

On the Role of Information in Educational Choice

On the Role of Information in Educational Choice

Luca Facchinello





Dissertation for the Degree of Doctor of Philosophy, Ph.D.,
in Economics
Stockholm School of Economics, 2016

On the Role of Information in Educational Choice

© SSE and Luca Facchinello, 2016

ISBN 978-91-7258-991-9 (printed)

ISBN 978-91-7258-992-6 (pdf)

This book was typeset by the author using L^AT_EX.

Front cover picture:

© Shutterstock/style-photography, 2016

Back cover picture:

Gianna Agostini, 2015

Printed by:

Ineko, Göteborg, 2016

Keywords:

Grades, academic ability, information, uncertainty, learning, school choice, educational attainment, surveys, peer effects.

A mia mamma

Foreword

This volume is the result of a research project carried out at the Department of Economics at the Stockholm School of Economics (SSE).

This volume is submitted as a doctor's thesis at SSE. In keeping with the policies of SSE, the author has been entirely free to conduct and present his research in the manner of his choosing as an expression of his own ideas.

SSE is grateful for the financial support provided by the Jan Wallander and Tom Hedelius Foundation which has made it possible to fulfill the project.

Göran Lindqvist

Director of Research
Stockholm School of Economics

Richard Friberg

Professor and Head of the
Department of Economics
Stockholm School of Economics

Acknowledgements

This thesis is the result of my Ph.D. studies at the Stockholm School of Economics. I am proud of this achievement, and I would like to thank all the people that, in different ways, were involved in the process.

The biggest thanks go to my two advisors, Erik Lindqvist and Juanna Joensen, from whom I learned so much. I really appreciate the encouragement and support they offered me throughout the Ph.D. Thanks to Erik's precious guidance my efforts were always channeled into productive directions. I thank him for his helpful comments, for always being available, and for putting a lot of his time into teaching me how to properly write a research article. Juanna's insightful comments and knowledge of the literature greatly contributed to the dissertation. I thank her for including me in her research project in education, which allowed me to strongly improve the first chapter of the thesis.

I am indebted to Jeff Smith, who sponsored my stay at the department of Economics of the University of Michigan. What I learned from him and the faculty during my fourth year of Ph.D. improved the quality of the thesis.

My stay abroad, and the Ph.D. itself, could have not been possible without the generous financial support of the Jan Wallander and Tom Hedelius Foundation, which I gratefully acknowledge.

I would like to thank Juanna Joensen and Greg Veramendi for their work in the survey paper, and Elena Mattana, Evelina Bonnier, and John Eric Humphries for productive discussions within the education project.

I thank Martina Björkman Nyqvist, Tore Ellingsen, Johanna Wallenius, Federica Romei, Kelly Ragan and Paul Segerstrom for their help in preparing me for the job market. A special thanks goes to Kerem Coşar, for his excellent work throughout the market.

My years in Stockholm would have not been the same without the company of fellow Ph.D. students and friends Arieda Muco, Paola Di Casola, Spyridon

Sichlimiris, Theodoros Rapanos, Ana Maria Ceh, Egle Karmazeine, André Richter, Taneli Mäkinen, Alberto Vesperoni, Abel Schumann, Jakob Almerud, Niels-Jakob Harbo Hansen, Audinga Baltrunaite, Eleonora Freddi, Marta Gigheddu, Nadiia Lazhevskaja, and Amanda Jakobsson. I really appreciate the “drinks”, parties, academic bickering and pleasant conversations of these years! I also thank Theodoros, Niels-Jakob, Shuhei, Audinga, Mounir and Miri for making the job market experience more pleasant.

While the thesis was written during the Ph.D., I could never have made it here without the support of outstanding teachers along the path. I would like to thank those that never get any glory, but were so important to me. I am thankful to Annamaria Boroso and Tiziana Bernardi for respectively fostering creativity and logical thinking when I was a child, Clotilde Todescan and Mirella Caberlin for providing solid foundations in language and math, and their high school counterparts, Giovanna Viola and Paola Morettin, for keeping up the good work. A special thanks goes to my high school English teacher, Elena Ruffatto, for being such an inspiring teacher and making possible my studies abroad.

My graduate studies in Bologna were fundamental to my advancement to a Ph.D. program. I thank all the LMEC faculty for their exceptional work, and in particular my two advisors, Chiara Monfardini and Andrea Ichino, for guiding my first steps into research.

I could never have made it through the up and downs of the Ph.D. without the support of my family and friends. My mom Antonella and my dad Carmelo were always there for me when I needed it. Our constant TV video-chats made me feel like I never left. I thank my brother Andrea and his wife Laura for keeping me up-to-date with their life and growing family, my niece Emma and my nephew Giovanni for cheering us up with their smiles. A big thank to my friends Jacopo, Marina, Erika and Elisa, who made my stays in San Pietro in Gu feel always too short.

