



The Public Defense
of the Doctoral Thesis in Economics
by

Paweł Bukowski

on

Essays on the Economics of Education

will be held on

Monday, June 20, 2016 at 3:00 pm

in the

Faculty Tower, Room 309
Central European University
Nádor Street 9, Budapest

Thesis Committee:

László Csaba (Chair)

Sergey Lychagin (Internal member)

Miklós Koren (Internal member)

Júlia Varga (External member)

Dániel Horn (External member)

Supervisors:

Gábor Kézdi

John S. Earle

Examiners:

Sascha O. Becker, Professor of Economics at the University of Warwick, Deputy Director of the ESRC Centre for Competitive Advantage in the Global Economy, External Research Professor at Ifo Institute for Economic Research

(External Examiner)

Sergey Lychagin, Assistant Professor at the Central European University

(Internal Examiner)

The doctoral thesis is available for inspection
at the CEU Economics Department

Abstract

This thesis consists of one co-authored and two single-authored chapters, which investigate the modern and historical determinants of student performance and educational inequalities.

The first chapter (and the Job Market Paper) examines the effect on current student performance of the 19th century Partitions of Poland among Austria, Prussia and Russia. Despite the modern similarities of the three regions, using a regression discontinuity design I show that student test scores are 0.61 standard deviation higher on the Austrian side of the former Austrian-Russian border. On the other hand, I do not find evidence for differences on the Prussian-Russian border. Using a theoretical model and indirect evidence I argue that the Partitions have persisted through their impact on social norms toward local schools. Nevertheless, the persistent effect of Austria is puzzling given the historical similarities of the Austrian and Prussian educational systems. I argue that the differential legacy of Austria and Prussia originates from the Austrian Empire's policy to promote Polish identity in schools and the Prussian Empire's efforts to Germanize the Poles through education.

The second chapter is co-authored with Martyna Kobus. It studies the effect of threat of school competition on performance of public schools. We provide the evidence for the negative effect of the competition on students' test scores in public schools. We use the introduction of the amendment facilitating the creation of autonomous schools in Poland in 2009 as a breakthrough date in DiD estimation. The specifics of the Polish reform provide for a credible proxy for the *threat* of competition, so we can take into account that the size of competition is endogenous to the market characteristics. For the total sample we find no effect, however, for more competitive urban educational markets, we report a drop in test scores in public schools following the introduction of the amendment. This negative effect is robust to the existence of some competition prior to the amendment and to the size of public schools. It does not result from the violation of the common trend assumption either. We focus on the short run in which there is only a limited set of actions available to schools' principals. We exclude student sorting as a potential channel.

The third chapter estimates the effect of school competition on sorting within a school (across classes). The identification strategy is based on a two-stage design of the Polish Comprehensive Education, which allows to isolate an exogenous change in student mobility. In addition, I use a novel measure of student socio-economic characteristics - Raven's Progressive Matrix test score. The results show that school competition leads to a higher sorting of students within a school and between schools. I investigate two explanation of the effect on sorting within a school: the demand for peer quality and the demand for teachers. The data point to the importance of the former mechanism, i.e. the demand for high quality peers that motivates school principals to create high tracks within a school.

Chapter 1

“How History Matters for Student Performance. Lessons from the Partitions of Poland”

An intriguing idea in recent economic and historical research is that modern economies are affected by past institutions even after the institutions have ceased to exist. In the case of education, historical investments in public goods and property rights institutions have been shown to affect current educational attainment, provision of schools and literacy levels. However, we know less about the mechanisms underlying these long-run consequences of institutions and if and how they depend on social context. In the first chapter, I analyze the Partitions of Poland (1815-1918) among Austria, Prussia, and Russia as a laboratory to investigate how history matters for student performance. The existing evidence suggest that the former borders between the Empires were not drawn to reflect any pre-existing socio-economic, historical, geographic or ethnic divisions. Today, the the three regions are within Poland, are ethnically homogeneous and have the same modern educational and legal systems.

