Who Cares?

Determinants of the Fathers' Use of Parental Leave in Germany

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May 2010

Abstract

The aim of this study is the identification of socio-economic and workplace-related determinants of the fathers' use of parental leave after the introduction of the Parental Allowance and Parental Leave Act in Germany in 2007. This reform implied a strong paradigm shift in German family policy and led to a strong increase in the share of leaves taken by fathers. Using the 2007 German Microcensus as a data basis, three logistic models are estimated. The main results include a strong positive infoluence of the female partner's employment status and income as well as of variables that are related to the job security of both spouses. Overall, the findings are partly consistent with German studies that have been conducted under the former family policy regime and partly with Scandinavian studies.

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1 Introduction

Since the 1980s, several European countries have established different types of paternity leave or have reserved a part of the parental leave for the parent who does not take the lion's share of the leave, which is the father in most cases. In Germany, from 1996 to 2006, the Federal Child-Raising Allowance Act (*Bundeserziehungsgeldgesetz, BErzGG*) was in place. According to this law, mothers and fathers could share a child-raising leave for up to three years after the birth of a child, while receiving a means-tested benefit if the income was below a certain threshold. However, take-up rates of fathers stagnated between 2.1 and 3.3 % (Federal Statistical Office 2009). Meanwhile, the total fertility rate remained between 1.33 and 1.37 in the past decade, and therefore substantially below the replacement level of 2.1 children per woman on average. At the same time, the female employment rate increased from 55.3 % in 1996 to 62.2 % in 2006, but stayed at an average level compared to other EU countries (EU-27 average: 57.3 % in 2006) (Eurostat 2009). Besides, due to several extensions of the child-raising leave, the mothers' actual number of working hours even decreased during the 1990s, while the mothers on leave were counted as employed in the national statistics (Merz 2004).

The replacement of the BErzGG by the Parental Allowance and Parental Leave Act (*Bundeselterngeld- und Elternzeitgesetz, BEEG*) in 2007 implied a strong paradigm shift with regard to German family policy. The BErzGG promoted the male-breadwinner family model. On the contrary, the aim of the BEEG is that no parent should be dependent on her or his spouse or governmental support in the long run. According to this law, which is geared towards the Swedish model of family policy, parents can share 14 months parental leave among each other, while receiving a parental benefit of 67 %[1] of the monthly net income. However, following the "use-it-or-lose-it"-system, two months are reserved for the other parent (usually the father). One result which is already visible is that take-up rates of fathers increased sharply to 18 % in 2009 (see figure 1).

In the year 2007, which is explored in this study, more than 60,000 fathers applied for parental leave with parental benefit (Federal Statistical Office 2008a). In other words, of all children born in 2007, about 8.8 % had fathers that took parental leave. About two thirds took this opportunity for a period of two months. Obviously, these are the months that are reserved for the partner and that would be lost otherwise. About one fifth (21.2 %) took between three and eleven months of parental leave, and 17.6 % took twelve months which is the maximum amount of months a parent of a two parent household is entitled to.

If parents share the parental leave months and take them successively, the mother

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[1]Minimum amount of allowance for all: 300 Euros, maximum: 1.800 Euros.

Figure 1:

Share in %

Share of Parental Allowance Applications by Fathers*
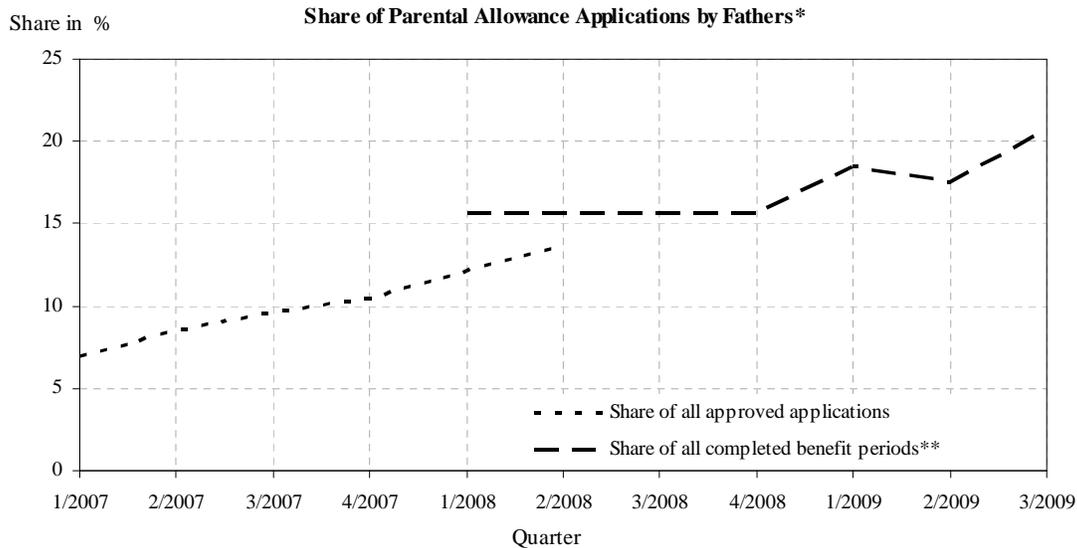
* Change in the official statistical records 2008/09: Approved parental allowance applications in the application month are no longer recorded, but completed benefit periods in the month of the end of the benefit period instead.
** Average for the year 2008.
Sources: Federal Statistical Office (2009); own illustration.

