# LIST OF ABSTRACTS 2019

## 2019/01

### Minimum Rényi entropy portfolios

Nathan Lassance and Frédéric Vrins

Accounting for the non-normality of asset returns remains challenging in robust portfolio optimization. In this article, we tackle this problem by assessing the risk of the portfolio via the "amount of randomness" conveyed by its returns. We achieve this using an objective function that relies on the exponential of *Rényi entropy*, an information-theoretic criterion that precisely quanties the uncertainty embedded in a distribution, accounting for higher-order moments. Compared to Shannon entropy, Renyi entropy features a parameter that controls the way uncertainty is measured. A Gram-Charlier expansion shows that the parameter controls for the relative contributions of the central (variance) and tail (kurtosis) parts of the distribution. We further rely on a non-parametric estimator of the exponential Renyi entropy, which extends a robust sample-spacings estimator initially designed for Shannon entropy. A portfolio selection application illustrates that minimizing Renyi entropy yields portfolios that outperform robust minimum variance portfolios in terms of risk-return-turnover trade-off.

***Keywords***: portfolio selection, Shannon entropy, Rényi entropy, risk measure, information theory

## 2019/02

### Insurance with a deductible. A way out of the long term care insurance puzzle

Justina Klimaviciute and Pierre Pestieau

Long-term care (LTC) is one of the largest uninsured risks facing the elderly. In this paper, we first survey the standard causes of what has been dubbed the LTC insurance puzzle and then suggest that a possible way out of this puzzle is to make the reimbursement formula less threatening for those who fear a too long period of dependence. We adopt a reimbursement formula resting on Arrow's theorem of the deductible, i.e. that it is optimal to focus insurance coverage on the states with largest expenditures. It implies full self-insurance for the first years of dependency followed by full insurance thereafter. We show that this result remains at work with ex post moral hazard.

***Keywords***: long-term care insurance, deductible, Arrow's theorem, reimbursement rule
***JEL codes***: G22, I13, J14

## 2019/03

### The performance of public enterprises

Sergio Perelman and Pierre Pestieau

The purpose of this paper is to argue in favour of public enterprises that would be accountable for their performance, that is the way they fulfil the missions assigned to them by the public authority. This requires a rigorous and regular performance assessment. If adopted earlier such an approach would have avoided unneeded and costly privatizations as well as being trapped by inefficient public-private partnership arrangements. Recent evidence on enterprise performance seems to point out that institutions matters more than ownership.

***Keywords***: privatization, performance, public enterprises, public-private partnership

## 2019/04

### Investment in children, social security, and intragenerational risk sharing

Simon Fan, Yu Pang and Pierre Pestieau

We analyze the role of pay-as-you-go social security in intragenerational risk sharing in an overlapping-generations model with individual heterogeneity. Parents invest in their children's education in exchange for old-age support financed by a fraction of their children's future earnings. Due to random factors such as luck in the job market, children may have different earning capacities even if they receive the same education. Without social security, a parent receives a transfer payment from her own child, so the received amount is uncertain as it depends on the child's earnings. The social security scheme of pooling transfer contributions from all children and then returning them equally to each parent insures parents against the risks of educational investments. Our model shows that social security stimulates educational spending, increases labor earnings, and improves social welfare (as measured by *ex ante* individual utility). However, it worsens *ex post* intragenerational income equality (as measured by the Gini coefficient for lifetime income).

***Keywords***: old-age insurance, social security, public education, income inequality
***JEL codes***: D81, H20, H55, I24

## 2019/05

### Missing poor in the U.S.

Mathieu Lefebvre, Pierre Pestieau and Gregory Ponthiere

Given that poor individuals face worse survival conditions than non-poor individuals, one can expect that a steeper income/mortality gradient leads, through stronger income-based selection, to a lower poverty rate at the old age (i.e. the «missing poor» hypothesis). This paper uses U.S. state-level data on poverty at age 65+ and life expectancy by income levels to provide an empirical test of the missing poor hypothesis. Using air pollution as an instrument for mortality differentials, we show that instrumented changes in mortality differentials have a negative and statistically significant effect on old-age poverty: a 1% increase in the mortality differential implies a 9% decrease in the 65+ headcount poverty rate. Using those regression results, we compute hypothetical old-age poverty rates while neutralizing the impact of the income/mortality gradient, and show that correcting for heterogeneity in income-based selection effects modifies the comparison of old-age poverty prevalence across states.

