

Economic Evaluation of an Early Childhood Intervention and a Student Mentoring Program.

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Abstract:

This thesis adds causal evidence to the field of social and educational policies in Germany. The work investigates a home visiting program for disadvantaged first time mothers and a student mentoring program. A randomized field experiment and a quasi-experimental difference-in-difference approach is used to establish causal inference. Both programs are publicly financed and aim to increase human capital. Therefore, both programs have strong fiscal and social relevance. The results of the analysis can give policy makers evidence how to use public money efficiently.

The evaluation of the home visiting program shows that by the end of the first year of the program, children in home visited families perform significantly better than those in the control families in cognitive measures. However, the effects fade-out after 24 months. Examination of gender differences reveal that the effects are concentrated on girls. Investigating the effects of the intervention on the maternal life course reveals an increase in fertility and maternal life-satisfaction and well-being, whereas the treatment does not affect maternal employment, school attendance and child care use. These results are in contrast to previous studies from the US where home visiting programs decreased fertility.

The impact of the university mentoring program on first year study success is evaluated by a difference-in-difference framework. The mentoring is only offered to students in an economics and management program, whereas it is not offered to students in an industrial engineering program. However, students in both programs take the same classes and write the same exams in their first study year. Results show that the mentoring program significantly raised the grades and decreases the failure rates in the first semester exams.

Keywords:

Randomized Controlled Trial, Early Childhood Intervention, Student mentoring, Natural Experiment

Zusammenfassung:

Diese Dissertation liefert kausale Erkenntnisse für den Bereich der sozial- und Bildungsmaßnahmen in Deutschland. Die Arbeit untersucht ein Hausbesuchsprogramm für benachteiligt erstgebärende Mütter und ein Mentoringprogramm für Studenten anhand eines randomisierten Feldexperimentes und eines quasi-experimentellen *difference-in-difference* Ansatzes. Beide Programme sind öffentlich finanziert und sollen eine Humankapitalsteigerung bewirken. Somit weisen beide Programme eine starke fiskalische und gesellschaftliche Relevanz auf. Die Ergebnisse der Untersuchung können politischen Entscheidungsträgern helfen, öffentliche Gelder effizient zu verwenden.

Die Evaluation des Hausbesuchsprogramms zeigt, dass Kinder, deren Familien die Hausbesuche erhalten haben, am Ende des ersten Lebensjahres bei kognitiven Tests besser abschneiden als Kinder in der Kontrollgruppe. Allerdings werden die Effekte nach 24 Monaten geringer. Eine Analyse von Geschlechtsunterschieden führt zu dem Ergebnis, dass die Effekte auf Mädchen konzentriert sind. Für den mütterlichen Lebensweg bewirkt das Hausbesuchsprogramm einen Anstieg der Fertilität, der mütterlichen Lebenszufriedenheit und des Wohlbefindens. Im Gegensatz dazu lassen sich keine Auswirkungen auf die mütterliche Erwerbstätigkeit, den Schulbesuch und die Nutzung von Kinderbetreuungseinrichtungen finden. Die Ergebnisse stehen im Gegensatz zu Ergebnissen amerikanischer Studien, die zeigen, dass Hausbesuchsprogramme die Fertilität der Teilnehmerinnen senken.

Der Einfluss des Mentoringprogramms auf den Studienerfolg im ersten Semester wird anhand eines *difference-in-difference* Ansatzes evaluiert. Dieser Ansatz nutzt den Umstand, dass das Programm nur für Studenten eines wirtschaftswissenschaftlichen Studiengangs und nicht für Studenten eines Wirtschaftsingenieurstudiums angeboten wurde. Allerdings besuchen im ersten Studienjahr Studenten aus beiden Studiengängen dieselben Kurse und schreiben dieselben Klausuren. Die Ergebnisse der Studie zeigen, dass das Mentoringprogramm die Noten der wirtschaftswissenschaftlichen Studenten signifikant

erhöht und die Durchfallquoten signifikant reduziert hat.

