Effects of Early Childhood Intervention on Maternal Employment, Fertility and Well-Being: Evidence from a RCT

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October 2016

Early Childhood Interventions

- Home visiting for disadvantaged mothers with children below three is a popular type of early childhood intervention worldwide. Home visiting expands, e.g. in the U.S., U.K., and Germany.
- Home visiting programs involve the parents and target parental skills. Programs have positive effects on child development and behavioral problems (e.g. Almond and Currie, 2011 for a review).
- Additionally, home visiting directly or indirectly target maternal fertility and economic self-sufficiency.
- This paper analyses the effects of a home visiting program (*Pro Kind*) on maternal fertility and economic self-sufficiency.

Why are effects on maternal outcomes interesting?

1. High fiscal relevance because these mothers show strong welfare persistence and receive a substantial share of total welfare spending.

2. Evidence for intergenerational transmission of welfare cultures (Dahl et al. 2014, *QJE*).

3. Effects on maternal life course may influence the impact on child development, e.g. spacing or employment (Buckles and Munnich, 2012, *JHR*; Black et al., 2010, *JHR*; Carneiro et al., 2015, *JPE*).

Open Empirical Question

- Home visiting can lead to higher maternal labor market or education participation because of support and improved personal strengths. Lower fertility as a consequence.

OR

- Home visiting can lead to a longer leave period and increased fertility because of higher satisfaction with the maternal role due to the improved parental skills.

In the US, RCTs found that home visiting programs **increase** employment and **reduce** subsequent pregnancies and births and welfare dependency (Olds et al. 2007, *Pediatrics*; Olds et al. 1997, *JAMA*; Brooks-Gunn et al. 1994, *AJPH*).

In Germany results may be different because of different employment and fertility incentives for mothers on welfare.

The Pro Kind Project

- Based on the „Nurse Family Partnership (NFP)“-Program (Olds et al. 2004).
- Located in Germany.
- Scheduled home visits by midwives, nurses or social pedagogues.
- Home visits start during pregnancy up to 2nd birthday.
- Frequency: Weekly, bi-weekly and monthly.
- Overall 52 home visits are scheduled.
- Quasi-fixed curriculum.

The Pro Kind Project - Affiliation Criteria

- First time mothers
- Affiliation from the 12th until the 28th week of pregnancy
- Economic criteria (at least one), e.g.:
  - Household receives social welfare or unemployment benefits
  - Low Income
  - Overindebtedness

The Pro Kind Project - Goals

Pro Kind has the same aims as similar US programs:

- Improving families' economic self-sufficiency and appropriate family planning.
- Improving parental skills to increase sufficient child stimulation and to avoid child abuse and neglect.
- Improving child and maternal health.