Using a two-dimensional regression discontinuity design I compare test-measured performance of students in municipalities at the two sides of the former border between Austria and Russia. I show that student test scores on the Austrian side are 0.61 standard deviation higher. On the other hand, I do not find evidence for differences on the Prussian-Russian border.

There are many potential channels through which the Partitions has affected the current student performance. I highlight that people living in the former Austrian Empire have inherited positive social norms toward local schools, which lead to a higher schooling effort and thus increase the performance of students. I provide three pieces of empirical evidence to support this channel. At the same time, I show that other channels, in particular skill-biased migrations, labor market differences, school quality are unlikely to explain my results.

Why social norms differ in the Austrian and Prussian partitions is puzzling given given that the former was not economically superior over the later and both Empires had almost identical educational systems and similar provision of public education. I argue that the differential legacy of Austria and Prussia originates from the different interaction between educational institutions and Polish identity. While the Prussian state used these institutions mainly to Germanize Poles (e.g. through the German language of instruction), the Austrian state used them to support Polish identity (e.g. through the Polish language of instruction). Because of the historical attitude of the Polish population toward the educational systems, positive social norms toward education may have been more likely to emerge in the Austrian partition. These could be then transmitted through generations and still affect student and parental effort. I provide a suggestive evidence for this hypothesis using the historical data on the 19th century educational outcomes

Overall, contributions of this study are threefold. Firstly, I show that history matters for student performance and it accounts for a sizable gap in educational achievements. Secondly, I provide evidence that history has persisted through its impact on social norms toward local schools. Finally, I propose a source of persistence based on the interaction between institutions and identity.

Chapter 2

”The threat of competition and public school performance: evidence from Poland”

with Martyna Kobus

School competition, one of the most important forces driving effectiveness of schools, depends on school funding, school choice or the structure of education. However, schools are not only affected by the actual competition, they might also anticipate a threat of competition and try to prevent it. Similarly, as monopolistic firms, they might want to block entry of new schools in order to secure their profits. But this might not be beneficial for student performance.

In the second chapter we focus on the impact of the threat of competition from autonomous schools on public school performance in Poland. As an identification strategy we use the amendment to the education act introduced in March 2009 which facilitated the creation of autonomous schools but only for schools that have 71 and less students. Therefore, public schools located in areas where there is a higher percentage of students who attend schools with less than 71 students are more exposed to competition. We show that this is indeed strongly related to actual creations of autonomous schools. Using year 2009 as a breakthrough date in the Difference-in-Difference estimations we find that the higher competition caused by the mentioned reform has significant negative impact on the performance of urban public schools. Urban areas are more competitive educational markets than rural areas, with dense school network and better parental background. The effect is similar for public schools that are larger (more than 300 students) and becomes stronger for urban schools that already have an autonomous school in their neighborhood and may thus be more aware of the consequences of the reform. We argue that in our case changes in student composition between schools are unlikely, but also we analyze changes in test scores at the municipality level, which cancels out the direct effects of sorting between schools. In cities (above 20000 inhabitants) test scores drop at the aggregate community level.

We focus on the short run consequences of the reform. In the short run, school administrators are restricted in their options and school’s reputation is not only the function of productivity and student ability, but also on activities that are visible to parents and attract but are not necessarily related to productivity. In Poland, teachers enjoy high level of employment security and they cannot be laid off easily, in particular, not in the short run. Therefore, what remains available to school principals, is either efficiency changes i.e. incentivizing teachers to work harder, or boosting their school’s prestige. We find no evidence for increasing teachers’ salaries or investment in infrastructure in the expenditure dataset. We only find some anecdotal evidence that principals may resort to deterring the entry of community schools by marketing their schools to parents.

Chapter 3

“School Competition and Sorting of Students Within a School”

Existing literature shows that school competition might lead to sorting of students between schools. However, we know less about the effect of school competition on sorting within a school (across classes). This is surprising given the importance of class assignment and that student sorting is not neutral for the performance of students and might violate educational equality of opportunity.

