



The Public Defense
of the Doctoral Thesis in Economics
by

Jenő Pál

on

Essays on News Consumption and Dynamic Programming

will be held on
Monday, December 4, 2017 at 3:00 p.m.

in

Quantum Room (101), Nádor 15
Central European University
Nádor street 9, H-1051 Budapest, Hungary

Thesis committee:

László Mátyás (Chair)

Balázs Muraközy (External member)

Sergey Lychagin (Internal member)

Supervisor:

Miklós Koren

Examiners:

Joan Calzada, Associate Professor, University of Barcelona (External examiner)

Sergey Lychagin, Assistant Professor, Central European University (Internal examiner)

The doctoral thesis is available for inspection
at the CEU Department of Economics and Business.

Abstract

The thesis consists of three chapters: the first, single-authored chapter and the second chapter, co-authored with Susan Athey and Markus Mobius, analyze online news consumption based on browsing behavior data, while the third chapter (co-authored with John Stachurski) is about a problem in numerical dynamic programming.

Chapter 1

Using a linked dataset of frontpages of The New York Times observed multiple times a day and browsing data, I measure the effect of the positions of news articles on the popularity of news articles. In a simple multinomial logit framework with article fixed effects I am able to identify position effects from within article differences of positions across frontpages. Focusing on the vertical positioning, I estimate a negative and decreasing strength effect of article position. The magnitude of the estimated effects is large: an article positioned in the top versus the second positions all else being equal results in 26 to 44 percent higher view share for the upper position. In a counterfactual exercise, I find a conservative mean increase of 5 percent on click-through rate resulting from solely re-ordering some articles on the frontpage. Furthermore, the actual ordering observed in the data is closer to a random ordering than to the counterfactual optimum. These findings point to the possibly enormous influence of editorial decisions on what people read in newspapers.

Chapter 2

A policy debate centers around the question whether news aggregators such as Google News decrease or increase traffic to online news sites. One side of the debate, typically espoused by publishers, views aggregators as *substitutes* for traditional news consumption because aggregators' landing pages provide snippets of news stories and therefore reduce the incentive to click on the linked articles. Defendants of aggregators, on the other

hand, view aggregators as *complements* because they make it easier to discover news and therefore drive traffic to publishers. This debate has received particular attention in the European Union where two countries, Germany and Spain, enacted copyright reforms that allow newspapers to charge aggregators for linking to news snippets. In this paper, we use Spain as a natural experiment because Google News shut down all together in response to the reform in December 2014. We compare the news consumption of a large number of Google News users with a synthetic control group of similar non-Google News users. We find that the shutdown of Google News reduces overall news consumption by about 20% for treatment users, and it reduces page views on publishers other than Google News by 10%. This decrease is concentrated around small publishers while large publishers do not see significant changes in their overall traffic. We further find that when Google News shuts down, its users are able to replace some but not all of the types of news they previously read. Post-shutdown, they read less breaking news, hard news, and news that is not well covered on their favorite news publishers. These news categories explain most of the overall reduction in news consumption, and shed light on the mechanisms through which aggregators interact with traditional publishers.

Chapter 3

This paper studies a value function iteration algorithm based on nonexpansive function approximation and Monte Carlo integration that can be applied to almost all stationary dynamic programming problems. The method can be represented using a randomized fitted Bellman operator and a corresponding algorithm that is shown to be globally convergent with probability one. When additional restrictions are imposed, an $O_P(n^{-1/2})$ rate of convergence for Monte Carlo error is obtained. This paper has been already published (Jenő Pál and John Stachurski: *Fitted Value Function Iteration with Probability One Contractions*. Journal of Economic Dynamics and Control, 37 (2013) 251–264).

Jenő Pál

CONTACT INFORMATION

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RESEARCH INTERESTS

Economics of Digitization, Media Economics, Numerical Methods

EDUCATION

Central European University, Budapest, Hungary

Ph.D., Economics, expected: December 2017

- Thesis title: *Essays on News Consumption and Dynamic Programming*

Corvinus University of Budapest, Budapest, Hungary

M.Sc., Quantitative Economic Analysis (with honours), July 2010

- major: Mathematical Finance

REFEREED JOURNAL PUBLICATIONS

Pál, J. and J. Stachurski. "Fitted value function iteration with probability one contractions." *Journal of Economic Dynamics and Control* 37(1) 251-264 (2013)

OTHER PUBLICATIONS

Koren, M., J. Pál, P. Kondor and Á. Szeidl. "Economic effects of firms network connections." *Hungarian Economic Review* 61(11) 1341-1360 (2014) (in Hungarian)

EXPERIENCE

Data Scientist at Emarsys, Budapest 2017 -

Data Analyst at CEU Microdata, Budapest 2012 - 2016

Research Intern at Microsoft Research New England, Cambridge, MA 2013, 2015

AWARDS

Student Awards — Central European University

- Academic Achievement Award for First-Year Doctoral Students 2012
- 5th Lindau Meeting on Economic Sciences, participant 2014

Student Awards — Corvinus University of Budapest

- Outstanding Student Award of the mathematical finance program 2010
- Jenő Szép prize for excellence in mathematics 2010

Travel Awards

- Zürich Initiative on Computational Economics 2011

TEACHING EXPERIENCE

Lead Instructor

Central European University 2015, 2016

- Programming Tools: Python programming for MA students in Economics

Teacher Training

CERGE-EI Teaching Fellows Program, Prague 2014

- teaching microeconomics and econometrics at ETVS Lornd University

Teaching Assistant

Central European University 2011 - 2012

- Pre-session Mathematics, Econometrics 2, Mathematical Methods for Economists (MA in Economics)

Corvinus University of Budapest 2006 - 2009

- Measure Theory (MA in Economics)
- Mathematical Analysis, Algebra, Microeconomics, International Economics (BA in Economics)

COMPUTER
PROGRAMMING

Experienced

- R (data.table, dplyr, ggplot2, Shiny)
- Python (NumPy, SciPy, Pandas, NetworkX)
- SQL (PostgreSQL, Google BigQuery)

Familiar with

- Stata, Matlab