Stockholm, April 27, 2016

Luca Facchinello

Contents

Contents	ix
Introduction	1
1 The Impact of Early Grading on Academic Choices: Mechanisms and Social Implications	5
1.1 Introduction	6
1.2 Institutional Setup	11
1.3 Model	17
1.4 Model's Results	21
1.5 Empirics	33
1.6 Empirical Results	37
1.7 Discussion	48
1.8 Conclusion	49
1.A Numerical Model	52
1.B Descriptives	77
1.C Refutability Tests	96
References	112
2 Rethinking Education Choices: The Effect of Surveys	119
2.1 Introduction	120
2.2 Institutional Setting and Empirical Strategy	125
2.3 Data	133
2.4 Empirical Results	138
2.5 Conclusion	140
2.A Balancing Tests	141
2.B Results	154

References	165
3 Does Peer Ability Affect Education Choices?	171
3.1 Introduction	172
3.2 Setup	174
3.3 Empirics	180
3.4 Mechanisms	188
3.5 Conclusion	192
3.A Indexes	193
3.B Rank Deviations	197
References	200

Introduction

When students are uncertain about own ability, information might affect their academic choices. The thesis consists of three self-contained chapters that explore different facets of this theme.

The first chapter studies theoretically and empirically the role of early grade assignment in education choice, focusing in particular on mechanisms. The main argument is that early grading affects differently the choices of students with different academic ability and socioeconomic status.

The second chapter investigates empirically whether repeatedly surveying compulsory school students affects their educational choices, attainment, and long-run labor market outcomes. The basic idea is that educational surveys might contain information relevant for the choices of the students.

The last chapter studies empirically whether, and how, students' choices in compulsory school are affected by peer ability. If students assess their academic ability in relation to their classmates, peer ability might have an effect on their academic choices.

A short summary of each chapter follows.

The Impact of Early Grading on Academic Choices: Mechanisms and Social Implications

Does early grading affect educational choices? To answer this question, I exploit a curriculum reform which postponed grade assignment in Swedish compulsory schools. The staggered implementation of the reform allows me to identify short- and long-term effects of early grading, for students with different academic ability and socioeconomic status (SES). When graded early on, high-ability students (especially if high-SES) exhibit higher grades in compulsory school, and are more likely to choose academic courses. Low-ability students

react in the opposite way, with particularly negative reactions among low-SES students. High school attainment increases for high-ability low-SES students; college attainment decreases for low-ability low-SES students. None of these effects carry over to the labor market. This suggests that early grades improve the match between early education choices and academic ability, and reduce over-investment in education. I show that the short-term effects are consistent with predictions from a learning model in which children are uncertain about academic ability, have different priors depending on SES, and use grading information to re-optimize educational choices. I find no evidence of demotivating effects for low-ability students, an alternative mechanism through which grades might affect education choices, and the main motivation behind the grading reform.

Rethinking Education Choices: The Effect of Surveys

(with Juanna Schrøter Joensen and Greg Francisco Veramendi)

Can surveys affect investments in education? This paper examines whether individual education choices and outcomes are affected by a survey posing questions related to expectations and forward-looking behavior. We have administrative data for the whole Swedish population to which an extensive education survey was administered to randomly drawn samples of 3rd graders. This constitutes a randomized social experiment for testing whether responding to survey questions alters behavior. We observe complete educational and labor market histories until the individuals are 31 years old. We have exogenous variation in the timing of first surveys and when an additional survey was administered to parents. The causal effect of the survey on both short- and long-run outcomes is generally not significantly different from zero, independently of parental education. We find, however, that being surveyed increases educational attainment and job stability in the early career for some subpopulations. We will address more specifically heterogeneity of the effect in future research.

Does Peer Ability Affect Education Choices?

Average classroom ability matters if children assess their ability relative to their peers. I use detailed survey data on a cohort of Swedish 6th graders to estimate

the overall effect of classmates' ability on students' choices in compulsory school. I show that variation in class ability within schools is unrelated to own ability and other determinants of education choice. I find that a one standard deviation increase in average class ability reduces by 2 percentage points the probability of taking an advanced math course in grades 7 to 9. Peer ability does not affect English course choices in grades 7 to 9, and whether students choose academic tracks in high school. I look at underlying mechanisms and show evidence that peer ability negatively affects students' assessment of own ability. The different reduced-form effects on math and English course choices reflect different spillovers in performance: students benefit much more from having high ability peers in English, an interactive subject, than they do in math. Finally peer ability does not seem to affect student's motivation, class interaction and parental support, but positively affects teacher interaction.