Schlagwörter:

Randomisiertes kontrolliertes Experiment, Frühkindliche Bildungsmaßnahme, Mentoring für Studenten, Natürliches Experiment

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1 Introduction

Policy makers in Europe and Germany increasingly recognize the need for evidence-based social and educational policies when deciding how to allocate limited funds (e.g. [Commission of the European Communities, 2007](#); [Bundesministerium für Bildung und Forschung, 2008](#)). These policy makers mainly call for evidence from randomised control trials (RCT) or quasi-experiments. However, until now in Europe and especially in Germany evidence-based policy evaluations are limited in the area of social and educational policies.¹ This might be explained by the need of technical complex research methods in quasi-experiments or high investments in the case of field experiment to establish causal inferences.

This thesis tries to add causal evidence to the field of social and educational policies in Germany. For this aim the work investigates a home visiting program for disadvantaged first time mothers and a student mentoring program. I use a randomized field experiment and a quasi-experimental difference-in-difference approach to establish causal inference. Both programs are publicly financed and aim to increase human capital. Therefore, both programs have strong fiscal and social relevance. The results of the analysis can give policy makers evidence how to use public money efficiently. To attain the result, this thesis procedures as follows:

Chapter 2 describes the implementation of the *Pro Kind* program and its accompanying research. *Pro Kind* is a home visiting program for disadvantaged first time mothers

¹[Arni \(2012\)](#) gives an overview about RCTs in various policy areas in Europe. He shows that in German-speaking countries RCTs are only conducted to evaluate labor market policies (e.g. [Krug and Stephan, 2011](#)).

and their families. 755 mothers participate in the program in three German federal states. The mothers are randomly allocated equally to a treatment and a control group. This randomized controlled trial gives the possibility to identify the causal effects of the intervention. An implementation research documents that the intervention is implemented as aspired. Data for the evaluation is collected by development test, personal interviews and telephone interviews until the third birthday of the child. Because participation in *Pro Kind* is voluntary, some mothers do not participate in the entire research and do not get the full number of home visits. However, due to the research design, the special population and the sound implementation of the intervention, the research created a unique data set which is convenient to evaluate the intervention.

Using this data set, chapter 3 analyses the effects of the *Pro Kind* Program on child development. By the end of the first year of the program, children in home visited families perform significantly better than those in the control families by 0.18 standard deviations in the Mental Developmental Index. Examination of gender differences reveal that home visited girls score 0.30 standard deviations higher than girls in the control families, whereas boys score similar in both groups. The effects fade-out after 24 months. However, sensitivity analyses present strong evidence that the estimated effects are downward biased by additional treatment for the control families. Analyzing the infant skill formation process reveals self-productivity of skills but in different magnitude for boys and girls. Furthermore, I analyze possible monetary returns of the program.

Chapter 4 investigates the effects of the *Pro Kind* intervention on the maternal life course. In focus of the analysis are maternal employment, school attendance, child care use, fertility, life-satisfaction and well-being. For the analysis I use data from the telephone interviews. The longitudinal design of these data gives the possibility to apply duration methods. I find that *Pro Kind* increases fertility and maternal life-satisfaction and well-being, whereas the treatment does not affect maternal employment, school attendance and child care use. These results are in contrast to previous studies from the US where

home visiting programs decreased fertility.

Finally, chapter 5 presents evidence from a natural-experiment which is used to evaluate the effectiveness of a student mentoring program. The mentoring includes several compulsory, scheduled, face-to-face appointments between a mentor who is graduated and employed by the institution and a student in the first study year. For the evaluation, I use the fact that the mentoring is only offered to students in an economics and management program, whereas it is not offered to students in an industrial engineering program. However, students in both programs take the same exams. Therefore, the industrial engineering students present a reliable control group for evaluating the program. I find that the mentoring program significantly decreases the failure rates in the first semester exams.