

**Hanna Mühlrad**  
**PhD Candidate**

**Home Address:**

Storgatan 5B  
411 24 Göteborg  
Sweden  
Cell Phone: +46735018817

**Office:**

Department of Economics  
University of Gothenburg  
Vasagatan 1, Box 640  
SE 405 30 Gothenburg

**E-mail:** [hanna.muhlrad@economics.gu.se](mailto:hanna.muhlrad@economics.gu.se)

**Web page:** <https://sites.google.com/site/hannamuhlrad/home>

**Citizenship:** Swedish

**Research Fields:**

Health Economics  
Development Economics  
Labor Economics

**Desired Teaching:**

Health Economics  
Development Economics  
Applied micro econometrics  
Labor Economics

**Dissertation Title:** *Fertility, Health and Labor: Evidence from Reproductive Technology Policy Changes*

**Expected Completion Date:** January 25, 2018

**Graduate Studies:**

University of Gothenburg, 2012 - to present. Department of Economics  
Supervisors: Associate Professor Andreea Mitrut and Professor Randi Hjalmarsson

Stockholm University, 2014 - to present. Visiting PhD at Institute for Social Research (SOFI)

University of Oxford, 2013. Visiting DPhil Student at Department of Economics  
Supervisor: Associate Professor James Fenske  
Affiliations: Center for the Study of African Economies (CSAE)

Lic. Phil., 2016, Department of Economics, University of Gothenburg, Sweden.  
[Discussant: Hans Grönqvist, Associate Professor at Department of Economics, Uppsala University]

**Undergraduate Studies:**

MSc courses, 2010-2012, Department of Economics, Stockholm University  
BSc. Economics, 2007-2009, Department of Economics, Stockholm University

**Fellowships, Honors and Awards:**

FoU Karolinska Institute and Danderys Sjukhus (co-investigator), 2017, 100,000 SEK

Knut och Alice Wallenbeks stiftelse, 2017, 10,000 SEK  
 Donationsnämndens stipendier, University of Gothenburg, 2015-2017, 60,000 SEK  
 Hedeliusstipendier, Jan Wallanders and Tom Hedelius Research Foundation 2014, 60,000 SEK  
 Sahlgrenska, Travel grants, University of Gothenburg, 2014, 10,000 SEK

### **Research Experience:**

The Riksbank (Sweden's Central Bank), Unit for Macroeconomic and Financial Analysis, summer internship, 2013  
 The Swedish Retail Institute (HUI Research), Research assistant, 2011  
 Institute for International Economic Studies (IIES), Stockholm University, Research assistant to Professor Harry Flam, 2010

### **Teaching Experience:**

Guest Lecturer, Empirical Development Economics, Bachelors level, 2017, Barnard College, Columbia University  
 Lecturer, Governing health and illness in a global perspective, MSc level, 2017, University of Gothenburg and Sahlgrenska Academy  
 Teaching assistant, Applied Economics and Trade, Bachelors level, 2017, University of Gothenburg  
 Teaching assistant, Macroeconomics, Bachelors level, 2016, University of Gothenburg  
 Teaching assistant, Microeconomics, Bachelors level, 2010, Stockholm University  
 Supervision, Bachelors theses (8 theses) – Development Economics/ Labor Economics and health Economics, 2014-2017, University of Gothenburg  
 Supervision, MSc thesis (1 thesis) – Applied econometrics/Environmental Economics, 2015/2016, University of Gothenburg

### **Papers:**

*“Cesarean Section for High-Risk Births: Short and Long Term Consequences for Breech Births”*  
 [job market paper]

*“IVF, Multiple Births and Birth Quality: Analysis of an IVF Reform in Sweden”*  
 with Sonia Bhalotra, Damian Clarke and Mårten Palme

*“The Impact of Abortion Legalization on Fertility and Female Empowerment: New Evidence from Mexico”* with Damian Clarke