This chapter is a first study to estimate the effect of school competition on sorting within a school (across classes) and between schools. In order to isolate an exogenous change in student mobility, which increases school competition, I exploit a two-stage design of the Polish Comprehensive education. For measuring sorting I use the fraction of the variance of Raven’s Progressive Matrix test score explained by school or class levels. Raven’s score is a measure of general intelligence, which is determined by student genetic abilities and socio-economic background. It is fixed since early childhood, which ensures that the only source of class/school homogeneity is sorting of students. The results show that school competition leads to more homogeneous classes and schools.

Next, I focus on the potential mechanisms explaining the effect of school competition on sorting within a school. One explanation is that high track might be used to attract high-skill or high-income students (the demand for peer quality). A complementary is that it might be also used to attract high-skilled teachers (the demand for teachers). Using data on school characteristics I empirically test these two channels. The results point out to the importance of the demand for peer quality channel.

| | | |
|----------------------------|---|---|
| CONTACT INFORMATION | Department of Economics Central European University Nador u. 9 1051 Budapest, Hungary | +36 302 302 132 bukowski_pawel@phd.ceu.edu https://sites.google.com/site/pwllbukowski/ Citizenship: Polish DoB: 31st October 1986 |
| CURRENT ACADEMIC POSITIONS | 07/2016 - Research Economist, The Centre for Economic Performance London School of Economics and Political Science | |
| PAST ACADEMIC POSITIONS | 06/2015 - 06/2016 Junior Research Fellow, CenEA , Szczecin | |
| EDUCATION | 2016 PhD in Economics, Central European University , Budapest <i>Dissertation:</i> "Essays on the Economics of Education" <i>Completion:</i> June 2016 <i>Supervisors:</i> Gábor Kézdi, John S. Earle <i>Examiners:</i> Sascha O. Becker, Sergey Lychagin 2015 Visiting Student Researcher, University of California at Berkeley <i>Hosted by:</i> David Card, Center for Labor Economics 2010 MA in Economics, University of Warsaw 2009 BA in Economics, University of Warsaw | |
| RESEARCH EXPERIENCE | 2014-2015 Organizer of the WEast Workshop on Economic History in Budapest 2015 2013-2014 Research Assistant for prof. John S. Earle (George Mason University and CEU) 2013 Research Assistant for prof. Peter Benczur (European Commission and CEU) 2011 Research Assistant - The Educational Research Institute in Warsaw 2008 Research Assistant - research project in Network Economy at University of Warsaw | |
| TEACHING EXPERIENCE | Qualifications: | CEU Program for Excellence in Teaching in Higher Education <i>Courses Taught</i> Microeconomic Analysis TA, Central European University School of Public Policy, Graduate Course, Fall 2014 Applied Econometrics Seminar TA, Central European University Department of Economics, Graduate Course, Winter 2014 Econometrics 2 Seminar TA, Central European University Department of Economics, Graduate Course, Winter 2013 Introduction to Econometrics Advanced Seminar TA, Central European University Department of Economics, Graduate Course, Fall 2012 IT tools in Economics Seminar TA, University of Warsaw Department of Economics, Undergraduate Course, Winter 2011 |

GRANTS AND
FELLOWSHIPS

- 2016 GDN-CERGE-EI Regional Research Competition grant
 2015 *The Review of Economic Studies* Fellowship (a grant for outstanding research proposal)
 2015 The Royal Economic Society conference grant
 2015 Doctoral Research Support Grant at Central European University
 2011-2014 The Full Central European University Doctoral Fellowship
 2009-2010 Central European Programme in International and Institutional Economics Mobility Grant (CEEPUS) at Central European University

AWARDS

- 2016 The CEU Award for Advanced Doctoral Students
 2013 The Best Presentation Award at the Russian Summer School on Institutional Analysis
 2005-2010 Academic performance scholarships (University of Warsaw, Dep. of Economics)
 2007-2008 Academic performance scholarship (University of Warsaw, Institute of Sociology)

