Female Labor Supply and Parental Leave Benefits: The Causal Effect of Paying Higher Transfers for a Shorter Period of Time

Annette Bergemann
Regina T. Riphahn

DISCUSSION PAPER SERIES

I Z A

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

Female Labor Supply and Parental Leave Benefits: The Causal Effect of Paying Higher Transfers for a Shorter Period of Time

Annette Bergemann
*VU University Amsterdam
and IZA*

Regina T. Riphahn
*University of Erlangen-Nuremberg
and IZA*

ABSTRACT

Female Labor Supply and Parental Leave Benefits: The Causal Effect of Paying Higher Transfers for a Shorter Period of Time[*]

We study the labor supply effects of a change in child-subsidy policy designed to both increase fertility and shorten birth-related employment interruptions. The reform yields most of the intended effects.

Corresponding author:

Regina T. Riphahn
Department of Economics
Univ. Erlangen-Nuremberg
Lange Gasse 20
D - 90403 Nuremberg
Germany
E-mail: Regina.Riphahn@wiso.uni-erlangen.de

1. Introduction

During the past decades, female labor force participation has increased in most OECD countries. However, it often still falls substantially short of the labor force participation of men. Many countries have been considering policy reforms to address this issue. In 2007, a German policy reform substantially modified family subsidies, with the dual objective to increase fertility and to enhance incentives for women to return to the labor force after childbirth.

Since January 1, 2007 parents of newborn children in Germany receive "parents' money" (*Elterngeld*). It amounts to two thirds of the pre-birth net income of the parent who interrupts employment. There is a minimum amount of 300 (also for those not previously in the labor force) and a maximum of 1800 Euro per month. The benefit is paid at most for 12 months for one of the parents. The other parent can flexibly receive the benefit for two months of employment interruption. The new transfer is more generous than the previous means-tested program, which paid a maximum of 300 Euro for up to 24 months. However, the new program pays for a much shorter period of time. The reform modified the parental leave benefit and its entitlement period. At the same time the parental leave period, which involves job protection for three years, remained unchanged.

Classic labor supply models predict that the reform enhances female labor force participation. First, it abolishes a work disincentive, as the old regime had mandated that every Euro earned was to be deducted from the transfer amount. Second, transfers can be much higher now than before. At the end of the transfer period, a sizeable income drop now gives a stronger incentive to substitute transfers by labor income. Third, the transfer payment period was reduced by half, which suggests a faster return to the labor force than under the old regime.

In addition to the overall labor supply effect, particularities of the reform suggest heterogeneous responses depending on prior labor earnings. Mothers with high prior earnings are newly eligible to receive transfers. During the period of transfer receipt their labor supply should now decline, and afterwards it should jump upward to (at most) the pre-

1

reform level. Low income mothers may now receive higher benefits than before, but for a shorter period of time. When the transfer expires, their labor supply should be larger than before the reform. Therefore we expect particularly mothers with low earnings to increase their labor supply and to return to the labor force faster than before the reform.

Previous studies generally confirm the responsiveness of female labor supply to extensions of family leave policies, but none seem to have investigated the causal effect of cuts in duration. Baker and Milligan (2008) show that an extension of the Canadian maternal leave period lengthens the time women spent at home. In previous studies for Germany, Ondrich et al. (1996, 2003) find that mothers' probability to return to the labor force declines when parental leave periods are extended. Han et al. (2007) detect clear behavior changes following institutional reforms in the United States. Spiess and Wrohlich (2008) also discuss the reform under study here and use a micro-simulation model for an *ex ante* analysis of its expected labor supply impact. They predict an increase in female participation rates and in the number of hours worked 12 months after a birth.

2.   Data and Method

We use data from the German Socio-Economic Panel, an annual longitudinal household survey. We consider all women who indicated a new birth in the surveys 2005-2007, i.e. between January 1, 2005 and the end of 2007.[1] We observe 451 births and drop the first observed birth of 8 women who had two children in the considered period, thus focusing on a mothers' last observed birth. Overall, we observe 395 births under the old and 48 births under the new regime.

Our dependent variables are indicators of women's intention to return to work and the planned time until returning to work. Given the small number of observations and the nonlinear nature of the response categories, we code a <u>likely return</u> to the labor force if a woman indicates this to be the case (alternative answers: certainly no, rather not, probably

---

[1] The SOEP data has been supplied by the Deutschen Institut für Wirtschaftsforschung (DIW Berlin). For more information on the data see Wagner, Frick, Schupp (2007).

yes, certainly, already employed). In addition, we code a <u>fast return</u> to work, if she answers that she plans to return within one year or faster (alternative answers: never, not within 5 years, within 2-5 years, immediately or within one year, already working). 88 percent of the new mothers indicate that it is likely that they return to work and 41 percent indicate that they will return within one year.