will be absent from work for a shorter period, which entails interesting effects both on the micro and the macro level. A short leave period reduces a mother's loss of human capital and income induced by the birth of a child.[2] This promotes equal opportunities with regard to job applications and wages. This, in turn, reduces the poverty risk of mothers and children. Besides, the fathers' involvement in childcare is associated with strong father-child bonds and lower divorce rates (Hausegger et al. 2003). Furthermore, analyses from several European countries show that it raises the number of desired children in a household (Cooke 2003; Buber 2002; Lappegård 2008). On the macro level, the country of Germany would especially profit from the mothers' stronger attachment to the labour market and higher fertility rates. They could diminish the lack of qualified workers both at the present (the mothers) and in the future (the children), given that the labour supply matches the demanded job specifications.

This study explores the determinants of fathers' use of parental leave, because knowledge about these factors can be applied to the formulation of policy recommendations that further promote the leave-taking of fathers. As the BEEG rather resembles the parental leave schemes found in Scandinavian countries than the former German system,

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[2]Boll (2009) finds that a woman who takes three years of leave plus three years of part-time work at the age of 28 looses between 29 and 36 % of the maximum wage until the age of 45, depending on the educational level. If she only takes one year of parental leave and two years of part-time employment, the income loss is halved.

the question is raised whether the results differ substantially from those of previous German studies that were conducted under the BErzGG and may rather be similar to those of Scandinavian studies. Alternatively, entrenched social and cultural values could have such a great impact that the results are similar to German studies unter the BErzGG.

In the next step, economic theories and international literature on the determinants of the fathers' use of parental leave are evaluated. After the description of the data and methodology employed in this study, descriptive results and the results of three binary response models using data of the 2007 German Microcensus are presented. It is estimated which variables affect the fathers' use of parental leave, and, if applicable, how strong their effects are. The first model includes all fathers, regardless of their own and their spouse's work status, in order to capture an overall picture of parental leave determinants for fathers. The second model focuses only on working fathers, which allows an analysis of work-related determinants. The third model is restricted to fathers in dual earner relationships, so that the influence of differences between the spouses with regard to socio-economic features can be assessed. At the end, the results are summarized and discussed.

2 The Fathers' Use of Parental Leave: Theoretical and Empirical Background

2.1 Theoretical Background

In current microeconomic theory, two strands of literature about intra-family time allocation are generally accepted: time-allocation models of the New Home Economics and game-theoretic bargaining models.

In the model of the allocation of time, a household forms one consumption and production unit (Becker 1965). It produces "goods" that are not available on the market, among them children. The demand for such goods depends on their prices, which, in turn, are based on direct costs as well as time and opportunity costs. Additionally, it is subject to an income and a time constraint. The total available time equals the sum of working time and consumption time, which includes parental leave. An individual's division of time depends on the utilities of the different options. The higher the opportunity costs of the consumption time, which consist of the foregone earnings and human capital depreciation, the lower is the utility of the consumption time. A higher income implies higher opportunity costs and thus a higher relative price of the consumption time. Consequently, as the income rises, a rational individual increases the time spend on work and decreases the time for consumption. Becker (1981: 21) claims that due to the "biological commitment" of women for child "production" and care, they are

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more productive in the household, even if both spouses are endowed with the same human capital. In addition, early specialisation of women into household tasks as well as limited career advancements and lower wages further contribute to the gender-specific distribution of market work and non-market work. In the end, the maximisation of the joint utility function entails the wife's specialisation in home production and the husband's specialisation in full-time market work.

On the contrary, household bargaining models assume the maximisation of an individual utility function to each spouse (e.g. Ott 1992). This is a plausible assumption, since, in case of marital dissolution or the breadwinner's death, the implicit economic dependency of wives on husbands in Becker's approach implies an asymmetric risk to the partner that has specialised in household production and childcare (Blossfeld and Drobnič 2001: 23-24). Therefore, neither spouse agrees to do so. Both are eager to minimise time for household chores and childcare and maximise the time spend in paid work. But each spouse's allocation of time is the result of bargaining and depends on her or his individual's bargaining position. This, in turn, is positively related to individual income and human capital resources. Thus, the spouse with the relatively higher work-related resources concentrates on market work and does less housework and childcare, while the other one does less paid work but the lion's share of household and childcare tasks. To sum up, the outcome of this model is not as "radical" as in Becker's approach, even though both microeconomic models' results depend strongly on the economic power of each spouse.