Implementation of the *Pro Kind* program

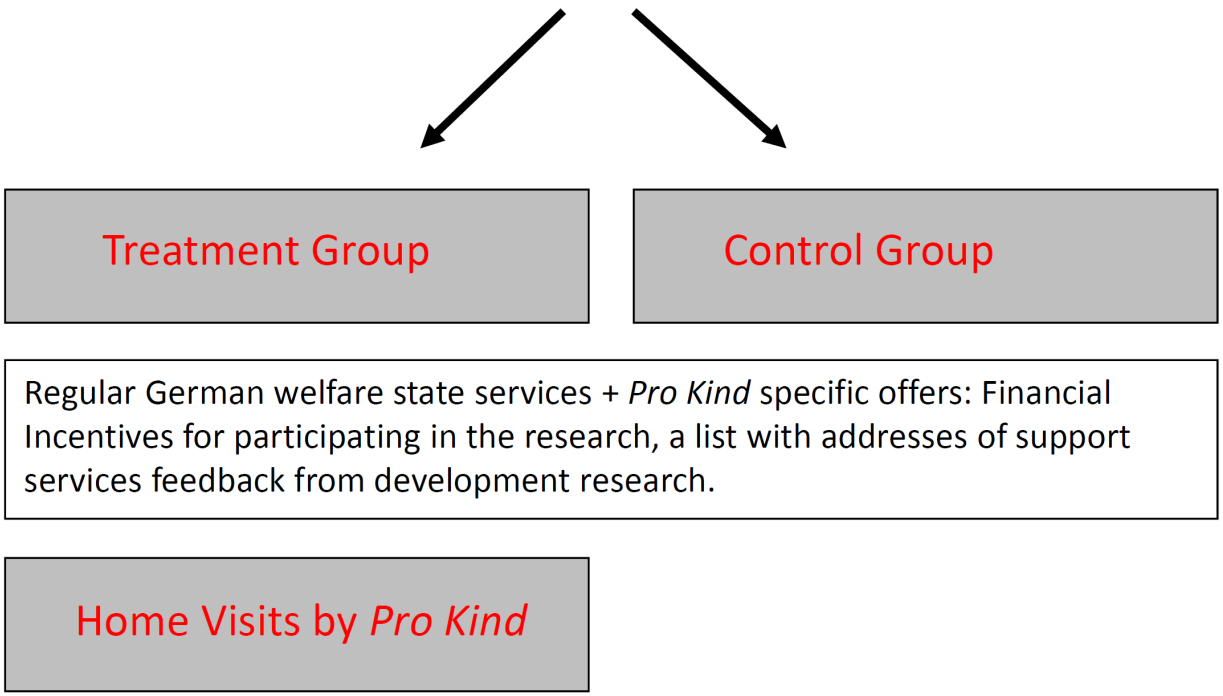
- Conducted home visits: Mean = 32.7, range: 0-94 (Similar to RCTs in US).
- 97.8% of the mothers in the treatment group received at least one home visit.
- 40% of time for life planning, 60% for parental skills and health (Similar to RCTs in US).
- Overall 12,894 home visits were conducted.

The Pro Kind Project

- *Pro Kind* was mainly funded by:
  - the German Federal Ministry of Family Affairs, Senior Citizens, Women and Youth (BMFSFJ),
  - participating federal states and communities.
- *Pro Kind* was joint by a interdisciplinary research team of development psychologists, sociologists, physicians and economists from several research institutions.

Randomized Controlled Trial

- Randomization stratified by age, community and German citizenship



Enrollment Periods and Participants by Federal State

Federal State	Treatment Group	Control Group	Enrollment Period
Lower Saxony	153	133	01.11.2006 - 30.04.2009
Bremen	112	107	15.04.2007 - 15.03.2009
Saxony	129	121	01.01.2008 - 31.12.2009
$\sum$	**394**	**361**	