As the introduction of the reform was largely unanticipated, we are able to identify the causal labor supply effect by comparing the labor force participation intentions for women under the two different policy regimes. **Figure 1** depicts the development of monthly births between January 2005 and December 2007 and confirms the exogenous nature of the timing of the reform. In addition to the reform effect, we also control for various sets of covariates, notably, the age of the child at the time of the interview, whether it is a first child, and whether the woman lives in East Germany, where child care facilities are substantially better than in the West.

Table 1 presents descriptive statistics of our variables. The covariates of the two subsamples of women who gave birth before and after Jan. 1, 2007 differ with respect to the age of the child, whether or not the birth is a first child and the religious affiliation. The sampling frame of the data causes the higher average age of children born prior to 2007, because e.g. births in 2006 can be observed both in the surveys in 2006 and 2007 whereas births in 2007 can (so far) only be measured if the 2007 interview took place after the birth. Note that the main part of the interviews take place in February and March. We find a higher fraction of first births in the 2007 sample than in the years before, as well as a lower share of mothers with Christian religious affiliation in 2007 than in the years before. Since that the aggregate figures (see **Figure 1**) do not suggest a substantial increase in fertility in 2007, we have no reason to assume a causal connection between these two covariates and the benefit reform.

3.   Results

Table 2 presents Probit estimation results of the effect of the benefit reform ("birth in 2007") on the two indicators of female labor supply after child birth, i.e. whether the mother plans to return to work ("likely return") and the expected time until the return ("fast return"). If the 2007 reform increased the probability and speed of return we would expect a positive average marginal effect of the "birth in 2007" variable in all regressions.

The estimations of the likely return yield an insignificant reform effect. Columns 1-3 in **Table 2** depict the average marginal effects for three specifications which are indicative of specifications with additional control variables. Mothers of only one child and with high levels of education have a higher expected probability to return to the labor force.

Columns 4-7 depict the results with respect to the expected timing of a return to the labor force with various sets of control variables. Here we find the expected significant effect of the reform on the timing of the return to the labor force. The marginal effect is substantial at about 14 percentage points which compares to an average of 40 percent of all new mothers who plan to return to the labor force fast.

We find a higher propensity to quickly return to the labor force among well educated women and among those with a strong attachment to the labor force. Not presented are marginal effects which suggest a substantially higher propensity of East German women, of women without a religious affiliation, and of those with older children to return to the labor force quickly. Additional specifications, which we do not present to save space, showed that own income has a positive effect on a fast return to the labor force and partner income yields an insignificant negative effect.

To test whether the effect of the reform differs depending on prior earnings we additionally controlled for interaction effects of prior earnings with the "birth in 2007" indicator for both dependent variables (not presented to save space). The interaction term generates insignificantly negative interaction effects, indicating that the overall positive labor supply

response of the reform is predominantly driven by mothers with lower pre-birth earnings.[2] This matches our expectations and points to the potential distributional impact of the reform.

4.   Conclusion

This is the first study to evaluate the causal effect of a reform that increased parental leave benefits' amounts and shortened their payment period. Based on planned labor force participation the reform succeeded in speeding up mothers' return to work. This shortened employment interruption should yield beneficial long term effects with respect to reduced human capital depreciation and wage penalties suffered by mothers who used to drop out of the labor force for extended periods after child birth.

---

[2] The marginal effect of the interaction effect was computed using Stata's inteff command (Norton et al. 2004). It was statistically significant at the 10 percent level in a linear probability model with robust standard errors.