However, empirical findings suggest that there are more factors that influence the allocation of time between spouses. Several studies argue that even if the female partner exhibits a higher human capital endowment and income or works as many hours as her partner, she is still responsible for most of the housework and childcare (Beblo 1999; Lauk and Meyer 2005; Stancanelli 2003; Yamada et al. 1999). At the same time, it is widely observed that there is hardly any difference in time for household chores of "traditional" and "modern" men, especially when a couple has children, despite very different views in regard to the gendered division of labour (Schulz and Blossfeld 2006; Wengler et al. 2008; Zerle and Krok 2008).

For this reason, sociologists argue that not only rational considerations but also cultural factors, especially gender role expectations, are important factors that determine intra-family time allocation. According to the "doing gender" approach, also referred to as the "gender display" approach, cultural norms hamper the role reversal of men and women, so that women have to display that they are women and men that they are men (West and Zimmermann 1987; Brines 1994). If traditional views are prevailing in a society, this theory implies that if a woman's earnings capacity exceeds that of her husband, both spouses are eager to retain traditional behaviour in terms of housework

and childcare in order to show that they are "proper" wives and husbands. Similar results are assumed in the identity-formation model (Bielby and Bielby 1989) and in the gendered moral rationalities approach (Duncan and Edwards 1997). Akerlof and Kranton (2000) seized the suggestion that female labour market participation threatens the identity of husband and wife and therefore enhanced the bargaining model through the variable "identity". As a result, a woman's paid work implies a loss of utility. This, in turn, is compensated by a stereotypical behaviour of the female partner concerning household tasks, which probably results in stereotypical behaviour on the male partner's side.

Last but not least, Blossfeld and Drobnič (2001: 34-37) point out that collective beliefs about the correct division of labour within a couple do not only vary between societies, but also between social classes, as the motivation for the labour market participation of mothers differs between them. However, from this point of view, predictions of the gendered division of childcare are not straightforward. On the one hand, men's participation in childcare is likely to increase with his educational and, hence, income level. On the other hand, the higher his income, the lower the incentives for his wife to work in the labour market, so that more time can be spend on childcare. As it will be presented in the next section, the majority of empirical analyses support the first mentioned alternative.

2.2   Empirical Background

Most empirical studies on the fathers' use of parental leave have been conducted in the Scandinavian countries, as they had been the fist ones to introduce "daddy months" and parental leave for both parents in the late 1970s and early 1980s. Sundström and Duvander (2002) use data from the 1994 registers of the National Insurance Board of Sweden to analyze the determinants of the fraction of parental leave days used by the father. They find that this fraction is positively correlated with the education and income of both spouses, but the fathers' income has a greater impact. Moreover, fathers use a larger fraction if they are married and if it is the firstborn child. For the same country, Bygren and Duvander (2006) confirm the positive impact of the mother's education and income, but not of the father's. Even so, fathers' workplace characteristics have a stronger effect than those of the mother. Fathers who work in the public sector, in large firms and in female-dominated professions take more parental leave. Hoem (1995)[3] finds the same results as Sundström and Duvander (2002) for the fathers' education and the birth order. In addition, they reveal that growing up

[3]Hoem (1995): Kvinnors och mäns liv, i. Sysselsättining från 17 åra ålder (The lives of women and men, in employment from age 17). Statistics Sweden, Stockholm. Cited in Sundström and Duvander (2002), pp. 437-438.

in Sweden has a positive influence on the fathers' leave-taking. In this context, Haas et al. (2002) point to the importance of organizational culture of firms. They show that a company's commitment to caring values, the level of "father friendliness", the support for women's equal employment opportunities, the fathers' perception of support from senior managers as well as a rewarding system that is geared to task performance instead of the number of attended hours are crucial factors for the use of parental leave by fathers.

For Norway, Lappegård (2008) conducts a comprehensive analysis of the determinants of fathers' leave-taking in dual-earner couples using data from the Norwegian population registers. She distinguishes between one-child and two-child couples as well as between paternity leave (leave for fathers exclusively) and gender-neutral leave (parental leave that can be used by either parent). For one-child couples, the workplace characteristics rather affect the gender-neutral leave of fathers than the use of the paternity leave, since the gender-neutral leave has to be negotiated among the spouses. The use of the paternity leave is positively correlated with both spouses' education and the father's employment in a medium sized company. This is also the case for the gender-neutral leave, but in addition, fathers are more likely to take this leave if both parents work in the public sector and in a male-dominated profession. In both models, the fathers are more likely to take leave if his partner's income is only slightly lower than his own, compared to a much lower income or a higher income of the mother than of the father. Another study for Norway shows that fathers' education, mothers' income, mothers' fulltime employment prior to birth and the number of preschool children positively affects the fathers' use of paternity leave and gender-neutral leave (Naz 2007). Besides, married fathers and those working in a female-dominated profession as well as those from a Western country are more likely to use leave. In this study, the father's workplace does not have an effect on the paternity leave but a strong effect on the use of the gender-neutral leave.