***Keywords***: poverty, measurement, income/mortality gradient, selection biases, comparability
***JEL codes***: I32

## 2019/06

### Ratings, reviews, recommendations and the consumption of cultural goods

Paul Belleflamme and Martin Peitz

In this short paper, we elaborate on the importance of ratings, reviews and recommendations (short, 3R systems) for the consumption of cultural goods. Our aim is to provide a non-technical perspective on the issue informed by the existing literature on the topic.

***Keywords***: cultural goods, rating system, recommender system, consumer feedback, long tail

## 2019/07

### Endogenous vertical segmentation in a Cournot oligopoly

Paul Belleflamme and Valeria Forlin

An arbitrary number of (ex ante symmetric) firms first choose whether to produce a highquality or a low-quality product and then, the quantity of product to put on the market. We establish the following results: (i) there exists competition within and across quality segments; (ii) firms may be better off producing the low quality if competition within this segment is sufficiently low; (iii) a firm's switch across qualities may benefit all the other firms; (iv) there exists a unique partition of the firms between the two quality segments; (v) if high quality has a larger cost-quality ratio, then the equilibrium exhibits vertical differentiation; (vi) there may be too much differentiation from the consumers' point of view.

***Keywords***: quality, differentiation, oligopolistic competition
***JEL codes***: D43, L13, L25

## 2019/08

### Fair long-term care insurance

Marie-Louise Leroux, Pierre Pestieau and Gregory Ponthiere

The study of the optimal long-term care (LTC) social insurance is generally carried out under the utilitarian social criterion, which penalizes individuals who have a lower capacity to convert resources into well-being, such as dependent elderly individuals or prematurely dead individuals. This paper revisits the design of optimal LTC Insurance while adopting the *ex post* egalitarian social criterion, which gives priority to the worst-off in realized terms (i.e. once the state of nature has been revealed). Using a lifecycle model with risk about the duration of life and risk about old-age dependence, it is shown that the optimal LTC social insurance is quite sensitive to the postulated social criterion. The optimal second-best social insurance under the *ex post* egalitarian criterion involves, in comparison to utilitarianism, higher LTC benefits, lower pension benefits, a higher tax rate on savings, as well as a lower tax rate on labor earnings.

***Keywords***: long-term care, social insurance, fairness, mortality, compensation, egalitarianism
***JEL codes***: J14, LI31 H55

## 2019/09

### Multi-hub express shipment service nework design with complex routes

José Miguel Quesada Pérez, Jean-Sébastien Tancrez and Jean-Charles Lange

The *Express Shipment Service Network Design (ESSND) problem consists in defining a network of flights that enables the overnight flow of express packages from their origins to their destinations at minimum cost. This problem is normally solved considering only one-leg, multip-leg and ferry routes*. Assessing the value of more complex route types is an open question of academic and practical importance. In this article, we present a mixed integer programming model that includes five types of complex routes: two-hub, transload, direct, inter-hub and early routes. We assess their economic impact by performing many experiments built from an instance provided by FedEx Express Europe. Inter-hub and early routes have the best performance, with significant average savings (from 0.5% to 3.5%).

***Keywords***: service network design, express integrator, multiple hubs, flexible hub assignment, mixed integer programming, complex routes

## 2019/10

### Alternative representation of semivalues, the inverse problem and coalitional rationality

Irinel Dragan and Pierre Dehez

The concept of semivalue of a transferable utility game has been introduced by Dubey, Neyman and Weber as weighted sum of marginal contributions. Later, Puente has introduced a particular class of semivalues, called binomial semivalues, where weights are obtained through a recursive procedure. In the present paper, we extend Puente's procedure to obtain an equivalent representation of semivalues that turns out to be useful to solve the inverse problem and the question of coalitional rationality.

