Bergemann, Annette; Riphahn, Regina T.

Working Paper
Female labor supply and parental leave benefits: the causal effect of paying higher transfers for a shorter period of time

CESifo Working Paper, No. 2578

Provided in Cooperation with:
Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

Suggested Citation: Bergemann, Annette; Riphahn, Regina T. (2009) : Female labor supply and parental leave benefits: the causal effect of paying higher transfers for a shorter period of time, CESifo Working Paper, No. 2578, Center for Economic Studies and Ifo Institute (CESifo), Munich

This Version is available at:
http://hdl.handle.net/10419/26623

Terms of use:
Documents in EconStor may be saved and copied for your personal and scholarly purposes.
You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.
If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.
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

CESifo Working Paper No. 2578
Category 4: Labour Markets
March 2009

An electronic version of the paper may be downloaded
• from the SSRN website: www.SSRN.com
• from the RePEc website: www.RePEc.org
• from the CESifo website: www.CESifo-group.org/wp

Abstract

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.

JEL Code: J13, J21.

Keywords: female labor supply, fertility, child subsidy, parents money.

Annette Bergemann  
VU University Amsterdam  
Department of Economics  
De Boelelaan 1105  
1081 HV Amsterdam  
The Netherlands  
abergemann@feweb.vu.nl

Regina T. Riphahn  
University Erlangen-Nuremberg  
Lange Gasse 20  
90403 Nürnberg  
Germany  
regina.riphahn@wiso.uni-erlangen.de

January 2009  
We are grateful for helpful comments by Gerard J. van den Berg and Barbara Hanel.
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-
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 likely return 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 fast return 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.\textsuperscript{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.

\textsuperscript{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

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

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

<table>
<thead>
<tr>
<th></th>
<th>Likely Return</th>
<th>Fast Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth 2007</td>
<td>-0.032 (0.052)</td>
<td>-0.044 (0.052)</td>
</tr>
<tr>
<td>First birth</td>
<td>- 0.122 (0.031)</td>
<td>0.075 * (0.025)</td>
</tr>
<tr>
<td>Single parent</td>
<td>- 0.097 (0.066)</td>
<td>-0.056 (0.056)</td>
</tr>
<tr>
<td>Maternal schooling</td>
<td>- 0.026 ** (0.007)</td>
<td>- (0.007)</td>
</tr>
<tr>
<td>Maternal experience</td>
<td>- 0.005 (0.004)</td>
<td>- (0.007)</td>
</tr>
<tr>
<td>Age of child</td>
<td>y ** y ** y **</td>
<td>y ** y ** y **</td>
</tr>
<tr>
<td>Maternal age</td>
<td>- y y y y y y y</td>
<td>- y y y y y y y</td>
</tr>
<tr>
<td>East German</td>
<td>- y y y y y y y</td>
<td>- y y y y y y y</td>
</tr>
<tr>
<td>Foreign origin</td>
<td>- y y y y y y y</td>
<td>- y y y y y y y</td>
</tr>
<tr>
<td>Religion</td>
<td>- - - - - - y **</td>
<td>- - - - - - y **</td>
</tr>
<tr>
<td>Pseudo R squared</td>
<td>0.055 0.16 0.213</td>
<td>0.010 0.062 0.11</td>
</tr>
</tbody>
</table>

Note: A.M.E. stands for average marginal effect. All models consider an intercept term. **, * and o 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)

![Graph showing monthly live births from 2005 to 2007 with data points for each year]

Source: German Federal Statistical Office

References


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


2517 Sascha O. Becker, Peter H. Egger and Valeria Merlo, How Low Business Tax Rates Attract Multinational Headquarters: Municipality-Level Evidence from Germany, January 2009


2519 Jesus Crespo Cuaresma, Gernot Doppelhofer and Martin Feldkircher, The Determinants of Economic Growth in European Regions, January 2009


2521 Geir B. Asheim and Tapan Mitra, Sustainability and Discounted Utilitarianism in Models of Economic Growth, January 2009

2522 Etienne Farvaque and Gaël Lagadec, Electoral Control when Policies are for Sale, January 2009

2523 Nicholas Barr and Peter Diamond, Reforming Pensions, January 2009


2526 John Whalley, Jun Yu and Shunming Zhang, Trade Retaliation in a Monetary-Trade Model, January 2009

2527 Mathias Hoffmann and Thomas Nitschka, Securitization of Mortgage Debt, Asset Prices and International Risk Sharing, January 2009

2528 Steven Brakman and Harry Garretsen, Trade and Geography: Paul Krugman and the 2008 Nobel Prize in Economics, January 2009

2529 Bas Jacobs, Dirk Schindler and Hongyan Yang, Optimal Taxation of Risky Human Capital, January 2009

2530 Annette Alstadsæter and Erik Fjaerli, Neutral Taxation of Shareholder Income? Corporate Responses to an Announced Dividend Tax, January 2009

2531 Bruno S. Frey and Susanne Neckermann, Academics Appreciate Awards – A New Aspect of Incentives in Research, January 2009
Nannette Lindenberg and Frank Westermann, Common Trends and Common Cycles among Interest Rates of the G7-Countries, January 2009