Only one German study was found on the determinants of the fathers' use of parental leave after the introduction of the new parental leave scheme in 2007. Pfahl and Reuss (2009) conducted a descriptive and explorative analysis with a sample of 624 fathers that took part in a survey launched on the internet. This sample consisted of 0.7 % of all fathers that took parental leave in 2008. However, because of the method of drawing the sample, it is not representative, so that the results have to be treated with caution. About two thirds of the fathers in the sample use parental leave in the first two months after the child's birth, and half of them take this opportunity with their spouse at the same time. The results show further that a majority is comparatively old, holds a university degree, lives in large cities and has a partner that is working. About two thirds of the fathers have more than one child, work in the public sector or

in other service branches. Three fourth are employed in companies with more than 100 employees. As a decisive factor for the decision to use parental leave, the fathers in the sample specify the amount of their income in comparison to their spouse's, as well as their workplace situation including the flexibility of work schemes.

Geisler and Kreyenfeld (2009) conducted a multivariate analysis on the use of the child-raising leave of fathers between 1999 and 2005, i.e. before the parental leave reform. According to this study, fathers are more likely to take child-raising leave if they live in eastern Germany, are of German nationality, not married but cohabiting, have an older or better educated spouse or became fathers of multiples. Furthermore, the father's age and the number of children are positively associated with his use of the leave. As to workplace characteristics, fathers with a permanent work contract are more likely to take leave than self-employed men and those with a temporary contract, and so are fathers that are employed in the public sector in comparison to the private sector.

The main conclusion of studies that investigate women's and men's attitudes towards the uptake of child-raising leave is that the omnipresent fear of income losses deterred fathers from using this leave (Beckmann 2001; Institut für Demoskopie Allensbach 2005; Kassner and Rüling 2005; Rost 2002). Further reasons are career disadvantages as well as the fear of stigmatization and cancellation (Beckmann 2001; Institut für Demoskopie Allensbach 2005).

3   Data and Methodology

The German Microcensus is a 1 % representative sample of the German population. It comprises about 370,000 households with about 820,000 individuals. This survey has been conducted in western Germany since 1957 and in eastern Germany since 1991. By extrapolation, the data are representative for the total resident population in Germany (Federal Statistical Office 2008b). The questionnaires reveal whether a father is taking parental leave (at all, less than three months, three months or more) (Federal Statistical Office 2007b). The advantage of this survey is that it provides enough cases for a multivariate analysis due to the large sample size.

However, there are a few drawbacks. Firstly, the individual is only asked whether she or he is currently on parental leave. It is not recorded whether they have already taken parental leave in the corresponding year or whether they intend to use it. Therefore, the group of fathers that are not currently on parental leave include those that have completed their parental leave months or have not started yet. Intuitively, it is expected that many fathers take the two parental leave months that would otherwise be lost in the 13th and 14th months after the child's birth. But, as 2007 is the first year under

the new legislation, only fathers that took parental leave during the first year after the child's birth are included in the sample. Thus, the fact that this database provides only information on a particular time (a snapshot) of the respondents' lives calls for caution with regard to the results and their interpretation.

Secondly, as the biological kinship between family members is not accounted for, our sample includes all male persons with one or more children below the age of one in the family, although some of them may not be the biological father of the child. This probability is higher among fathers that are currently not on parental leave, as only the biological or the legal father of a child is eligible for parental leave.

As stated above, this sample includes all men that reported to have a child under the age of one in the family. It is further restricted to men between 22 and 54 years of age who live with a spouse in the same household, as this group is relevant for the research question. Three logistic regression models are applied. The dichotomous dependent variable Y takes the value 1 if the father is on parental leave and 0 if not. The selection of the independent variables (X) is based on the empirical literature on the determinants of the fathers' use of parental leave, as summarized in section 2.2.