### **Work in Progress:**

*“Marginal Returns to Early Health Care Interventions: Evidence from Sweden”*  
 with Mårten Palme and Julia Boguslaw

*“Medical and socio-economic aspects of early pain exposure and development of pain disorders and mental illness later in life- Evidence from the Swedish registry data”*  
 with Nina Bohm Starke and Philip Haraldson

### **Conference, Workshop and Seminar Presentations:**

Internal seminar series, Sustainable Development Colloquium, Columbia University, 2017  
 Institute for Social and Economic Research, University of Essex, 2017  
 Workshop on Parental Beliefs, Information and Investments, Institute for Social and Economic Research, university of Essex, 2017  
 Workshop on Sustainable Development, Columbia University, 2017

Workshop on Development in Comparative Perspective, Department of Economics, Delhi School of Economics, 2017  
 Karolinska Institute, Department of Obstetrics and Gynecology, 2016  
 The Swedish Institute for Social Research, Stockholm University, 2016  
 International Pregnancy Advisory Services (IPAS) Mexico City & Instituto Nacional de Salud Pública, 2016  
 Karolinska Institute, Department of Women's and Children's Health, 2016  
 Essen Health Conference, 2016  
 Centre for the Study of African Economies Conference, University of Oxford, 2016  
 Microwave, Department of Economics, Stockholm University, 2016

### Peer Reviewing

Journal of African Economies

### Languages:

Swedish (native), English (fluent), Hebrew (currently studying)

### Extracurricular:

Volunteering work for Zikaron, Holocaust lectures (Third generation testimony) for high-school pupils  
 Swedish Women's Voluntary Defense Organization (Svenska Lottakåren),

### References:

Professor Randi Hjalmarsson University of Gothenburg Department of Economics Box 640, 405 30 Gothenburg, Sweden Email: <a href="mailto:randi.hjalmarsson@economics.gu.se">randi.hjalmarsson@economics.gu.se</a>	Associate Professor Andreea Mitrut University of Gothenburg Department of Economics Box 640, 405 30 Gothenburg, Sweden Email: <a href="mailto:andreea.mitrut@economics.gu.se">andreea.mitrut@economics.gu.se</a>
Professor Sonia Bhalotra University of Essex Department of economics & Institute for Social and Economic Research (ISER) Wivenhoe Park, Colchester, C04 3SQ Email: <a href="mailto:srbhal@essex.ac.uk">srbhal@essex.ac.uk</a>	Professor Mårten Palme Stockholm University Department of Economics SE-106 91 Stockholm Sweden Email: <a href="mailto:marten.palme@ne.su.se">marten.palme@ne.su.se</a>

### Dissertation abstract

Reproductive and birth technologies, including innovations in modern contraception, abortion, IVF and Caesarean section, have advanced rapidly since the beginning of the Twentieth century. Reproductive technologies assist women in controlling fertility and thus in obtaining a desired family size as well as improving the health of mothers and children worldwide. According to the World Bank, there has been a rapid drop in fertility from 5 children per women in 1960 to 2.5 children in 2015. While access to birth and reproductive technologies varies to a large extent, it is possible that they could eliminate existing disparities in health. Despite the rapid progress in the development of reproductive and birth technologies multiple questions regarding the impact of this technological advancement, as well as questions on how improved access can reduce gaps in health, remain unanswered. My research aims at contributing knowledge in this field, particularly by focusing on the causal and long run impacts including both health indicators and labor market outcomes. The common themes to my papers are the topics of fertility, women's and children's health, empowerment and labor market outcomes with a strong focus on causal effects from policy changes using administrative data in both developed and

developing countries. I use quasi-experimental methods to estimate the causal impact for the policy in question. My dissertation contains three empirical papers. In the first chapter, I examine the causal and long term impact of an increase in planned C-section among high risk births on multiple socio-economic outcomes including health, future fertility and labor responses. In my second chapter, the impact of an IVF reform mandating single embryo transfer as default procedure providing a negative fertility shock is analyzed. Finally, in the third chapter, I examine the effect from abortion legalization in Mexico City on fertility and female empowerment.

