Egor Kudriavtcev

✉ egor.kudriavtcev@simon.rochester.edu
site: www.ekudr.info   linkedin: www.linkedin.com/in/egor-kudriavtcev-14523194

Education

2017 – present **The Simon Business School, University of Rochester**
Ph.D. Candidate in Marketing

2011 – 2013 **New Economic School (NES),** *Master of Arts*
Major: Economics, specialization: Finance

2008 – 2010 **Moscow Institute of Physics and Technology (MIPT),** *Master of Science*
Applied Mathematics and Control department
Major: Applied Mathematics and Physics, specialization: Applied Economics

2004 – 2008 **Moscow Institute of Physics and Technology (MIPT),** *Bachelor of Science*
Applied Mathematics and Control department
Major: Applied Math. and Physics, specialization: Applied Mathematics

Current research projects

Automatic pricing competition. An experiment with simulated Amazon seller.
joint work with Jeanine Miklos-Thal and Catherine Tucker

It is a study on how the presence of the automation tools on such platforms as Amazon influences the long-term pricing equilibria. At the core of this research project, we are looking at how individuals make their decisions in an online pricing simulation, which imitates Amazon sellers. Each individual seller can choose between manual pricing and automatic pricing. The combination of the individual sellers' decisions constitutes a long-term pricing equilibrium.

Product Launches with New Attributes: A Hybrid Conjoint-Consumer Panel Technique for Estimating Demand. Neural network estimation.
joint work with Mitchell Lovett and Bhoomija Ranjan

The conjoint study is a great tool for making predictions of individual preferences for non-existing product attributes. Unfortunately, this tool measures only stated preferences, which prompt of different types of biases. The demand estimation of revealed preferences provides much more accurate results for existing products but can't be used for non-existing product attributes. This paper provides a hybrid method of demand estimation, which combines the information from both conjoint surveys and consumer panel purchase data. The core idea of the method lies in utilizing neural networks which are built in a structural way (NN+S approach), and further regularized and tuned for best out-of-sample prediction.

Estimation of unobserved product characteristics using matrix factorization technique: beer industry case.

This paper investigates an application of matrix factorization (MF) approach for estimating unobserved product characteristics from online ratings in the beer industry. The results show that estimated unobserved characteristics can be associated with observed characteristics. At the same time, estimated unobserved characteristics have several advantages over observed characteristics, including relevance, interpretability and low dimensionality. In the case of beer industry, the incorporation of estimated unobserved characteristics improves the substitution patterns of the aggregate demand model. This paper quantifies the errors of the estimates and shows that the bias caused by the selection of reviews is negligible. This technique can also be applied for estimating unobserved product characteristics to improve the substitution patterns estimates in such industries as video games, movies, books.

The structure of matrix elasticities in aggregate demand models with random coefficients and unobserved product characteristics: matrix factorization technique for individual ratings data. The problem of selection and endogeneity.

This paper investigates an application of matrix factorization (MF) approach for estimating unobserved product characteristics from individual reviews data (such as online ratings). If individuals make their purchases and make their reviews based on similar sets of product characteristics, then it is possible to estimate unobserved product characteristics from individual reviews data and use them to improve the estimates of aggregate demand models. The main goal of this paper is to understand how price endogeneity and reviews selection influence the estimates of the BLP model (which utilizes unobserved products characteristics estimated from matrix factorization). From numerous Monte-Carlo simulations I established that the suggested approach improves the structure of cross-price elasticities when estimated products characteristics are relevant. In the case when the estimated product characteristics are noisy or biased the suggested approach doesn't improve BLP estimates nor makes them worser even when the sources of the bias are selection and price endogeneity.