Model 1 includes all men in the restricted sample. Among the independent variables are personal traits of character and the spouse's employment status (i=1,2 denotes the values of the variables):

$$
\begin{aligned}
logit\left(Y_{1/0}|X\right) = \quad & \alpha + \beta_1 age + \beta_2 age^2 + \beta_3 citizen + \beta_4 cohab \\
& + \beta_5 kids + \sum_{i=1}^2 \beta_{6,i} edu_i + \beta_7 rural + \beta_8 east \qquad (1) \\
& + \beta_9 inc + \sum_{i=1}^2 \beta_{10,i} femwork_i
\end{aligned}
$$

As to personal characteristics, the age (age), age squared (age^2), family status ($cohab$), nationality ($citizen$), number of children in preschool age ($kids$), the level of education (edu), the type of the region (regtype), the region ($east$) and the monthly net income (inc) are included in the model. *Cohab* is a dummy variable that takes the value 0 if the father is married and 1 if he is cohabiting. The dummy variable *citizen* distinguishes between fathers of German and dual citizenship on the one hand and foreign citizenship on the other hand. The level of education is classified into three categories. Persons without any school leaving or training qualification are defined to have a low educational level. This is the reference group. In the model, dummy variables for medium educational level (primary or secondary education) and high educational level (tertiary education) are included. Regarding the type of region, it is distinguished between urbanized and agglomerated on the one hand and rural regions on the other hand. Furthermore, the dummy variable *east* denotes whether a person lives in the eastern or western part of Germany. This variable is included because of the different

historical backgrounds of these two regions. The variable for the income consists of 25 income groups, but it is treated as a metric variable in this analysis. The variable femwork captures the spouse's employment status - not employed, part-time or full-time employment - respectively. In all models, α denotes the axis intercept.

Model 2 is restricted to men that actively participate in the labour market. In addition to the variables in model 1, it allows an assessment of the influence of the workplace. It accounts for the following work-related characteristics, each being composed of one or several dummy variables: the type of work contract (*temp*), sector affiliation (*public*), holding a leading position or not (*lead*), the firm size (*fsize*) and the sex ratio of the profession (*sratio*). The estimation follows this equation:

$$
\begin{aligned}
logit\left(Y_{1/0}|X\right) = \quad & \alpha + \beta_1 age + \beta_2 age^2 + \beta_3 citizen + \beta_4 cohab \\
& + \beta_5 kids + \sum_{i=1}^{2} \beta_{6,i} edu_i + \beta_7 rural + \beta_8 east \\
& + \beta_9 inc + \sum_{i=1}^{2} \beta_{10,i} femwork_i + \beta_{11} temp \\
& + \beta_{12} public + \beta_{13} lead + \beta_{14} fsize + \sum_{i=1}^{2} \beta_{15,i} sratio_i
\end{aligned}
\tag{2}
$$

The variable *temp* denotes whether a person holds a permanent contract or not, and *fsize* captures whether there are more than 50 employees working at the specific establishment or not. Individuals that hold a leading position include public officers in the upper grades of civil servants, employees with tasks on one's own responsibility and those with broad managerial functions and decision-making power as well as self-employed persons with five or more employees. For the classification of the sex ratio of the profession, an analysis was conducted on the basis of the same data base, the 2007 German Microcensus, in order to find the sex ratio of occupations listed in the ISCO classification list. Following Leitner (2001), female-dominated occupations feature a share of women above 50 % of all employed persons, male-dominated occupations a share of less than 30 %, and balanced occupations are in between these two groups.

Finally, model 3 comprises only dual-earner couples, so that the differences between the spouses' socio-economic and work-related background can be estimated. The independent variables include personal characteristics of the fathers as well as differences between the spouses as to age (*agedif*), income (*incdif*), the educational level (*eddif*), leading position (*leaddif*), firm size (*sizedif*), work contract (*condif*) and sex ratio of the profession (*ratiodif*). They are included in the model as dummy variables; see table

3 for specification details. The equation of model 3 can be depicted as follows:

$$
\begin{aligned}
logit\left(Y_{1/0}|X\right) = \ & \alpha + \beta_1 citizen + \beta_2 cohab + \beta_3 kids + \beta_4 rural \\
& + \beta_5 east + \sum_{i=1}^{2} \beta_{6,i} agedif_i + \sum_{i=1}^{2} \beta_{7,i} incdif_i \\
& + \sum_{i=1}^{2} \beta_{8,i} eddif_i + \sum_{i=1}^{3} \beta_{9,i} leaddif_i \\
& + \sum_{i=1}^{3} \beta_{10,i} pubdif_i + \sum_{i=1}^{2} \beta_{11,i} sizedif_i \\
& + \sum_{i=1}^{3} \beta_{12,1} condif_i + \sum_{i=1}^{4} \beta_{13,i} ratiodif_i
\end{aligned}
\tag{3}
$$

Before the results of the estimations are presented, a closer look is taken at some descriptive statistics in the next section.