Table 1   Descriptive Statistics

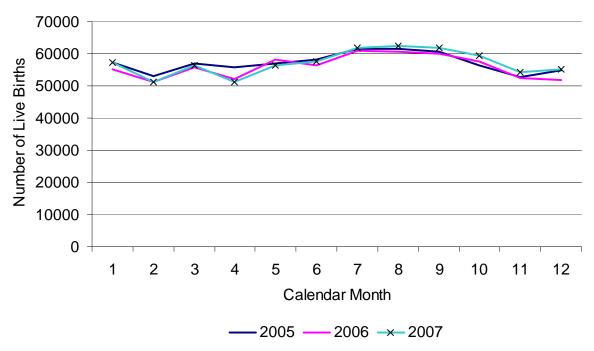|	Old regime (N = 395 births)			New regime (N = 48 births)	
	Mean	Std.Dev.		Mean	Std.Dev.
Dependent Variable:					
Likely return (0/1)	0.891	0.016		0.792	0.059
Fast return (0/1)	0.400	0.025		0.458	0.073
Independent Variables:					
Age of child at interview in months	5.668	0.187	**	1.875	0.194
Birth is first birth (0/1)	0.491	0.025	*	0.646	0.070
Single parent (0/1)	0.081	0.014		0.083	0.040
Maternal age at interview	30.597	0.292		29.646	0.727
Maternal schooling in years	12.634	0.137		13.135	0.405
Maternal experience in years	6.992	0.242		6.738	0.763
East German (0/1)	0.238	0.021		0.229	0.061
Foreign origin (0/1)	0.091	0.014		0.125	0.048
Religion Christian (0/1)	0.681	0.023	*	0.500	0.073
Religion other (0/1)	0.051	0.011	*	0.167	0.054
Religion none (0/1)	0.268	0.022		0.333	0.069

Note: ** and * indicate statistically significant difference of the subgroup means at the 1 and 5 percent levels.

Table 2   Probit Estimates - Dependent Variables: Likely Return and Fast Return

	Likely Return			Fast Return			
	A.M.E. (Std.Err.) 1	A.M.E. (Std.Err.) 2	A.M.E. (Std.Err.) 3	A.M.E. (Std.Err.) 4	A.M.E. (Std.Err.) 5	A.M.E. (Std.Err.) 6	A.M.E. (Std.Err.) 7
Birth 2007	-0.032 (0.052)	-0.044 (0.052)	-0.054 (0.053)	0.155 * (0.080)	0.144 o (0.079)	0.133 o (0.076)	0.146 o (0.077)
First birth	–	0.122 ** (0.031)	0.075 * (0.025)	–	0.144 ** (0.050)	0.033 (0.051)	0.016 (0.050)
Single parent	–	-0.097 (0.066)	-0.056 (0.056)	–	-0.112 (0.079)	-0.067 (0.079)	-0.07 (0.077)
Maternal schooling	–	–	0.026 ** (0.007)	–	–	0.040 ** (0.010)	0.038 ** (0.010)
Maternal experience	–	–	0.005 (0.004)	–	–	0.036 ** (0.007)	0.033 ** (0.008)
Age of child	y **	y **	y **	y **	y **	y **	y **
Maternal age	–	y	y	–	y	y **	y **
East German	–	y	y	–	y **	y **	y
Foreign origin	–	y **	y o	–	y	y	y
Religion	–	–	–	–	–	–	y **
Pseudo R squared	0.055	0.16	0.213	0.010	0.062	0.11	0.136

Note: A.M.E. stands for average marginal effect. All models consider an intercept term. **, * and ⁰ indicate statistical significance at the 1, 5, and 10 percent level. All estimations are based on 443 observations. We control for age of child using a second order polynomial. A test rejected the addition of a cubic term.

Figure 1   Monthly Live Births (2005-2007)

Source: German Federal Statistical Office

References

Baker, Michael and Kevin Milligan, 2008, How does job-protected maternity leave affect mothers' employment?, *Journal of Labor Economics* 26(4), 655-691.

Han, Wen-Jui, Christopher Ruhm, and Jane Waldfogel, 2007, Parental leave policies and parents' employment and leave-taking, *IZA Discussion Paper* No. 3244, Bonn.

Norton, Edward C., Hua Wang, and Chunrong Ai, 2004, Computing interaction effects and standard errors in logit and probit models, *The Stata Journal* 4(2), 154-167.

Ondrich, Jan, C. Katharina Spiess, and Qing Yang, 1996, Barefoot and in a German kitchen: federal parental leave and benefit policy and the return to work after childbirth in Germany, *Journal of Population Economics* 9(3), 247-266.

Ondrich, Jan, C. Katharina Spiess, Qing Yang, and Gert G. Wagner, 2003, The liberalization of maternity leave policy and the return to work after childbirth in Germany, *Review of Economics of the Household* 1(1-2), 77-110.

Spiess, C. Katharina and Katharina Wrohlich, 2008, The Parental Leave Benefit Reform in Germany: Costs and Labour Market Outcomes of Moving towards the Nordic Model, *Population Research and Policy Review* 27(5), 575-91.

Wagner, Gert G., Joachim R. Frick, and Jürgen Schupp, 2007, The German Socio-Economic Panel Study (SOEP) – Scope, Evolution and Enhancements, *Schmollers Jahrbuch* 127 (1), 139-169.