GRADUATE SCHOOL
OF DECISION SCIENCES

Thursday 27/09/18
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R 511

Econometrics

Roxana Halbleib

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How Informative is High-Frequency Data for Tail Risk Estimation and Forecasting? An Intrinsic Time Perspective

(Roxana Halbleib, Timo Dimitriadis)

This paper proposes a novel approach to compute daily Value at Risk (VaR) and Expected Shortfall (ES) directly from high-frequency data. It assumes that financial logarithm prices are unifractal processes in an alternative time dimension, which we denote the intrinsic time. This assumption implies that, under certain conditions, the price processes are multifractal, which is a more general and more realistic assumption than the existent (fractional) Brownian Motion ones, as it accommodates typical features of financial returns, such as volatility persistence and fat-tailedness. The intrinsic time is a stochastic transformation of the clock time that captures the real time on financial markets in accordance with their trading intensity. The unifractality assumption allows to compute daily estimates of VaR and ES by simply scaling up their intraday counterparts computed from data sampled in intrinsic time. Consequently, our method is very simple to implement and simultaneously accounts for the rich information content of high-frequency data. In the empirical exercise we provide a comprehensive discussion of the statistical and dynamic properties of the resulting scaled-up quantile estimates. Moreover, we show that our approach outperforms the location-scale models or related fractal approaches in accurately estimating and forecasting VaR and ES.

Alexander Schmidt

Universität Hohenheim

Multiple Structural Breaks in Cointegrating Regressions: A Model Selection Approach

(Karsten Schweikert, Alexander Schmidt)

In this paper, we propose a new comprehensive treatment of structural change in cointegrating regressions. First, we consider a setting with fixed breakpoint candidates and show that a modified adaptive lasso estimator can consistently estimate structural breaks in the intercept and slope coefficient of a cointegrating regression. Second, we extend our approach to a diverging amount of breakpoint candidates and provide simulation evidence that structural breaks are estimated consistently. Finally, we use the adaptive lasso estimation to design new tests for cointegration in the presence of multiple structural breaks, derive the asymptotic distribution of our test statistics and show that the proposed tests have power against the null of no cointegration.

Maurizio Daniele

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Sparse Approximate Factor Estimation for High-Dimensional Covariance Matrices

(Maurizio Daniele, Winfried Pohlmeier, Aygul Zagidullina)

We propose a novel estimation approach for the covariance matrix based on the l1-regularized approximate factor model. Our sparse approximate factor (SAF) covariance estimator allows for the existence of weak factors and hence relaxes the pervasiveness assumption generally adopted for the standard approximate factor model. We prove consistency of the covariance matrix estimator under the Frobenius norm as well as the consistency of the factor loadings and the factors. Our Monte Carlo simulations reveal that the SAF covariance estimator has superior properties in finite samples for low and high dimensions and different designs of the covariance matrix. Moreover, in an out-of-sample portfolio forecasting application the estimator uniformly outperforms alternative portfolio strategies based on alternative covariance estimation approaches and modeling strategies including the 1/N-strategy.

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Lyudmila Grigoryeva

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Option pricing and hedging with one-step Kalman filtered factors in non-affine stochastic volatility model

(Alexandru Badescu, Lyudmila Grigoryeva, Juan-Pablo Ortega)

New pricing and hedging strategies are proposed for two non-affine {auto-regressive conditionally homo- and heteroscedastic stochastic factor models} with non-predictable drift which allows to account for leverage effects. We consider a factor dependent exponential linear pricing kernel with stochastic risk aversion parameters and implement both pricing and hedging for these models estimated via the one-step unscented Kalman filter. This technique proves to outperform standard GARCH and Heston-Nandi based strategies in terms of a variety of considered criteria in an empirical exercise using historical returns and options data.

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Personnel Economics I

Yasmin Schwegler
University of Lausanne

Towards an ecological model of how employees decide whether to deviate from a working procedure
(Yasmin Schwegler, Julian Marewski, Ulrich Hoffrage)

How do employees manage trade-offs between strict adherence to a working procedure or routine, and deviance from it? Such trade-offs are typically faced by white-collar workers in medium-sized and large companies, where work procedures are established but jobs also require some independent judgment, which can lead to recognizing more appropriate solutions and thus deviating from the procedure. Since it is not evident ex-ante if the adherence to or deviance from a procedure leads to a better outcome, deviation decisions are made under uncertainty. Well-established descriptive models of decision making under uncertainty are heuristics. As particularly simple decision strategies they exploit the structure of decision environments, and can thus aid people making smart decisions. The interplay of decisional processes and environments has been at the focus of much research outside the area of professional decision making (e.g. Marewski et al., 2010). Past work on professional decision making, in particular workplace deviance, has instead mostly focused on people's personality traits (e.g. De Clercq et al., 2014; Holtz & Harold, 2013), with notable exceptions (e.g. Lin et al., 2016). We aim to develop a model of how environmental properties might, in interplay with heuristic decision processes, lead employees to stick to a procedure or to deviate from it. While recent experiments on these trade-offs focused, for instance, on recruitment decisions (Patil et al., 2017), we start out by turning to employees in the procurement of a multinational company, who have to choose between suppliers while adhering to company procedures. In a qualitative pilot study, we examine the properties of their decision environments and the nature of situations in which deviations from procedures occurred.