4   Descriptive Results

The overall sample contains 4453 fathers. 227 (5 %) of them were on parental leave in the reference week. The majority (218, 4.8 %) took parental leave for less than three months, while only nine fathers (0.2 %) took parental leave for three or more months. Almost half of the fathers took parental leave not concurrent with their partner (100 fathers, 44.0 %). A summary of the distribution of the sample across all variables in the sample is provided in tables 1-3.

For a better overview on the fathers "who care" and for the deduction of policy recommendations, it is valuable to examine the distribution of fathers using parental leave across the values of the variables in the context of existing theoretical and empirical results. This distribution is displayed in table 4 for the sample of all three models. As to the age, the highest fraction of fathers taking parental leave can be found in the middle aged group, while the fraction is lower in the youngest age group and at a medium range in the oldest age group. This result contradicts the economic theory, as older men probably earn a higher income and thus the higher opportunity costs of taking parental leave are higher. However, the family formation age rises with the educational level. According to sociological approaches as well as empirical studies (e.g. Wengler et al. 2008) higher educated men are, firstly, more likely to share domestic tasks. Secondly, they are more likely to have a highly educated spouse that exhibits a high level of human capital (Teckenburg 2000; Wirth 2000; Blossfeld and Timm 2003). Thus, theses spouses are probably characterized by a high income, which, in turn, strengthens their bargaining position. Hence, the comparatively low share of fathers using parental leave in the youngest age group comes at no surprise.

Regarding the citizenship, between 5.5 and 7.4 % of German fathers and those with dual citizenship take parental leave, but only between 2.9 and 5.4 % of fathers with a foreign citizenship do so. Low labour market participation rates of foreign women as

well as culture-specific gender role models are possible explanations for this result.

According to Becker's microeconomic theory, the specialization of spouses would be higher for married couples which would imply a lower percentage of fathers using leave among this group. In contrast, predictions of sociological approaches are not straightforward (Naz 2007: 16; Sundström and Duvander 2002: 439). On the one hand, a marriage can be an indicator for a relatively strong family-orientation of the father. On the other hand, cohabiting couples are said to pay more attention to an equal division of labour. In this sample, the fraction of fathers using parental leave is somewhat higher for married than for cohabiting fathers. In addition, it is higher in families with only one child in preschool age. Firstly, this may be due to a financial rationale, as the costs of children increase with their number, so that the relinquishment of the father's income is more likely to be accepted after the birth of the first child than after subsequent births. Secondly, if the mother has already done the lion's share of childcare after the first birth while the father was employed continuously, the specialisation of household productivity and hence the reservation wage of the mother rises whereas the father's productivity in the labour market increases. Finally, the birth of the first child has a greater importance for the reaffirmation of the parental and partnership status (Vikat et al. 1999).

Interestingly, there seems to be a u-shaped correlation between the leave-taking of fathers and their educational level, as the share is higher for low and high educational levels as for the medium one. The reasons for the high share of fathers with tertiary education have been discussed above, whereas the high share of those without a formal education certificate could be based upon very low (or even no) income in relation to the spouse's income. The high share of fathers with a low income in dual-earner couples (see the sample for model 3) and the u-shaped pattern in the sample for model 2 fortify this assumption.

While the fraction of fathers using the opportunity of parental leave is lower in rural than in urbanized and agglomerated regions, which is in line with sociological and economic theory, the residence in eastern or western Germany seems to play only a marginal role. This could imply that persons that grew up in the different parts of Germany behave similarly, but it might also be caused by migratory movements between both parts of Germany.

On the contrary, the female partner's employment status seems to play a major role. Only between 2.8 and 3.4 % of the fathers with a female partner not employed in the labour market take parental leave, but between 6.2 and 6.5 % of those with a partner that works part-time and even between 7.4 and 7.8 % of those with a partner who is employed full-time.

With regard to the workplace-related variables, the share of fathers taking parental

leave is substantially higher in the public sector, among fathers with a leading position, those in a large firm and with a permanent contract. The result for the firm size hints at lower costs for the substitution of employees and a high flexibility of working times in large companies. All in all, the fraction of fathers that take parental leave is particularly high among those with sophisticated, secure and well-paid jobs. Moreover, their fraction is notably high in female-dominated professions. On the one hand, selection effects are likely to be at play. On the other hand, fathers working in these professions could have discovered ex post that female-dominated professions can generally better be reconciled with household and caring tasks (Datta Gupta and Smith 2001; Jacobs 1995), while male-dominated professions are associated with higher costs of taking parental leave (Jacobs 1995; Polachek 1981).

Recalling the suggestions of theoretic models and empirical literature, it is expected that fathers taking parental leave differ from the reference group in terms of differences to their spouses, especially in dual earner couples. Regarding age differences, it is striking that the fraction of leave-taking fathers is small for couples in which the female partner is older, because according to the bargaining model rationale the older spouse has the advantageous position with regard to human capital and, therefore, income. Yet, traditional gender roles do not seem to be easy to overcome. The mothers in this age category probably have a strong preference for caring for the child themselves. They have a higher average age than in the other categories (34 years), and thus might have realized motherhood comparatively late.