Erkki Koskela and Jan König, The Role of Profit Sharing in a Dual Labour Market with Flexible Outsourcing, January 2009

Tomasz Michalak, Jacob Engwerda and Joseph Plasman, Strategic Interactions between Fiscal and Monetary Authorities in a Multi-Country New-Keynesian Model of a Monetary Union, January 2009


Xenia Matschke and Anja Schöttner, Antidumping as Strategic Trade Policy Under Asymmetric Information, February 2009

John Whalley, Weimin Zhou and Xiaopeng An, Chinese Experience with Global 3G Standard-Setting, February 2009


Lars P. Feld and Jost H. Heckemeyer, FDI and Taxation: A Meta-Study, February 2009

Philipp C. Bauer and Regina T. Riphahn, Age at School Entry and Intergenerational Educational Mobility, February 2009

Thomas Eichner and Rüdiger Pethig, Carbon Leakage, the Green Paradox and Perfect Future Markets, February 2009

M. Hashem Pesaran, Andreas Pick and Allan Timmermann, Variable Selection and Inference for Multi-period Forecasting Problems, February 2009

Mathias Hoffmann and Iryna Shcherbakova, Consumption Risk Sharing over the Business Cycle: the Role of Small Firms’ Access to Credit Markets, February 2009

John Beirne, Guglielmo Maria Caporale, Marianne Schulze-Ghattas and Nicola Spagnolo, Volatility Spillovers and Contagion from Mature to Emerging Stock Markets, February 2009


2548 Dolores Messer and Stefan C. Wolter, Money Matters – Evidence from a Large-Scale Randomized Field Experiment with Vouchers for Adult Training, February 2009

2549 Johannes Rincke and Christian Traxler, Deterrence through Word of Mouth, February 2009

2550 Gabriella Legrenzi, Asymmetric and Non-Linear Adjustments in Local Fiscal Policy, February 2009

2551 Bruno S. Frey, David A. Savage and Benno Torgler, Surviving the Titanic Disaster: Economic, Natural and Social Determinants, February 2009

2552 Per Engström, Patrik Hesselius and Bertil Holmlund, Vacancy Referrals, Job Search, and the Duration of Unemployment: A Randomized Experiment, February 2009

2553 Giorgio Bellettini, Carlotta Berti Ceroni and Giovanni Prarolo, Political Persistence, Connections and Economic Growth, February 2009

2554 Steinar Holden and Fredrik Wulfsberg, Wage Rigidity, Institutions, and Inflation, February 2009

2555 Alexander Haupt and Tim Krieger, The Role of Mobility in Tax and Subsidy Competition, February 2009

2556 Harald Badinger and Peter Egger, Estimation of Higher-Order Spatial Autoregressive Panel Data Error Component Models, February 2009

2557 Christian Keuschnigg, Corporate Taxation and the Welfare State, February 2009

2558 Marcel Gérard, Hubert Jayet and Sonia Paty, Tax Interactions among Belgian Municipalities: Does Language Matter?, February 2009

2559 António Afonso and Christophe Rault, Budgetary and External Imbalances Relationship: A Panel Data Diagnostic, February 2009

2560 Stefan Krasa and Mattias Polborn, Political Competition between Differentiated Candidates, February 2009

2561 Carsten Hefeker, Taxation, Corruption and the Exchange Rate Regime, February 2009

2562 Jiahua Che and Gerald Willmann, The Economics of a Multilateral Investment Agreement, February 2009

2563 Scott Alan Carson, Demographic, Residential, and Socioeconomic Effects on the Distribution of 19th Century US White Statures, February 2009

2564 Philipp Harms, Oliver Lorz and Dieter Urban, Offshoring along the Production Chain, February 2009
2565 Patricia Apps, Ngo Van Long and Ray Rees, Optimal Piecewise Linear Income Taxation, February 2009

2566 John Whalley and Shunming Zhang, On the Arbitrariness of Consumption, February 2009

2567 Marie-Louise Leroux, Endogenous Differential Mortality, Non-Contractible Effort and Non Linear Taxation, March 2009

2568 Joanna Bęza-Bojanowska and Ronald MacDonald, The Behavioural Zloty/Euro Equilibrium Exchange Rate, March 2009

2569 Bart Cockx and Matteo Picchio, Are Short-Lived Jobs Stepping Stones to Long-Lasting Jobs?, March 2009


2572 Ondřej Schneider, Reforming Pensions in Europe: Economic Fundamentals and Political Factors, March 2009

2573 Jo Thori Lind, Karl Ove Moene and Fredrik Willumsen, Opium for the Masses? Conflict-Induced Narcotics Production in Afghanistan, March 2009

2574 Silvia Marchesi, Laura Sabani and Axel Dreher, Agency and Communication in IMF Conditional Lending: Theory and Empirical Evidence, March 2009

2575 Carlo Altavilla and Matteo Ciccarelli, The Effects of Monetary Policy on Unemployment Dynamics under Model Uncertainty - Evidence from the US and the Euro Area, March 2009


2577 Giorgio Bellettini and Filippo Taddei, Real Estate Prices and the Importance of Bequest Taxation, March 2009