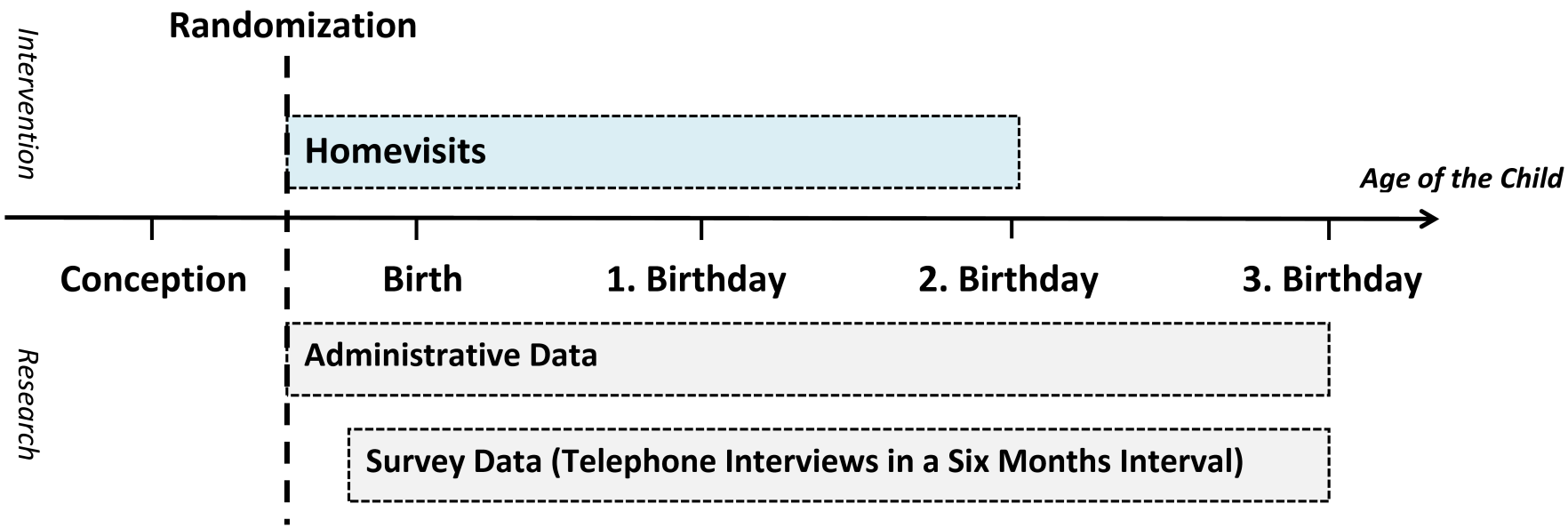
	Control Means (1)	Treatment Means (2)	Treatment vs. Control (3)
Demographic Characteristics			
Age in Years	21.53	21.27	-0.27 (0.31)
Week in Pregnancy	20.30	19.76	-0.53 (0.42)
Underage	0.18	0.21	0.04 (0.03)
Migration	0.18	0.12	-0.05* (0.03)
Monthly HH-income in Euro	916.62	937.28	17.54 (40.60)
Debt Over 3000 Euro	0.17	0.19	0.02 (0.03)
Education Risk	0.75	0.78	0.06 (0.04)
Income Risk	0.81	0.82	0.01 (0.03)
Employment Risk	0.86	0.82	-0.04 (0.03)
No Partner	0.28	0.29	0.01 (0.03)
Living with Parents	0.27	0.28	0.01 (0.03)
Persons in HH	2.45	2.55	0.09 (0.12)
Selected Psychological and Physical Characteristics			
Unwanted Pregnancy	0.17	0.18	0.01 (0.03)
Daily Smoking	0.34	0.34	-0.01 (0.03)
Isolation	0.08	0.06	-0.02 (0.02)
Foster Care Experience	0.19	0.23	0.04 (0.03)
Neglect Experience	0.39	0.38	-0.01 (0.04)
Lost Experience	0.54	0.49	-0.05 (0.04)
Violence Ever	0.09	0.08	-0.01 (0.04)
Depression	0.13	0.10	-0.03 (0.02)
Anxiety	0.18	0.17	-0.01 (0.03)
Stress	0.29	0.31	0.03 (0.03)
Aggression	0.19	0.14	-0.04 (0.03)
Medical Indicated Risk Pregnancy	0.11	0.11	-0.01 (0.02)
Body-Mass-Index	25.31	25.22	0.16 (0.39)
Sum Risk Factors	5.86	5.73	0.04 (0.03)
Observations	361	394	755

Notes: Robust standard errors are reported in parentheses in column 3. Column 3 presents the coefficient on the treatment dummy from a regression model with the treatment dummy plus community dummies.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Data Sources

- Administrative data from the Federal Employment Agency. Data includes:
  - Benefit and employment history
  - Household composition
  - Monthly information up to the third birthday
- Telephone interviews until the third birthday (Six months interval). Data includes:
  - Detailed information about pregnancies, subjective well-being, relationship stability, childcare, school attendance
  - Monthly information up to the third birthday

Research Time Line



Sample Composition Administrative Data

	Control Mean	Difference Between TG and CG
	(1)	(2)
Merged	0.945	-0.026
	(0.229)	(0.018)
		[0.162]
Observations	*361*	*755*

Notes: Robust standard errors in parentheses and p-values in brackets. Administrative data is available for 36 months after birth of treatment child. TG = Treatment Group; CG = Control Group.