Still, there are differences as to the spouses' relative educational level and especially their relative income. The share of fathers taking parental leave is slightly higher if the spouse exhibits the higher educational level, and it is considerably higher if she is the main breadwinner of the family.

Looking at the type of work contract, the share of fathers taking parental leave is distinctly higher when both partners have a permanent contract. Hence, not only the father's job security, but also the mother's is vital for the parental leave taking of fathers. By contrast, regarding the firm size, the probability that the father uses parental leave is higher when the father is employed in a larger firm. The exploration of female- and male-dominated professions shows that an eminently high fraction of fathers on parental leave can be found among couples of which both spouses work in a profession that is not typical for their sex. On the contrary, the fraction is small when the woman works in a female-dominated profession and the father in a male-dominated profession. As mentioned above, the opportunity costs of parental leave are lower in professions with a comparatively high percentage of women.

5 Regression Results

Tables 5 amd 6 provide the results of the three different logistic models for the assessment of determinants of the parental leave taking of fathers. For reasons of interpretation, the results of the estimations are shown in terms of odds ratios. The tests for the goodness of fit of the models show a good adaptation of all three models. Precisely, model 3 shows the best results as to Mc Fadden's Pseudo R2 and the log likelihood of the final model. In addition, the standard errors of all independent variables lie within an acceptable range.[4] Furthermore, sensitivity analyses have confirmed the robustness of the results, even for independent variables that are likely to be highly correlated with each other, as the educational level and income, for instance. Reduced models that contain only the significant variables have been estimated as well, but in order to show differences to other empirical studies, the full models are demonstrated here.

According to model 1 (see table 5), which controls for personal characteristics of the father, the age of the father influences significantly his use of parental leave. The odds of taking leave increase by 26 % with each additional year. The influence of the citizenship is even higher. Holding German or dual citizenship increases the odds of leave-taking by almost 90 %. As to the educational level, they are highest for men with a low educational level, and lowest for those with a medium level, while the odds for men with a high level are in between. However, the variable that influences the dependent variable strongest is the female partner's working status. If the mother is employed part-time, the odds of leave are more than doubled compared to a couple in which she is not active in the labour market. If she is employed full-time, the odds are even higher. In this case, the fathers' odds are about 150 % higher in comparison to the reference group. All other variables – marital status, number of children below the age of seven, type of region and region – are not significant in this model.

Model 2 (see table 5) includes only working fathers and accounts for their personal characteristics as well as work-related variables. The results for the personal traits of character are mainly in line with those of model 1: The citizenship, the educational level and the partner's employment status remain significant. Regarding the monthly net income, there is a negative correlation which is small in terms of odds ratios but still significant. With each higher income category, the odds of leave taking are reduced by 6 %. The results for the type of work contract, the leading position, the firm size and the gender ratio meet the expectations derived from the descriptive results. The

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[4]Standard errors and tests for the goodness of the models (except for likelihood ratio test (prob. chi^2) and McFadden's Pseudo R^2) are not depicted. For the assessment of the goodness of the models, the following figures have been evaluated: the number of iterations, log likelihood (null model), log likelihood (final model), LR chi^2, likelihood ratio test (prob. chi^2), McFadden's Pseudo R^2, goodness-of-fit test Pearson's chi^2(prob. $>$ chi^2), Hosmer-Lemeshow test (prob. $>$ chi^2).

odds are 50 % higher if the father has a permanent contract or holds a leading position. They are about two thirds higher if the father works in a large company. They are also significantly higher for fathers working in female-dominated professions. All in all, the most influential and positive variable remains the spouse's employment status.

Model 3 (see table 6) is restricted to dual-earner couples. It accounts for the differences between the spouses and the fathers' incomparable personal traits of character. Surprisingly, the type of region is the only significant variable in the group of personal characteristics. The odds of leave-taking are more than halved if the father lives in a rural region instead of an agglomerated or urbanized one. Looking at the differences between the spouses, age and educational differences are the only categories without significant variables. Especially the result for the income differences are standing out. The odds of taking parental leave increase by almost 150 % if the father earns less than his spouse, and they tend to be lower if his earnings are higher. Furthermore, they are higher if both spouses hold leading positions, are employed in the public sector and have permanent work contracts. Obviously, the security of both the father's and his partner's jobs play a crucial role in the decision on the distribution of parental leave months. As to the firm size, the odds are 79 % higher if the father is employed in the larger firm. Besides, they are significantly lower if the spouses work in occupations that are typical for their sex.