Adrian Chadi

University of Konstanz
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Minimum Wages and Gift-Exchange – Experimental Evidence on Worker Behavior When the Employer Raises the Pay

(Adrian Chadi, Mario Mechtel, Vanessa Mertins)

Economists differ in their views on how minimum wage legislation affects labor market outcomes. A key factor often ignored in this debate is the behavioral response of a worker to a wage hike induced by such policy. Arguably, workers may reciprocate higher labor costs for the employer by putting in more efforts, which could explain why minimum wages are not necessarily detrimental for firms. According to behavioral economics, the prerequisite for such reciprocal behavior is the kind message underlying a wage hike. Do workers react positively to a wage increase that does not exclusively follow the intent of the employer? This is the first experimental investigation into the behavioral effects of minimum wages at the individual level and outside the laboratory. A set of coincidental events surrounding a research project at a university allow us to credibly manipulate information on reasons for a substantial increase in hourly pay. Data on workers' effort levels, employer perceptions and reservation wages support the idea of robust gift-exchange after workers learn about the involuntary nature of the wage hike. Our findings suggest that exogenous interventions into wage policies can lead to a solidarity effect, fostering reciprocal behavior towards the employer, instead of reducing it.

Ofer Azar

Ben-Gurion University of the Negev

Relative thinking with substitute goods: Does it exist with real choices?

(Ofer Azar)

This paper examines whether in the context of product differentiation people exhibit "relative thinking," being affected by relative price differences even when only absolute price differences are relevant. Because people compare prices of alternative goods and services all the time, if they do it in a way that deviates from the traditional assumptions in economics, this has important implications for economics, consumer behavior, decision making, advertising, marketing, pricing, etc. Subjects were asked to indicate for 11 different pairs of goods, given the price of one good, what is the maximal price of the other good for which they prefer the latter. These decisions were incentivized. Subjects received different prices for the same good. If subjects exhibit relative thinking, then those who receive a higher good's price should be willing to pay more for the constant quality difference between the goods. The experiment also involved WTP versus WTA treatments. In the willingness to pay (WTP) treatment, the low-quality good price was provided and the subject indicated the high-quality good price that makes him indifferent between the two. In the willingness to accept (WTA) treatment, the high-quality good price was provided and the subject indicated the low-quality good price that makes him indifferent. The results were surprising: In the WTP version, no relative thinking was detected, but in the WTA version relative thinking was documented in all cases. The suggested explanation for the results is that people are affected by two biases: 1. Relative thinking. People are willing to pay more for a constant improvement in quality when the product's price is higher because they consider the price difference also as a percentage of the price. This is stronger when the goods are more similar. 2. A prominence bias. Subjects focus on the value of the product they are pricing although what matters is the difference in value between the two goods.

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Nickolas Gagnon
Maastricht University

How Unfair Chances and Gender Discrimination Affect Labor Supply

(Nickolas Gagnon, Kristof Bosmans, Arno Riedl)

We investigate the causal effect of the procedural fairness behind wage inequality on individual labor supply decisions. We conduct a large-scale experiment on an online platform, in which workers individually engage in the same task and are individually paid a piece-rate wage. A worker's labor supply decision only affects her- or himself, ruling out the possibility of reciprocity or punishment. The decisions of other workers do not impact a worker's earnings and are not revealed. Working less reduces one's exposure to the work environment at the expense of one's earnings. We employ two payment schemes with equal wages, and three payment schemes with equivalent unequal wages generated through different procedures: (1) equal chances, (2) unequal chances, and (3) gender discrimination. Workers receive information about the procedure that will lead to their own wage and the wage of another worker. Thereafter, they learn their wage, the wage of the other worker, and decide how much they work. We find that negative gender discrimination decreases workers' labor supply substantially (25-30%), which directly translates into lower earnings. This effect is distinct from other types of inequality, which themselves generally do not significantly decrease labor supply. Overall, our research provides a novel estimate of the supply-side consequences of discrimination.