Sample Composition Telephone Survey Data

	Control Mean (std. dev.) for Full Sample (1)	Difference Between TG and CG (2)
At Least One Interview After Birth	0.784	0.026
	(0.412)	(0.029)
		[0.381]
Data Available for 24 Months After Birth	0.557	0.045
	(0.497)	(0.036)
		[0.214]
Complete Data from Birth Until Third Birthday	0.380	0.024
	(0.486)	(0.036)
		[0.500]
Observations	*361*	*755*

Notes: Robust standard errors in parentheses and p-values in brackets. TG = Treatment Group; CG = Control Group.

No selective attrition between treatment and control groups for administrative or survey data.

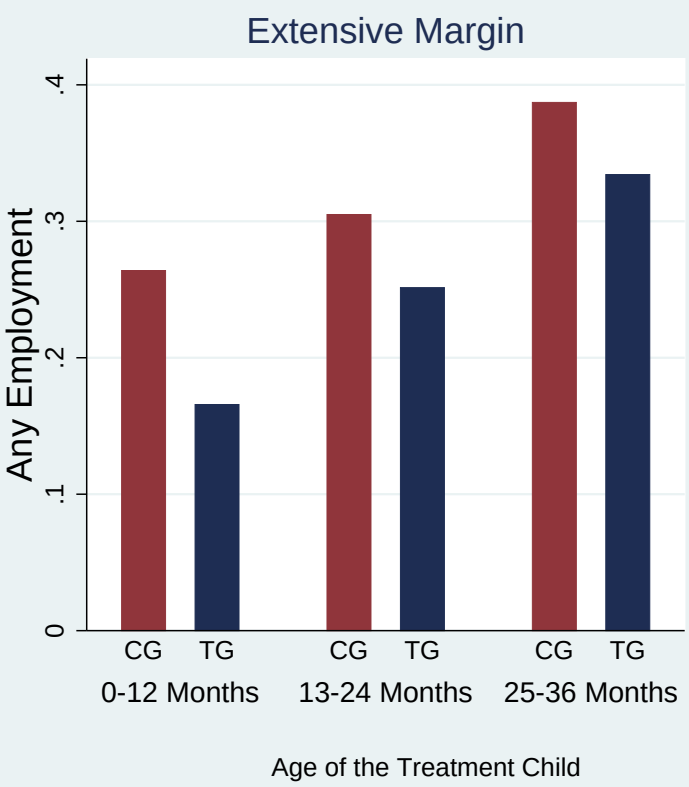
Results

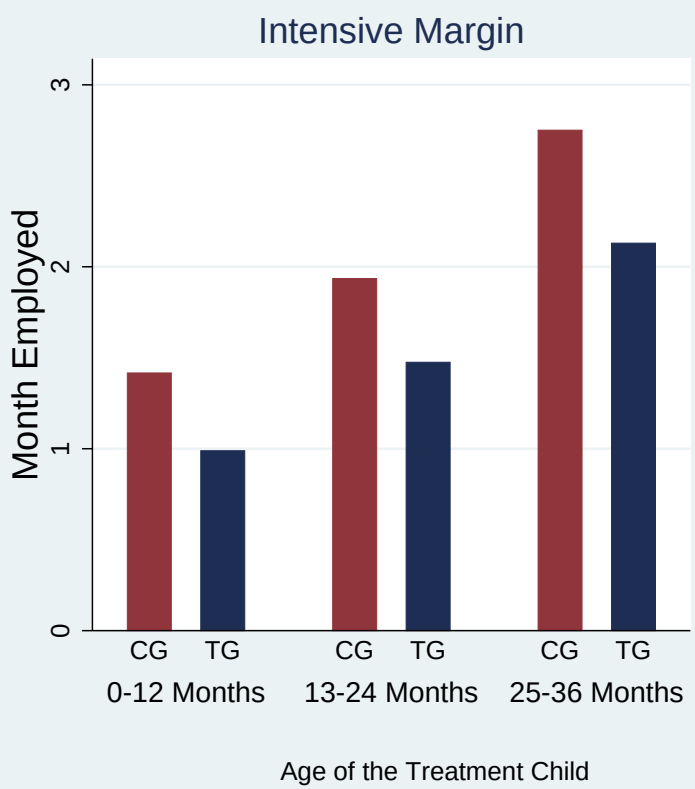
Maternal Life Course Outcomes 36 Months after Birth - Administrative Data

