



Lundi 18 juin 2018

à l'UNIL  
Extraneuf 109

- ≡ 9 h 30 Welcome coffee
- ≡ 10 h 00 Jose Garrido (Concordia University, Montreal)  
*Computational Bayesian Credibility for GLMs*
- ≡ 10 h 45 Discussion by Iegor Rudnytskyi and Yves Staudt
- ≡ 11 h 00 Phd talk #1: Michel Fuino (UNIL)  
*An Econometric Study on the Duration of Long-Term Care: Main Drivers and Substitution Effect*
- ≡ 11 h 20 Q&A's (including 2 questions by ISFA PhD students)
- ≡ 11 h 30 Networking Time
- ≡ 12 h 00 Lunch
- ≡ 13 h 30 Tim Boonen (University of Amsterdam)  
*Competitive Equilibria in a Comonotone Market*
- ≡ 14 h 15 Discussion by Jean-Louis Rullière
- ≡ 14 h 30 Phd talk #2: Claire Mouminoux (ISFA)  
*Are we more honest than others think we are?*
- ≡ 14 h 50 Q&A's (including 2 questions by ISFA PhD students)
- ≡ 15 h 00 Phd talk #3: Viktoriya Glushko (UNIL)  
*Analysis of cause-specific mortality rates using cointegration*
- ≡ 15 h 20 Q&A's (including 2 questions by ISFA PhD students)
- ≡ 15 h 30 Phd talk #4: Steve Briand (ISFA)  
*Time inconsistency and Delayed Retirement Decision: the French Pension Bonus*
- ≡ 15 h 50 Q&A's (including 2 questions by UNIL PhD students)
- ≡ 16h00 Apéro
- ≡ 16h30 Departure



## Abstracts:

### **Jose Garrido:** Computational Bayesian Credibility for GLMs

Abstract: We revisit the classical credibility results of Jewell (1974) and Bühlmann (1967) to obtain credibility premiums for a GLM severity model using a modern Bayesian approach. Here prior distributions can be chosen from out-of-sample information, without restrictions to be conjugate to the severity distribution. Then we use the relative entropy between the "true" and the estimated models as a loss function, without restricting credibility premiums to be linear. The entropic credibility premiums that result are simply obtained as predictions from GLMs fitted not to the observed claims, but their posterior means from the Bayesian model. A numerical illustration on real data shows the feasibility of the approach, now that computing power is cheap, and simulations software readily available.

### **Michel Fuino:** An Econometric Study on the Duration of Long-Term Care: Main Drivers and Substitution Effect

Abstract: In the last decade, the increasing number of elderly has highlighted the importance of the risk to be in need of help in activities of daily living (ADL). While, on the one hand, longevity improvements bring many positive aspects, on the other hand, it raises awareness on potential increases in long-term care (LTC) costs. In fact, the duration an elderly receives help in ADL is one of the main LTC cost drivers. Using a comprehensive social insurance dataset covering the LTC needs in Switzerland over a 20-years-period, we derive an econometric model for explaining the main factors of the time spent in dependence. We detail our model by separately analyzing the duration of care received at home and in an institution. Further, we discuss the substitution effect between at home and institutional care and assess changes in the duration over the last two decades. Finally, we predict the time spent in dependence for different profiles of elderly along their age at entry in dependence, their gender, their region of residence, their type of household, their acuity level and last working salary. In our study, these characteristics are all found to significantly influence the duration in dependence. We identify a substitution effect between at home and institutional care and provide empirical evidence that the time spent in dependence remains constant throughout the period of the study. (Joint work with Joël Wagner)