Microeconomic foundation of Matrix Factorization of product ratings

This paper reports some theoretical and practical results of applying matrix factorization (MF) for predicting product ratings. Uncommonly, the central focus of this paper is the latent factors estimated by MF rather than the predictive power of MF algorithm. I show that estimated latent factors from MF are tightly connected to unobserved and observed product characteristics. In particular, under linearity assumption of individual preferences the latent factors are equal (in certain sense) to principal components of all product characteristics (observed and unobserved). Moreover, estimated latent factors account for the importance of each product characteristic in the distribution of individual preferences, what potentially means that estimated latent factors (from MF) should be more informative about the positioning of the products than principal components (from standard PCA) of the product characteristics. Estimated latent factors are robust to certain forms of selection biases. All of that makes MF to be a great method for estimation of unobserved product characteristics for such industries as: video games, movies, books, alcohol etc.

Working & Research experience

2014 – 2015   **OAS Enterprises**, *Fixed income analyst*
               Analysed fixed income markets
               Worked with Bloomberg
2014 – 2015   **Strategy Partners Group**, *Freelancer*
               Did research on regional innovation activity in Russian
2012 – 2014   **Gaidar Institute of Economic Policy**, *Junior researcher*
               Built firm-level international trade models
               Estimated the effects of non-tariff measures
2011 summer   **Startup "Evanti"**, *Consultant*
               Developed investment memorandum
               Startup became the resident of Skolkovo
2009 – 2011   **Experimental Economics Laboratory at MIPT (MIPT EE Lab)**, *Student*
               Performed experiments and did research in experimental economics
2007 – 2009   **Institute of Economic Forecasting RAS**, *Junior researcher*
               Created Leontief's input-output models

Teaching experience

2019,2020   **Simon Business School**, *Lab instructor*
               Marketing Research

2018,2019	**Simon Business School***, TA*	
	Marketing analytics, Marketing research, Programming for analytics	
2015 spring	**International College of Economics and Finance (ICEF)***, TA, Grader*	
	Derivatives	
2015 spring	**New Economic School (NES), MAE program***, Grader*	
	Fixed Income	
2013, 2014	**National Research University – Higher School of Economics***, TA, Grader*	
	Probability Theory and Mathematical Statistics	
2013 spring	**New Economic School (NES), MIF program***, TA, Grader*	
	Financial Econometrics – I, II	
2013 fall	**International College of Economics and Finance***, Lecturer, Grader*	
	Computer Information Systems (Excel, VBA)	
2012 - 2013	**The State Academic University for the Humanities***, Lecturer, Grader*	
	Econometrics, Time Series Analysis	
2012 fall	**National Research University – Higher School of Economics***, Grader*	
	Introduction to Computer Science (Java)	
2010 – 2011	**Evening School of Engineering and Physics at MIPT***, Lecturer, Grader*	
	Advanced mathematics for senior pupils	

Private tutoring experience

2005 – 2016   linear algebra, mathematical analysis, probability theory, statistics, stochastic processes, econometrics, time series, graph theory, game theory, microeconomics, macroeconomics, optimal portfolio choice theory, neural networks, optimal control, differential equations, programming, and other…

Languages:

Russian	Native speaker
English	Fluent

Computer skills:

Windows, Mac OS, Ubuntu, Linux KVM	Experienced user
MS VBA for Excel	Advanced Programmer
R, Python, Julia, MATLAB, Gauss	Applied calculations, Modeling
Gretl, Eviews, Stata (and MATA)	Regressions and Data analysis
Java, C#, C++, Delphi, Python	Development of applications
Keras, tidyverse, data.table, pandas	Machine Learning, Data wrangling
JavaScript, Selenium	Web scraping
Rstan	Bayesian estimation
XML, HTML, SQL, DLL, OpenGL, …	Experienced with many other technologies
Bloomberg terminal (and excel integration)	Advanced user

Awards and Distinctions:

2016   Selected to receive a Eugene McDermott Graduate Fellowship from University of Texas at Dallas (UT Dallas)

2011   Prizewinner of 54th MIPT Research Conference, Experimental Economics section, report "Using the L-equilibrium for the analysis of the games with the unimodal profit functions"