	Extensive Margin		Intensive Margin (Months)	
	Control Mean	Diff. TG/CG	Control Mean	Diff. TG/CG
	(1)	(2)	(3)	(4)
Panel A: Economic Self-Sufficiency				
Any Occupation	0.521	-0.088	6.392	-1.550
	[0.479]	(0.038)**	[9.086]	(0.652)**
Welfare	0.964	0.030	31.92	1.840
	[0.295]	(0.013)**	[12.71]	(0.904)**
Observations	*341*	*703*	*341*	*703*
Panel B: Fertility				
Second Child in HH	0.183	0.066		
	[0.363]	(0.032)**		
Observations	*323*	*677*		

Notes: Standard deviations in square brackets; robust standard errors in parentheses. Columns (2) and (5) report the coefficient and standard error on Home Visiting (HV) from estimating equation (1) by OLS. Data is available on a monthly base from affiliation to 36 months after birth. TG = Treatment Group; CG = Control Group; HH = Household.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Employment by Age of the Child - Administrative Data





Fertility by Employment - Administrative Data

	Any Employment 0-24 Months		Not Employed 0-24 Months	
	Control Mean	Diff. TG/CG	Control Mean	Diff. TG/CG
	(1)	(2)	(3)	(4)
Second Child in HH after 36 months	0.121	-0.002	0.221	0.085**
	[0.231]	(0.043)	[0.416]	(0.042)
	122	233	199	444

Notes: Standard deviations in square brackets; robust standard errors in parentheses. Columns (2) and (5) report the coefficient and standard error on Home Visiting (HV) from estimating equation (1) by OLS. Data is available on a monthly base from affiliation to 36 months after birth. TG = Treatment Group; CG = Control Group; HH = Household.
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Life Situation - Survey Data

	Extensive Margin			Intensive Margin (in Months)		
	Control Mean	Diff. TG/CG	p-values	Control Mean	Diff. TG/CG	p-values
	(1)	(2)	(3)	(4)	(5)	(6)
School	0.120	-0.016	0.714	1.081	0.468	0.537
	[0.326]	(0.044)		[4.087]	(0.758)	
Constant Partnership	0.401	-0.005	0.927			
	[0.491]	(0.057)				
Change in Marriage Status	0.183	-0.025	0.566			
	[0.387]	(0.044)				
Second Birth	0.203	0.086	0.147			
	[0.403]	(0.059)				
Second Pregnancy	0.360	0.011	0.863			
	[0.481]	(0.065)				
Inconsistent Use of Contraceptives	0.205	0.047	0.405			
	[0.404]	(0.056)				
Observations	137	296		137	296	

Notes: Robust standard errors in parentheses; Standard deviations in square brackets. Columns (2) and (5) report the coefficient and standard error on home visiting (HV) from estimating equation (1) by OLS. Estimations include community fixed effects and baseline controls. The estimations are weighted by the inverse probability to participate in all interviews. TG = Treatment Group; CG = Control Group; HH=Household.

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Second Pregnancy Outcomes in Treatment and Control Groups - Survey Data

Panel A: Second Pregnancy Occurred

	Control Mean	Diff. TG/ CG
Pregnancy after First Birth	0.261	0.055
	[0.440]	(0.037)
Obs.	*283*	*602*

Panel B: Second Pregnancy Outcome

	Control Mean	Treatment Mean
Life Birth	0.53	0.63
Abortion	0.24	0.15
Misscarriage	0.14	0.09
Unobserved	0.10	0.13
Pregnancies	*74*	*101*

Panel C: Multinomial Logit

	Birth vs. Abortion	Birth vs. Miscarriage	Birth vs. Unobserved
Home Visiting	-0.677	-0.600	0.123
	(0.405)*	(0.503)	(0.512)
Obs.	*175*	*175*	*175*

Notes: Standard errors in parentheses; Standard deviations in square brackets. All mothers with at least one interview after birth are included. In Panel B all pregnancies from Panel A. Panel C is a multinomial logit estimation with Life Birth as baseline category. TG = Treatment Group; CG = Control Group;
* p $<$ 0.1, ** p $<$ 0.05, *** p $<$ 0.01

