Ágoston Reguly

Year of birth: 1990 | *Location: US, Atlanta*

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Research Interest

Applied econometrics in finance with special attention on using and improving machine learning methods. Currently, I am working on corporate events to better understand the long-term implications of these events.

Current position

Georgia Institute of Technology (GT), FSIL at Scheller College of Business Atlanta, US

Postdoctoral Research Fellow *Aug. 2022 –*

- I carry out research and the long-term performance of firms after corporate events such as mergers and acquisitions (M&A), seasoned equity offerings (SEO), initial public offerings (IPO), and dividend announcement. I use synthetic methods to create credible controls for event firms.
- As part of the Financial Services and Innovation Lab (FSIL) initiative, I am participating in a project which uses Equifax's credit score data to better understand household's financial decisions. With more than 400 million data points I use wealth and other financial variables to investigate the effect of life events (buying a house, children's education, retirement, etc) on financial decisions. This project is at a preliminary stage.
- With Professor Sudheer Chava, we have launched a research team called Machine Learning for Financial Markets. Currently, I am advising 15 undergraduate and graduate students within the framework of Vertically Integrated Projects at Georgia Tech. The team researches various topics in financial markets with machine learning tools. The team meets every week and each student/sub-team reports on progress.

Published and Working Papers

Long-term performance of firms after corporate events (WP) 2023

jointly with Sudheer Chava (GT)

- The paper employs synthetic difference in difference to estimate the long-run performance of firms that went through corporate events, such as IPO, M&A, SEO, or dividend payment. Our methodology not only identifies one matching firm that has similar characteristics to the event firm before the event and then controls for multiple factors (similar to e.g., Bessembinder and Zhang (2003) or Bessembinder, Cooper, and Zhang (2019)) but allows to weight multiple candidate control firms with possibly many characteristics through multiple periods. Our results on the overall long-run effect are aligned with most of the literature: significant negative excess returns around 1% and negative buy and hold abnormal returns (BAHAR) on 3- or 5-year horizons. Moreover, our method allows exploring heterogeneity across events and firms, which quantifies substantial dispersion in excess returns, providing an explanation for why many studies have not found significant differences in excess returns.

Fixed Effects with Partially Penalized Regression (WP) 2023

jointly with Felix Chan (Curtin University) and László Mátyás (CEU)

- We propose a partially penalized (shrinkage) estimators for panel data, where the structure of the fixed effects (FEs) is unknown. We assess the magnitude of the bias for the parameter of interest if the assumed structure is false (e.g. additive time and individual FEs) and show significant improvement, when using our flexible method.

Heterogeneous Treatment Effects in Regression Discontinuity Designs (WP) 2023

jointly with Róbert Lieli (CEU)

- The paper proposes a causal supervised machine learning algorithm to uncover treatment effect heterogeneity in classical regression discontinuity designs. Extending Athey and Imbens (2016) with leaf-by-leaf regression, we develop a criterion for building an honest "regression discontinuity tree", where each leaf of the tree contains the RD estimate of treatment conditional on the values of some pre-treatment covariates. Currently, we are working on an extension that builds in the bandwidth selection procedure. Previous, single-authored version without bandwidth selection can be found here.

The Use of Machine Learning in Treatment Effect Estimation (Published) 2022

jointly with Róbert Lieli (CEU) and Yu-Chin Hsu (National Central University and National Chengchi University)

In: Chan, F., Matyas, L. (eds), Econometrics with Machine Learning. Advanced Studies in Theoretical and Applied Econometrics, vol 53. Springer, Cham (2022), pp. 79-109.

- This book chapter presents recent developments in the econometrics literature showing that machine learning methods can be fruitfully applied for this purpose. We explain why the use of orthogonal moment conditions is crucial for double/debiased machine learning. Another, somewhat distinct, strand of the literature focuses on treatment effect heterogeneity. We distinguish between methods aimed at estimating the entire function and those that project it on a pre-specified coordinate. We also present an empirical application that illustrates some of the methods.

Modelling with Discretized Continuous Dependent Variable (WP) 2021

Joint work with Felix Chan (Curtin University) and László Mátyás (CEU)

- Extends the split sampling methodology of Reguly et. al. (2020) to linear models, when the outcome variable is observed through a discretization process.

Modelling with Discretized Ordered Choice Covariates (WP) 2020

Joint work with Felix Chan (Curtin University) and László Mátyás (CEU)

- Introduces a new data gathering method the so-called 'split sampling', which allows point identification and consistent estimation of parameters via least squares, when the covariates are discretized interval data.

Conferences

EEA-ESEM 2021 Summer Conference Copenhagen, Denmark

European Economic Association (EEA) and Econometric Society European Meeting (ESEM) *Aug. 2021*

- Presented my works on Modelling with Discretized Continuous Dependent Variable (ESEM) and on Heterogeneous Treatment Effects in Regression Discontinuity Designs (EEA).

IAAE 2021 Annual Conference at Erasmus School of Economics Rotterdam, The Netherlands

International Association for Applied Econometrics (IAAE) *June 2021*

- Presented my working paper on Heterogeneous Treatment Effects in Regression Discontinuity Designs

IAAE, 2019 Annual Conference at University of Cyprus Nicosia, Cyprus

International Association for Applied Econometrics (IAAE) *June 2019*

- Presented the working paper on Modelling with Discretized Ordered Choice Covariates

Research and Administrative Experience

Institute of Economics, Centre for Economic and Regional Studies (CERS) Budapest, Hungary

Junior Researcher *Sept. 2021 – May. 2022*

- Modelling the effect of payroll tax subsidies on employment and wage for young (under 25) and old (over 55) cohorts. I have investigated the properties of a job search model, which can explain the movements in the parameters of interest. The project leaders are Anikó Bíró (CERS) and Attila Lindner (University College London).