In Chapter One, **Cesarean Section for High-Risk Births: Short and Long Term Consequences for Breech Births** (my job market paper), I use a sample of “at-risk” births---namely, breech births, in which the fetus is presented with its head upwards instead of downwards---to study the causal impact of C-sections on the health of infants and on the health, subsequent fertility, and labor market outcomes of mothers. Because selection into C-section may be endogenous, I exploit an information shock to doctors in 2000, in which a new study about the benefits of planned C-sections for breech births led to a sharp 23% increase in planned C-sections. This increase occurred across the board: I find no evidence of a shift in the composition of women receiving C-sections following the shock. I then use this information shock in a reduced form pre-post analysis and as an instrument for C-sections in a 2SLS analysis of Swedish birth, in-patient, and labor market register data associated with births taking place during 1997-2003. I find that an increase in C-sections among breech births led to strong improvements in child health originating from both short- and long-run improvements, as indicated by higher APGAR scores at birth and fewer nights hospitalized during ages 1-7. The estimates suggest that the medical intervention almost completely narrowed the gap in health between breech and cephalic (normal position) births. I find no significant impact on maternal health at birth or subsequent births, nor on maternal labor market outcomes. Though marginally insignificant, estimates suggest a potential negative impact on future fertility.

In Chapter Two, **Multiple Births, Birth Quality and Maternal Labor Supply: Analysis of IVF Reform in Sweden**, together with Sonia Bhalotra, Damian Clarke, and Mårten Palme, we examine the impact of an in vitro fertilization (IVF) reform in Sweden. The share of births facilitated by IVF has increased rapidly, exceeding 3% in several industrialized countries. Although IVF addresses involuntary infertility and allows fertile women to postpone childbearing, it is associated with worse neonatal and maternal health. A major contributor to this is that IVF typically involves the transfer of multiple embryos, as a result of which IVF births are 10 to 15 times more likely to be multiple births. Following publication of medical evidence that pregnancy success rates could be maintained using single embryo transfers (SET), in 2003, Sweden mandated that SET be the default IVF procedure. Using Swedish register data for 1998-2007, we find that the SET reform was associated with a precipitous drop in multiple births of 64%, a 54% narrowing of the gap in child health between IVF and non-IVF births and an 86% narrowing of the gap in labor market outcomes for mothers three years after birth. Alongside we find no significant change in maternal health for the full sample but a significant improvement for first time mothers narrowing the gap in maternal health by 30%. These results are robust to adjusting for trends and for changes in the composition of mothers undertaking IVF. They imply that adoption of SET could lead to massive gains, reducing hospitalization costs, the foregone income of mothers and the long run socio-economic outcomes of IVF children.

In Chapter Three, **The Impact of Abortion Legalization on Fertility and Female Empowerment: New Evidence from Mexico**, together with Damian Clarke, we examine the effect of a large- scale, free, elective abortion program implemented in Mexico City in 2007. This reform resulted in a sharp increase in the request and use of early term elective abortions. We document, firstly, that this localized reform resulted in a legislative backlash in 18 other Mexican states which constitutionally altered penal codes to increase sanctions on abortions. We take advantage of this dual policy environment to estimate the effect of progressive and regressive abortion reform on fertility and women's empowerment. Using administrative birth data we find that progressive abortion laws reduce rates of child-bearing, particularly

among young women. Additionally, the reform is found to increase women's role in household decision making---an empowerment result in line with economic theory and empirical results from a developed-country setting. We however find little evidence to suggest that the resulting regressive changes to penal codes have had an inverse result over the time-period studied. In turning to mechanisms, evidence from a panel of women suggests that results are directly driven by increased access to abortion, rather than changes in sexual behavior, contraceptive use or contraceptive knowledge.