***Keywords***: transferable utility games, semivalues, inverse problem, power game
***JEL codes***: C71

## 2019/11

### Price disclosure by two-sided platforms

Paul Belleflamme and Martin Peitz

We consider two-sided platforms with the feature that some users on one or both sides of the market lack information about the price charged to participants on the other side of the market. With positive cross-group external effects, such lack of price information makes demand less elastic. A monopoly platform does not benefit from opaqueness and optimality reveals price information. By contrast, in a two-sided singlehoming duopoly, platforms benefit from opaqueness and, thus, do not have an incentive to disclose price information. In competitive bottleneck markets, results are more nuanced: if one side is fully informed (for exogenous reasons), plaltforms may decide to inform users on the other side either fully, partially or not at all, depending on the strength of cross-group external effects and hte degree of horizontal differentiation.

***Keywords***: price transparency, two-sideid markets, competitive bottleneck, platform competition, price information, strategic disclosure

## 2019/12

### A bargaining set for roommate problems

Ata Atay, Ana Mauleon and Vincent Vannetelbosch

Since stable matchings may not exist, we adopt a weaker notion of stability for solving the roommate problem: the bargaining set. Klijn and Massó (2003) show that the bargaining set coincides with the set of weakly stable and weakly efficient matchings in the marriage problem. First, we show that a weakly stable matching always exists in the roommate problem. However, weak stability is not sufficient for a matching to be in the bargaining set. Second, we prove that the bargaining set is always non-empty. Finally, as Klijn and Massó (2003) get for the marriage problem, we show that the bargaining set coincides with the set of weakly stable and weakly efficient matchings in the roommate problem.

***Keywords***: roommate problem, matching, (weak) stability, bargaing set
***JEL codes***: C71, C78

## 2019/13

### Exponential-type GARCH models with linear-in-variance risk premium

Christian M. Hafner and Dimitra Kyriakopoulou

One of the implications of the intertemporal capital asset pricing model (CAPM) is that the risk premium of the market portfolio is a linear function of its variance. Yet, estimation theory of classical GARCH-in-mean models with linear-in-variance risk premium requires strong assumptions and is complete. We show that exponential-type GARCH models such as EGARCH or Log-GARCH are more natural in dealing with linear-in-variance risk premia. For the popular and more difficult case of EGARCH-In-mean, we derive conditions for the existence of a unique stationary and ergodic solution and invertibility following a stochastic recurrence equation

approach. We then show consistency and asymptotic normality of the quasi maximum likelihood estimator under weak moment assumptions. An empirical application estimates the dynamic risk premia of a variety of stock indices using both EGARCH-M and Log-GARCH-M models.

***Keywords***: GARCH-in-Mean, EGARCH, Log-GARCH, CAPM, risk premium, maximum likelihood, stochastic recurrence equation
***JEL codes***: C13, C22, C51, G12

## 2019/14

### Crowdfunding dynamics

Paul Belleflamme, Thomas Lambert and Armin Schwienbacher

Various forms of social learning and network effects are at work on crowdfunding platforms, giving rise to informational and payoff externalities. We use novel entrepreneur-backer data to study how these externalities shape funding dynamics, within and across projects. We find that backers decide to back a particular project based on past contributions not only to that project - as documented by prior work - but also to other contemporaneous projects - a novel result. Our difference-in-differences estimates indicate that such 'cross-project funding dynamics' account for 4-5% in the increase of contributions that projects generate on a daily basis. We show that recurrent backers are the main transmission channel of cross-project funding dynamics: by initiating social learning about project existence and quality, recurrent backers encourage future funding by other backers. Our results demonstrate that even though contemporaneous projects compete for funding, they jointly benefit from their common presence on the platform. We finally show that these crowdfunding dynamics stir platform growth, with important consequences for competition among platforms.