Organizer of the Econometrics Reading Group Budapest, Hungary

Department of Economics and Business at CEU *2019*

- Organized reading group events for Ph.D. students and faculty members, covering various papers from the field of econometrics. We held meetings in two weeks frequency.

Central European University (CEU) Budapest, Hungary and London, UK

Research Assistant, collaborating with University College London *Oct. 2018 – Feb. 2019*

- Conducted research on econometric theory and applications of models where the dependent or explanatory variables are discretized due to surveys, but in fact, they are continuous. During the research, I have collaborated with MaaSLab at the University College London, a research group focusing on public transportation and faces challenges due to discretization when modeling.

Teaching Experience

Coding for Data Analysis with R 2022

Introduction to programming with R for various programs at CEU
(MS in Business Analytics, MS in Finance, MA and PhD in Economics)

- Developed course material, publicly available at gabors-data-analysis GitHub page.

Data Analysis 2018 – 2021

MS in Business Analytics at CEU

- 2020/21 Fall: **Lecturer** for Data Analysis 1 and 2
- 2018/19 Winter: Teaching Assistant for Data Analysis 3 and 4. (lecturer: Gábor Békés)

Coding 1: Data Management and Analysis with R 2020 – 2022

MS in Business Analytics at CEU

- 2020/21 and 2021/22 Fall: **Lecturer**

Data course 2020 – 2021

Executive Master of Business Art (EMBA) at CEU

- 2020/21 Fall: **Joint lecturer** with Anand Murugesan

Mathematics and Advanced Excel Pre-session 2019 – 2022

MS in Finance at CEU

- 2019/20, 2020/21 and 2021/22 Fall: **Lecturer**

Mathematical Methods for Economists 2017 – 2018

MA in Economics at CEU

- 2017/18 Fall: Teaching Assistant

Education

Central European University Budapest, Hungary

Ph.D. in Economics (US, Austrian and Hungarian degree) *Sept. 2016 –Sept. 2021*

- Advisors: Róbert Lieli and László Mátyás, Grade: *summa cum laude*

Budapest University of Technology and Economics Budapest, Hungary (BME)

MA in Economic Analysis - with summa cum laude *2012 – 2015*

Otto-Friedrich University of Bamberg Bamberg, Germany

Erasmus scholarship *Sept. 2012 – Feb. 2013*

Budapest University of Technology and Economics Budapest, Hungary

BA in Management and Business Administration *2009 – 2012*

Awards

Doctoral Research Study Grant 2021

CEU's grant for finishing Ph.D. students

Award for Advanced Doctoral Studies 2019

CEU's rector award for outstanding Ph.D. students

Pro Scientia Golden Medal (Hungarian Academy of Sciences) 2013

Academic award for young scholars from the Hungarian Academy of Sciences

National Scientific Students' Association Conference Awards (OTDK)

- 2015 and 2011 1st prize in economics section
- 2012 3rd prize in economics section
- 2011 Award of the Hungarian Economic Review (top Hungarian economic journal)

Other Awards

- 2014 Academic award of Rector Magnificus (BME)
- 2013 Economist's Forum's Young Scientist Award for the best article of the year
- 2013 Felkai András Memorial Scholarship for support training of young talents
- 2013 Outstanding students' award at the Budapest University of Technology and Economics
- 2012 Hungarian Republic Fellowship (József Nádor)

Publications as a student

Constructing Hungarian Zero-Coupon Yield Curve Models 2015
Conference Paper: National Scientific Students' Association Conference (in Hungarian)

Forecasting the Hungarian Nelson-Siegel Yield Curve with Mixed Factor Model 2014
Conference Paper: Hungarian Society of Economist Yearly Conference (in Hungarian)

Happiness of Economic Man - joint with: K. Martinás, Zs. Gilányi and V. Poór 2014
In Francesco Sarracino (Eds): The Happiness Compass, Chapter 19 Nova Science Publishers

Reappraisal of Rational Choice Theory - joint with K. Martinás 2013
Interdisciplinary Description of Complex Systems (INDECS), 11(1)

Behavioral models of pension systems, part I. and II. 2012, 2013
Economists' Forum, 2012. February and 2013. April (in Hungarian)

Additional Working Experience

Hungarian State Treasury 2019
Consultancy *Budapest, Hungary*

- Analysis on government security market

Hungarian Government Debt Management Agency 2013 – 2016
Expert Economic Analyst *Budapest, Hungary*

- I was responsible for periodical reports of the government security market and developing new methodologies for analyzing and forecasting the Hungarian government yield curve. Furthermore, I have contributed to the development of the new portfolio model.

Skills

Languages: Hungarian (native), English (fluent), German (intermediate)
IT skills:
Proficient: MatLab, R, Microsoft Excel
Familiar with: Python, SQL, Stata, Eviews, SPSS, Mathematica
Driving licence: A and B categories
Hobbies: I have been sailing for fourteen years, and achieved 1st award in the National Competition of Jolle 25 class in 2007, 2009, and 2010. Recently I have turned to mountaineering and rock climbing. Among many peaks in the Tatras and the Austrian Alps, in 2018 I climbed Mount Blanc via the Cosmiques route.
Family: I am lucky to have a loving wife and to be a father of two children.