and the Propensities for Self-Insurance and Self-Protection," *Southern Economic Journal*, 5
- Doherty, N. (1997), "Innovations in Managing Catastrophe Risk," *Journal of Risk and Insurance*.
- Doherty, N. and H. Schlesinger (2002), "Insurance Contracts and Securitization," *Journal of Risk and Insurance*.
- Ehrlich, I. and G. Becker (1972), "Market Insurance, Self-Insurance and Self-Protection," *Journal of Political Economy*,
- Eeckhoudt, L. And G. Dionne (1985), "Self-Insurance, Self-Protection and Increased Risk-Aversion," *Economic Letters*
- Froot, K.A. (2001), "The Market for Catastrophe Risk: A Clinical Examination." *Journal of Financial Economics*.
- Froot, K.A., D. Scharfstein and J. Stein (1993), "Risk Management: Coordinating Investment and Financing Problems," *Journal of Finance*.
- Jaffee, D. and T. Russell (1997), "Catastrophe Insurance, Capital Markets and Uninsurable Risks," *Journal of Risk and Insurance*.
- Jullien, B., B. Salanie and F. Salanie (1999), "Should More Risk Averse Agents Exert More Effort?" *Geneva Papers on Risk and Insurance Theory*.

### **9. Adverse Selection and Ex Ante Moral Hazard**

- Arnott, R. and J. Stiglitz (1988), "Randomization with Asymmetric Information," *Rand Journal of Economics*.
- Chiappori, P.A. and B. Salanié (2000), "Testing for Asymmetric Information in Insurance Markets," *Journal of Political Economy*.
- D'Arcy, S. and N. Doherty (1990), "Adverse Selection, Private Information and Lowballing in Insurance Markets," *Journal of Business*.

- Dionne, G. and N. Doherty (1994), "Adverse Selection, Commitment and Renegotiation: Extension to and Evidence from Insurance Markets," *Journal of Political Economy*.
- Engers, M. and L. Fernandez (1987), "Market Equilibrium with Hidden Knowledge and Self-Selection," *Econometrica*.
- Holmström, B. (1979), "Moral Hazard and Observability," *Bell Journal of Economics*.
- Miyazaki, H. (1977), "The Rat Race and Internal Labor Markets," *Bell Journal of Economics*.
- Pauly, M. (1968), "The Economics of Moral Hazard," *American Economic Review*.
- Pauly, M. (1974), "Overinsurance and Public Provision of Insurance," *Quarterly Journal of Economics*.
- Puelz, R. and A. Snow (1994), "Evidence on Adverse Selection: Equilibrium Signalling and Cross Subsidization in the Insurance Market," *Journal of Political Economy*.
- Rothschild, M. and J. Stiglitz (1976), "Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information," *Quarterly Journal of Economics*.
- Shavell, S. (1979), "Risk Sharing and Incentives in the Principal and Agent Relationship," *Bell Journal of Economics*.
- Shavell, S. (1979), "On Moral Hazard and Insurance," *Quarterly Journal of Economics*.
- Stiglitz, J. (1977), "Monopoly, Non-Linear Pricing and Imperfect Information: The Insurance Market," *Review of Economic Studies*.
- Stiglitz, J. (1983), "Risk, Incentives and Insurance: The Pure Theory of Moral Hazard," *Geneva Papers on Risk and Insurance*.
- Wilson, C. (1977), "A Model of Insurance Markets with Asymmetric Information," *Journal of Economic Theory*.