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Peer Effects

Max Reinwald

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A Dynamic Take on Demographic Dissimilarity
(Max Reinwald, Florian Kunze)

In an era characterized by societal and economic trends, like demographic change and increasing female workforce participation, employees are more likely than ever to work in teams with demographically different individuals. This study offers a new theoretical and empirical perspective on the dynamic effect of demographic dissimilarity on absenteeism behavior of team members. Integrating social identity and social contact theory, we propose that individual absenteeism behavior depends on the relational demographic position of the team member. Drawing on a sample of 2,816 individual newcomers in 866 work teams tracked over seven years we use growth curve modeling in a multilevel framework to test our hypotheses. In contrast to prior, more static research, which assumed time-stable effects of demographic dissimilarity, we show that gender and age dissimilarity effects are not constant over time. Rather, we find that dissimilar individuals increase their absence more strongly over the years. Particularly, dissimilar women and older employees show a steeper increase in their absenteeism levels over time and, accordingly, higher absolute absenteeism at later stages of team membership compared with that of their less dissimilar counterparts. Implications for diversity theory as well as for organizational diversity management are discussed.

Jarid Zimmermann
University of Cologne

Social context engineering in children
(Robert Böhm, Bettina Rockenbach, Jarid Zimmermann)

Adults often manage their social context in strategic and payoff-maximizing ways. For example, adults often successfully protect their work context from others with superior skills in their domain of expertise. Here we investigate how children manage their social context, that is, how they choose their social comparisons. We run a large field experiment with close to 200 children at kindergartens and elementary schools in Cologne, Germany. In our experimental setting, children can choose their social context strategically to achieve higher payoffs. Specifically, they first make drawings from photographs. Then they choose (in private) between low-quality and high-quality comparison drawings which function as their social context. Our results show that especially young children (from 4 to 5 years of age) exhibit a strong desire to choose high-quality comparison drawings as their social context. Young children learn to choose high-quality comparison drawings, when this yields higher payoffs (gold tokens), but they find it difficult to choose low-quality comparison drawings, when this yields higher payoffs. By contrast, older children (from 6 years to 7 years of age) manage to choose low-quality comparison drawings more reliably, when this yields higher payoffs. We present evidence that young children's difficulties in choosing low-quality comparison drawings stem from their desire to enhance their self-image by association with high-quality comparison drawings. This suggests that tendencies for downward social comparisons, i.e., comparisons to worse others, are not necessarily hard-wired in young children. Instead, we document that the ability to strategically choose downward social comparisons develops only when children typically first enter school, that is, at a time when social comparisons become more frequent and more important.

Felix Gaisbauer

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Using social information in dealing with dilemmas in disguise

(Felix Gaisbauer, Wolfgang Gaissmaier, Hansjörg Neth)

Should I have another drink now and risk a worse hangover tomorrow? Do I order a fish dish I crave although over-consumption is endangering this fish species? A decision situation may have conflicting rewards along a temporal (alcohol example) or a social dimension (over-fishing example) – either way, individuals frequently forego the best global option in the presence of a locally more attractive, but globally inferior option — a tendency known as melioration. When the temporal and social trade-offs in decision situations are not disclosed, but rather have to be discovered by experience, we describe such learning problems as dilemmas in disguise. We experimentally vary the nature of the dilemma in disguise (temporal vs. social) and the informational uncertainty of the rewards (deterministic vs. probabilistic) between participants to examine how these different sources of uncertainty change participants' strategy learning. Our main finding is that humans can navigate undisclosed temporal dilemmas in a social context but fail to exploit social information in dynamic social environments due to ineffective exploration. One important implication of our results is that seemingly selfish behavior in social dilemmas with an undisclosed dilemma structure could at least be partly explained by ignorance, rather than strategic defection.

Lukas Thürmer

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Reactions to Deviant Performance in Teams
(J. Lukas Thürmer, John M. Levine)

Teams can only reach their goals when their members perform well. This is why teams may react harshly to low performers. But also high performers may be evaluated as „rate busters" and face harsh reactions. How do teams decide whether to meet deviant performance with a harsh or mild response? Past research has largely neglected this attributional process in teams. We build on classic attribution theory and small group research, and argue that teams evaluate the effort and ability of the deviant. They then use this information to assess whether that person wants to help the team or not (perceived prosocial intent). We thus suggest that the attributional process in teams seeks to answer the question: Does the performance deviant want to help the team? Indeed, four experiments (total N = 811) demonstrate more negative team reactions to a low performer lacking effort than a low performer lacking ability, and this effort/ability effect was fully mediated by the low performer's perceived prosocial intent. Two experiments (total N = 400) further confirmed that team members reacted more positively towards a highly motivated high-performer that a highly talented high-performer. This effect was again fully mediated by the low performer's perceived prosocial intent. We discuss the role of attributional processes in team performance and decision making.