Characteristics of Second Time Mothers - Survey Data

	(1)	(2)	(3)	(4)	(5)	(6)
	Control		Treatment		SOEP	
	n	Mean	n	Mean	n	Mean
After Birth of sec. Child						
Unplanned Preg.	35	0.57	62	0.61	799	0.19
Father Does not Live In HH	35	0.29	60	0.40	803	0.06
No Other Care Apart From Mother	35	0.31	62	0.48	804	0.08
Mother has no Partner	33	0.06	58	0.17	803	0.01
Age of the Sec. Child in Mo.	32	8.41	62	6.49	802	6.96
Age of the Moth. at Births in Years	35	23.4	62	23.9	766	32.08

Notes: The presented data contains all second children for who data is available. C=Control Group; T=Treatment Group.

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Well-Being and General Life Satisfaction 27 Months after First Birth - Survey Data

	(1) Index of Well-Being	(2) Index of Life Satisfaction in Different Areas	(3) Satisfaction with Life in General
Home Visiting	0.167	0.106	0.147
	(0.043)***	(0.051)*	(0.062)**
Household Controls	Yes	Yes	Yes
Community Fixed Effects	Yes	Yes	Yes
N	429	425	427
R^2	0.18	0.26	0.18

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Explanations for Different Results in U.S. and Germany

	Nurse Family Partnership			Pro Kind
Characteristics of the Intervention				
Location	Elmira	Memphis	Denver	Germany
Year	1980	1990	1995	2007
Evaluation Design	RCT	RCT	RCT	RCT
Randomized Participants	264	1139	490	755
Home Visits (mean)	32	33	27.5	33
Material	NFP Guidebooks			German Adaption of NFP Guidebooks
Home Visitors (Qualification)	Family Nurses			Family Midwifes, Social Pedagogues
Home Visitors (Training)	NFP Guidelines			NFP Guidelines
Participants Characteristics				
Parity	First			First
Date of Randomization	Pregnancy			Pregnancy
Socioeconomic Status	Low			Low
Age	18.9	18.1	19.9	21.4
Unmarried in %	100	98	85	92
Years of Education	10.7	10.2	11.2	10.7
Results Maternal Life Course				
Employment	+	+	+	-
Second Birth	-	-	-	+

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Explanations for Different Results in U.S. and Germany

- Program content and participants very similar in U.S. and Germany.
- Abortion laws and contraception availability similar in U.S. and Germany. There might be a difference in knowledge about contraception.
- Welfare State
  - More generous welfare benefits for mothers on welfare in Germany than in U.S. (*The German tax and transfer system almost exclusively relies on traditional means-tested social assistance with very high withdrawal rates (Blundell et al. 2009).*)
  - Pro natalist environment in Germany in the last years (Childcare expansion, parental leave benefits).
- These institutional settings might reduce the effects of additional labour market skills.

Summary and conclusion

- *Pro Kind* reduces maternal employment and increases welfare dependency and subsequent births.
- Mothers stay longer at home after birth.
- The intervention failed to avoid unplanned pregnancies.
- The increased fertility is partly due to less abortions in the intervention group.
- Higher maternal well-being may cause this effect.
- The results on fertility and employment are in contrast to findings from U.S. studies.

Summary and conclusion II

- The results on fertility, employment and well-being may influence the effects on child development (direction unclear).
- In the *Pro Kind* program effects on child development are positive, but small (Sandner and Jungmann, 2016).

- Effects on fertility and labour market participation should be considered when assessing the overall value of home visiting programs.
- A large RCT on NFP in UK found no effects on subsequent pregnancies (Robling et al. 2015, *Lancet*). Effects on births and employment might be similar than in *Pro Kind*.

Thank You for Your Attention

KfN
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Universität Rostock Traditio et Innovatio
MHH Medizinische Hochschule Hannover
Leibniz Universität Hannover
Bundesministerium für Familie, Senioren, Frauen und Jugend
STAATSMINISTERIUM FÜR SOZIALES UND VERBRAUCHERSCHUTZ | Freistaat SACHSEN
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