2010   Winner of 53rd MIPT Research Conference, Experimental Economics section, report "Analysis of the model "Majority Voting" using the L-equilibrium concept"

2009   Prizewinner of 52nd MIPT Research Conference, Experimental Economics section,
        report "The model of the election participation: Theory and Experiment"

Conferences:
2015   58th MIPT Research Conference (winner)
                Delivered report "How L-equilibrium is connected to Nash equilibrium and
                LQRE"
2013   56th MIPT Research Conference
                Delivered report "The problem of the definition of the Choose Number class of
                games" (translation from Russian)
2013   32nd NES Research Conference
                Delivered report "Diversification of the production under liberalization of the
                international trade. Heterogeneous approach" (transl. from Russian)
2012   55th MIPT Research Conference
                Delivered report "Strategic-Rational behavior of the people in the games with
                unimodal profit functions" (translation from Russian)
2011   54th MIPT Research Conference (prizewinner)
                Delivered report "Using the L-equilibrium for the analysis of the games with the
                unimodal profit functions" (translation from Russian)
2010   53rd MIPT Research Conference (winner)
                Delivered report "Analysis of the model "Majority Voting" using the L-
                equilibrium concept" (translation from Russian)
2010   VI Moscow international conference of operations research
                Delivered report "The model of the election participation with two electoral
                groups. Theory and Experiment" (translation from Russian)
2009   52nd MIPT Research Conference (prizewinner)
                Delivered report "The model of the election participation: Theory and
                Experiment" (translation from Russian)

Publications in Russia (with english translations)

• Кудрявцев Е.Л., 2015, Труды 58-й научной конференции МФТИ, "Взаимосвязь L-равновесия с равновесием Нэша и LQRE" (Kudriavtcev E., 2015, Proceedings of 58th MIPT Research Conference, "How L-equilibrium is connected to Nash equilibrium and LQRE")

• Кудрявцев Е.Л., 2013, Труды 56-й научной конференции МФТИ, "Проблема определения класса игр «Выбери число»"(Kudriavtcev E., 2013, Proceedings of 56th MIPT Research Conference, "The problem of the definition of the Choose Number class of games")

• Кудрявцев Е.Л., 2012, Труды 55-й научной конференции МФТИ, "Рационально-стратегическое поведение людей в играх с унимодальной функцией выигрыша" (Kudriavtcev E., 2012, Proceedings of 55th MIPT Research Conference, "Strategic-Rational behavior of the people in the games with unimodal profit functions")

• Кудрявцев Е.Л., 2011, Труды 54-й научной конференции МФТИ, "Использование L-равновесия для анализа теоретико-игровых моделей с унимодальной зависимостью выигрыша от порогового значения стратегии игрока" (Kudriavtcev E., 2011, Proceedings of 54th MIPT Research Conference, "Using the L-equilibrium for the analysis of the games with the unimodal profit functions")

• Кудрявцев Е.Л., 2010, Труды 6-й Московской Международной конференции по исследованию операций "Модель явки на выборы с двумя группами выборщиков. Теория и эксперимент" (Kudriavtcev E., 2010, Proceedings of VI Moscow international conference of operations research, "The model of the election participation with two electoral groups. Theory and Experiment")

• Кудрявцев Е.Л., 2010, Труды 53-й научной конференции МФТИ, "Анализ модели "Явка на выборы" на основе L-равновесия" (Kudriavtcev E., 2010, Proceedings of 53rd MIPT Research Conference, "Analysis of the model "Majority Voting" using the L-equilibrium concept")
• Кудрявцев Е.Л., 2009, Труды 52-й научной конференции МФТИ, "Игровая модель явки на выборы: теория и эксперимент" (Kudriavtcev E., 2009, Proceedings of 52nd MIPT Research Conference, "The model of the election participation: Theory and Experiment")

Hobbies
Learning programming languages, experimenting with rack servers, studying video game industry, ex foosball leader and coach