### **Tim Boonen:** Competitive Equilibria in a Comonotone Market

Abstract: The notion of competitive equilibria has been fundamental to game theory and financial economics. A large portion of the literature is devoted to analysis of risk sharing games based on expected utilities and complete markets. In this paper, we investigate competitive equilibria in a special type of incomplete markets, referred to as a comonotone market, where agents can only trade such that their wealth allocation is comonotonic. The comonotone market is motivated by two seemingly unrelated observations. First, in a complete market, under mild conditions on the preferences, an equilibrium allocation is generally comonotonic. Second, in a standard insurance market, the allocation of risk among the insured, the insurer and the reinsurers is assumed to be comonotonic a priori to the risk-exchange. Two popular classes of preferences in risk management and behavioural economics, dual utilities (DU) and rank-dependent expected utilities (RDU), are used to formulate agents' objectives. We present various results on properties and characterization of competitive equilibria in this framework, and in particular their relation to complete markets. For DU-comonotone markets, we find the equilibrium in closed-form and for RDU-comonotone markets, we



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obtain closed-form in special cases. We further propose an algorithm to numerically obtain competitive equilibria based on discretization, which works for both the DU-comonotone market and the RDU-comonotone market. Although the comonotone and complete markets are closely related, many of our findings are intriguing and in sharp contrast to results in the literature on complete markets, in terms of existence, uniqueness, and closed-form solutions of the equilibria, and monotonicity of the pricing kernel. (Joint work with F. Liu and R. Wang)

**Claire Mouminoux:** Are we more honest than others think we are?

Abstract : While the laws are justified on the basis of the efficiency they provide to society, policy makers and researchers focus on the reasons why people violate the law. Crimes and violations induce directly costs. But there is another indirect costs that is generally ignored: the fact that a person can violate the law (whether it does or not) can reduce trust in one's honesty. Thus, even if the economic agent is honest and respects the law, this loss of confidence, which could be unfounded, is also a source of inefficiency. We introduce in an experiment, a normative rule of « decision » in order to elicit both honesty and beliefs about honesty from subjects in the lab. There is no direct transfer of money between both parties to avoid any inequality aversion or altruism aversion. The main question remains how individuals trust in the honesty of an anonymous group. Subjects are split into two groups: those who are subject to the temptation of (unverifiable) dishonesty and those who value the dishonesty of others. We inform each participant that we cannot identify defection. We find an important heterogeneity of trust in honesty through subjects. On average, subjects A suggests that participants B are more honest than they are. Moreover, we identify distortion of effective honesty and beliefs about other honesty when the environment of players A is unfavorable. (Joint work with Jean-Louis Rulliere).

**Viktoriya Glushko:** Analysis of cause-specific mortality rates using cointegration

Abstract : Historically actuaries used to work with the total mortality rates which encompassed all possible causes of death. Since the mortality rates differenced by causes of death do not have the same evolution, introducing mortality rates by cause of death brings new insight and helps to better understand the observed development of total mortality. Until recently, the common practice has been to assume the independence of difference causes of death, although the dependence between the causes clearly exists as we are in presence of competing risks. Cointegration and the related VECM (Vector Error Correction Models) methodology allow modeling the relation of two and more variables which while being subject to the different evolution patterns remain linked to each other in the long run. In Arnold [2016] the data on main causes of death for 5 countries (USA, Japan, France, England & Wales and Australia) was analyzed. In this presentation we deepen the analysis by adding one additional cause in order to check if the conclusions hold, i.e. the model is stable.

**Steve Briand:** Time inconsistency and Delayed Retirement Decision: the French Pension Bonus

Abstract: With the increase of the life expectancy and the demographic shocks, several public policies in the last decades aim to encourage individuals to postpone retirement. One of them, the pension bonus, gives an increased pension if individuals retire beyond their Full Retirement Age. Previous ex post analyses found that the responsiveness to this type of financial incentives, which encourage postponing retirement, is heterogeneous among agents and that the global effect is relatively limited. Deriving from previous research in Behavioral Economics, this article analyzes the impact of time inconsistency on the decision to delay retirement to get the bonus. We use public national survey data with questions on motivations to retire to measure short-term and long-term impatience. After controlling for the endogeneity of the bonus knowledge, results show that time-inconsistent agents are less likely to retire with the bonus.