

University of Groningen

Economy and health

Viluma, Laura

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:

2019

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Viluma, L. (2019). *Economy and health: essays on early-life conditions, health, and health insurance*. University of Groningen, SOM research school.

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

ECONOMY AND HEALTH

Essays on early-life conditions, health, and health insurance

Laura Viluma

Publisher: University of Groningen
Groningen, The Netherlands

Printed by: Ipskamp Drukkers B.V.
Enschede, The Netherlands

ISBN: 978-94-034-1435-5 (printed version)
978-94-034-1434-8 (electronic version)

© 2019 Laura Viluma

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system of any nature, or transmitted in any form or by any means, electronic, mechanical, now known or hereafter invented, including photocopying or recording, without prior written permission of the publisher.



university of
 groningen

Economy and Health

Essays on early-life conditions, health, and health insurance

PhD thesis

to obtain the degree of PhD at the
 University of Groningen
 on the authority of the
 Rector Magnificus prof. E. Sterken
 and in accordance with
 the decision by the College of Deans.

This thesis will be defended in public on

Monday 8 April 2019 at 14.30 hours

by

Laura Viluma

born on 17 June 1984
 in Ogre, Latvia

Supervisor

Prof. R.J.M. Alessie

Co-supervisors

Dr. J.O. Mierau

Dr. V. Angelini

Assessment Committee

Prof. G. Doblhammer

Prof. M. Lindeboom

Prof. E. Buskens

ACKNOWLEDGEMENTS

I still remember the first lecture in health economics of my Master's program at Erasmus University Rotterdam where I fell in love with the subject, after having chosen the program basically on a whim. It was the excellent teachers of this program, who showed me the exciting problems that health economics deal with and made even econometrics feel accessible and interesting. That gave me confidence that academic research in health economics is something I want to pursue. Now, when my PhD has come to an end, I would like to mention some of the other great people without whom this would not have been possible.

First and foremost, I want to thank my great team of supervisors – Rob, Viola and Jochen, who were always there with brilliant ideas, support and encouragement. They were excellent as a team and also each individually. Rob's expertise in econometrics and sharp eye for detail is invaluable just as his kind and calm guidance. Viola is my role model for everything, from how to do research and how to teach to how to balance the academic and family life. And Jochen, being the "macro" expert, always sees the bigger picture and keeps everyone focused on the goal. Thank you all, I could not have dreamed of better supervisors. In addition, I would like to thank Gerard, who has been a large part of this project with his friendly advice and expertise.

Also, I would like to thank the assessment committee of my thesis, professors Erik Buskens, Gabriele Doblhammer, and Maarten Lindeboom for taking their time to read and assess this thesis and providing valuable feedback.

This thesis would not have been possible without the support from the department of Economics, Econometrics and Finance, and SOM Graduate School. The many conference visits, educational activities and other initiatives to support PhD's have made this process much more enjoyable and valuable. I am especially grateful to Ellen Nienhuis, Taco van der Vaart and the PhD coordinators for their support.

The first steps of the PhD I made together with my colleagues from the NWO project, Lydia, Bart, and Maxim. Sharing the ups and downs of the first year of PhD while taking courses and designing the research project, made it much more tolerable. There are

also other great people from FEB, with whom we have spent good times with – Eduard, Raun, Beatriz, Bart, Roel, Hermien, Gianmaria, Jerry, Nico, Orsi, Dan, Aga, Anne, and Edin.

I would also like to thank my friends back home – Viktorija, Agnija, and Madara and their respective “other halves” – Edgars, Pavels, and Ivars. Thank you for being in my life for so many years. You know, you are like family to me. The adventures and laughs we have together are the best stress relief and distraction from research.

The next big thanks goes to my parents, whose unwavering support is at the basis of everything I do. And my brother Sandijs, my sister Anete and her husband Kaspars, for always being there for me. And my niece Elza, who is simply a little piece of sunshine in our lives. Above all, the biggest thanks goes to Maris, who is my rock, my love and my best friend. You know, that this PhD is absolutely your fault and I would have never been here without you. And the final thanks to my kids, Gatis and Arturs, who have made sure, that I don't take my work home and don't work too late. I hope this inspires you to do great things in your lives, whatever they may be.

Laura Viluma

Groningen, February 4, 2019

TABLE OF CONTENTS

Chapter 1. Introduction	1
1.1. Motivation and research questions.....	1
1.1.1. Early-life economic circumstances and health.....	2
1.1.2. Moral hazard and selection in health insurance	4
1.2. Summary and policy recommendations	5
Chapter 2. Economic downturns and infant health	11
2.1. Introduction	11
2.2. Economic downturns and infant health.....	15
2.2.1. Effect on fertility decision.....	16
2.2.2. Effect on consumption of health-related goods.....	17
2.3. Data & Methods.....	17
2.3.1. Lifelines	17
2.3.2. Unemployment.....	24
2.4. Methods.....	24
2.5. Empirical Results	26
2.5.1. Provincial unemployment and fertility decision.....	26
2.5.2. Provincial unemployment and babies' health	29
2.5.3. Maternal age and smoking behaviour.....	32
2.6. Conclusions.....	34
Chapter 3. Economic Conditions at Birth and Cardiovascular Disease Risk in Adulthood: Evidence from post-1950 Cohorts	37
3.1. Introduction	37
3.2. Data	41
3.2.1. Lifelines	41
3.2.2. Unemployment Data.....	45
3.3. Methods.....	46

3.4.	Results.....	48
3.5.	Conclusions.....	51
	Appendix: Calculating 10-year risk estimates for fatal cardiovascular disease (SCORE)	52
Chapter 4. Do Cesarean Delivery Rates Rise when the Economy Declines? A Test of the Economic Stress Hypothesis.....		55
4.1.	Introduction.....	55
4.2.	Data.....	58
4.2.1.	Lifelines.....	58
4.2.2.	Sample selection.....	58
4.2.3.	Provincial Unemployment.....	63
4.3.	Methods.....	64
4.4.	Results.....	66
4.5.	Conclusions.....	73
	Appendix.....	75
	A: Cesarean Delivery in the Netherlands.....	75
	B: Comparison of excluded and included observations.....	76
Chapter 5. Moral Hazard and Selection for Voluntary Deductibles.....		77
5.1.	Introduction.....	77
5.2.	Regulatory framework.....	80
5.3.	Theoretical framework.....	81
5.3.1.	Asymmetric information and adverse selection.....	81
5.3.2.	Moral hazard.....	82
5.4.	Data.....	83
5.4.1.	Healthcare utilization.....	84
5.4.2.	Voluntary deductible.....	84
5.4.3.	Control variables.....	85
5.5.	Methods.....	88
5.6.	Results.....	92
5.6.1.	Descriptive statistics.....	92
5.6.2.	Multidimensional asymmetric information.....	93
5.6.3.	Health care utilization.....	95

5.6.4. Moral hazard	98
5.7. Conclusions	104
Appendix: List of variables	106
Acknowledgments regarding data and financing	107
Bibliography.....	109