***Keywords***: crowodfunding, digital platforms, FinTech, network effects, social learning
***JEL codes***: D43, G23, L14, L26, L86

## 2019/15

### Making a difference: European mutual funds distinctiveness and peers' performance

Sophie Béreau, Jean-Yves Gnabo and Henri Vanhomwegen

Skilled managers of equity mutual funds can develop innovative strategies to outsmart their style peers. We unveil various causes of distinct investment strategies and test whether they materialize into outperformance of peer competitors. We frame our paper on European funds and propose a novel procedure to measure and test the impact of strategy distinctiveness while dealing with endogenous style classification and sample noise in peers' comparisons of performance. We find a strong, robust and positive impact of strategy distinctiveness on financial performance. Yet, the marginal effect decreases with the level of distinctiveness.

***Keywords***: European equity mutual funds, distinctiveness, commonality, peer performance, adaptive clustering
***JEL codes***: G11, G12, G23

## 2019/16

### Investing in superheroes? Comic art as a new alternative investment

Fabian Bocart, Christian Hafner, Yulia Kasperskaya and Marti Sagarra

Drawing on an exclusive dataset of more than 106,000 items of comic art sold at auciton, we build quarterly and semi-annual indices for American and European comic art. We find that this new type of alternative investment outperformed US and European equities and bonds. Between 2002 and 2017, annualized returns of US comic artworks clearly outperformed most asset classes with a solid 11% annualized return, while European comic art achieved 25% yearly returns on average in the period after 2009. We show that comic art delivers significant diversification benefits to an investment portfolio thanks to low correlations with other assets and to the geographical diversification between EUropean and American markets. These outcomes contrast with fine art in general, which dhelivered few diversification benefits when compared to equities and bonds between 2002 and 2017, and whose geographical markets are closely tied to each other.

***Keywords***: comic art, alternative investments, auctions, hedonic regressions, price index, portfolio
***JEL codes***: C2, G1, Z1, Z11

## 2019/17

### Do sugar taxes affect the right consumers?

Valerio Serse

Sugar taxes are often considered as a possible tool to tackle excessive sugar consumption. This paper estimates a dynamic multinomial Logit model of cola demand on a novel supermarket scanner dataset in order to study preference heterogeneity and state dependence in product choice. The model estimates allow evaluating the effectiveness of taxation in recuding demand for sugary colas across different consumer types. The results show that a sugar tax would be less effective among the targeted population of heavy sugar consumers. This policy, however, would be more effective among low-income households. Tax policy simulations

show that a specific tax on sugar should be preferred to an ad-valorem tax on sugary colas on both corrective and equity grounds. This is because ad-valorem taxes can lead low-income households and heavy sugar consumers to substitute from expensive to cheaper sugary brands. Lastly, because households exhibit state dependence in cola choice, sugar taxes would be more effective in reducing sugar consumption in the long-run.

***Keywords***: heterogeneity in preferences, state dependence, sugar taxes, discrete choice models
***JEL codes***: D12, H31, I18, Q18

## 2019/18

### A model of the optimal allocaiton of government expenditures

SImon Fan, Yu Pang and Pierre Pestieau

Government expenditures can be used for various socio-economic objectives, including public education, consumption of public goods and services, and social protection. This paper analyzes the optimal allocation of public expenditures among these competing functions. We establish an overlapping generations model with heterogeneous individuals in which the government optimally chooses income tax, transfer payment, educational spending, and public consumption. Our model characterizes the transitional dynamics and the steady state of each function with and without a pay-as-you-go international contract. We also conduct a simulation illustrating that the presence of an intergenerational contract may raise public consumption and social welfare in the ssteady state.

***Keywords***: government spending, public education, public consumption, individual heterogeneity
***JEL codes***: H20, H31, H50