PAPERS

How History Matters for Student Performance: Lessons from the Partitions of Poland - the earlier version publicized as *Identity as a Determinant of Institutional Persistence: Lessons from the Partitions of Poland*, Berkeley Economic History Laboratory Working Paper 2015-10

The Threat of Competition and Public School Performance: Evidence from Poland, with Martyna Kobus (Polish Academy of Sciences)

School Competition and Sorting of Students Within a School (working paper soon)

Top Income Shares in Poland: 1918-2013, with Filip Novokmet (Paris School of Economics) (working paper soon)

Long-Run Social Mobility in Hungary, with Gregory Clark (University of California at Davis), Attila Gaspar (CEU) and Rita Peto (CEU) (early stage)

JOURNAL
PUBLICATIONS

Educational Equality of Opportunity in Poland: Stochastic Dominance Approach, *Ekonomista* 5/2012, with Martyna Kobus (Polish Academy of Sciences)

OTHER
PUBLICATIONS

Editor in Chief of: *Esther Dufo; Poverty Alleviation: Step by Step*, volume for the John von Neumann Award 2013, Rajk Laszlo College for Advanced Studies, Budapest 2014.

Measuring Productivity Dispersion Across Russian Manufacturing Firms, 2003-2010, Economics Department Working Papers, OECD 2014, with John S. Earle (George Mason University and CEU)

Continuation of Changes. Report on the State of Education in Poland 2011. (In Polish) The Educational Research Institute, Warsaw 2012.

A Concept of Educational Expenditure and the Analysis of the Existing data. Final report from the research project. (in Polish) The Educational Research Institute, Warsaw 2011.

PRESENTATIONS AT 2016 RES PhD Meetings, London, January 2016
 CONFERENCES AND Ifo Center for the Economics of Education, Munich, November 2015
 SEMINARS BEHL Economic History Lunch, Berkeley, May 2015
 UC Davis Economic History Coffee Hour, Davis, May 2015
 UC Berkeley Labor Lunch, Berkeley, April 2015
 Warsaw Economic Seminars, Warsaw, November 2014
 3rd IZA@DC Young Scholar Program, Washington DC, September 2014
 The European Summer School 2014 in Economic History, Berlin, September 2014
 Warsaw International Economics Meeting, Warsaw, July 2014
 WEast Workshop on Economic History, Belgrade, July 2014
 The 20th Annual Dubrovnik Economics Conference, Dubrovnik, June 2014
 Kent Frontier Research in Social-Economic History Meeting, Canterbury, June 2014
 Educational Governance and Finance, Asker, May 2014
 Visegrad Fund Workshop on Educational Policies, Budapest, April 2014
 Seminar on Psycho- and Econo- metrics Methods in Educational Research, Warsaw, March 2014
 European Association of Law and Economics Annual Meeting , Warsaw, September 2013
 Warsaw Frontier Research in Social-Economic History Meeting, Warsaw, July 2013
 Russian Summer School on Institutional Analysis, Moscow, June 2013
 The Workshop on Educational Governance, Trondheim, April 2013
 The 6th RGS Doctoral Conference in Economics, Bochum, February 2013
 World Telecommunication and Information Society Day, Warsaw, May 2008

PROFESSIONAL The Royal Economic Society
 AFFILIATIONS

REFEREE SERVICE *Közgazdasági Szemle*

MISCELLANEA *Languages:* Polish (native), English (fluent), Russian (beginner)
Software: Stata, Matlab, L^AT_EX, QGIS, Eviews, Mathematica, MS Office
Personal: Organization of the FRIV music festival

| | | |
|------------|--|---|
| REFERENCES | Gábor Kézdi Department of Economics Central European University +36 1 327-3000 x 2201 Email | John S. Earle School of Public Policy George Mason University +1 703-993-1780 Email |
| | Botond Kőszegi Department of Economics Central European University +36 1 327-3000 x 2792 Email | Martyna Kobus Institute of Economics The Polish Academy of Sciences +48 505 774 413 Email |