To sum up, the three models show that the fathers' use of parental leave is strongly influenced by his spouse's employment status. If she is employed, the income differences play a major role. In this context, also the positive relations between the fathers' uptake of parental leave and variables that are related to the job security (sector affiliation, type of work contract, occupational position) are remarkable.

6   Summary and Discussion

Using data from the 2007 German Microcensus, this paper provides insights into the determinants of the fathers' use of parental leave after the introduction of the new parental leave scheme in Germany that is geared towards the Swedish model of family policy. The fathers in this sample "who care" are on average older than the reference group and therefore overrepresented in leading positions. Moreover, they are more frequently employed in the public sector, in large companies and female-dominated professions. Their share is also higher among German fathers and those living in agglomerated regions. Interestingly, they are not only found more likely in high income and educational groups, but also in the low ones. This suggests a u-shaped distribution across these variables. The small percentage differences between the values of each variable could be related to the fact that the data is restricted to fathers that take leave during the first

twelve months after a child's birth and that almost half of them take this opportunity concurrent with their spouse. The binary regression models are in line with most of the results of the descriptive analysis, but point to the fact that workplace characteristics, especially in comparison with the partner, have a greater impact on the use of parental leave than personal traits of character. With regard to the father's sector affiliation and firm size, the mother's income as well as the share of females in both spouses' professions, the results are consistent with those of most Swedish and Norwegian studies. They differ with respect to the effect of the educational level and the marital status, also in comparison with the German study by Geisler and Kreyenfeld (2009) on the use of the child-raising leave by fathers. Besides, this study departs from the latter with regard to age differences and the region. However, concerning the effects of the type of region and of the work contract, the results are similar. Overall, the findings of this study are partly consistent with Scandinavian analyses and partly with the German Study under the former family policy regime. With regard to the theoretical approaches, the economic theory of relative resources is confirmed in the comparison between the spouses. The comparison between fathers on leave and those not on leave supports the sociologist view that urban and highly educated men, which are most likely to hold modern gender role models, are the advocates of an equal division of childcare tasks.

These results provide useful information for the development of measures that promote the leave-taking by fathers. The finding that fathers with a secure job, namely those with a permanent contract, in the public sector and in leading positions, are more likely to use parental leave comes at no surprise. Thus, more "father friendliness" in the private sector, for self-employed fathers, those with a temporary contract and not in a leading position could enhance the share of fathers that use parental leave. In addition, the increase of the mothers' wages in relation to their spouses' would presumably boost parental leave taking by fathers, since this study demonstrates its strong positive dependence on the female partner's net wage. Generally, useful instruments for raising the mothers' income are firstly, the reduction of child-related career breaks through shorter parental leave periods, secondly, daddy months that cannot be used with the mother at the same time, and thirdly, an abundant supply of fulltime public childcare slots. The replacement of the joint tax system for married couples by a progressive indi¬vidual taxation of each parent would further have a positive impact on most women's wages in relation to their husband and therefore enhance fathers' use of parental leave. This reform would stop the positive discrimination of couples with a large wage gap and would raise most women's net wages during the fiscal year, which is associated with a positive incentive to work, as theoretical frameworks (e.g. Apps and Rees 2004) and empirical studies (e.g. Wrolich 2007) suggest.

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Table 1: Summary of the sample for model 1

	Obs	Mean	Std. Dev.	Min	Max
age	4208	34.0974	5.8656	22	54
age2	4208	1197.0320	412.4048		
citizenship	4208	0.8451	0.3619	0	1
marital status	4208	0.1816	0.3855	0	1
number of children below the age of 7	4208	1.5383	0.6653	1	5
educational level	4208	2.2883	0.5167	1	3
type of region	4208	.8802	0.3247	0	1
region	4208	.8192	0.3849	0	1
monthly net income	4208	10.8705	3.9841	1	25
partner's employment status	4208	2.1191	0.8680	1	3

Definition of the variables: age2 = age squared; citizenship: 0 = foreign citizenship, 1 = German or dual citizenship; marital status: 0 = married, 1 = cohabiting; educational level: 1 = no formal education certificate, 2 = primary or secondary education, 3 = tertiary education; type of region: 0 = rural, 1 = urbanized or agglomerated; region: 0 = eastern Germany, 1 = western Germany; monthly net income: 25 income groups treated as metric variable; partner's employment status: 1 = full-time employment, 2 = half-time employment, 3 = not employed.

Sources: Federal Statistical Office 2007a; own calculations and illustration.

Table 2: Summary of the sample for model 2

	Obs	Mean	Std. Dev.	Min	Max
personal traits of character					
age	3703	34.3200	5.6500	22	54
age2	3703	1209.9600	398.0500	484	2916
citizenship	3703	0.8600	0.3400	0	1
marital status	3703	0.1700	0.3700	0	1
number of children below the age of 7	3703	1.5312	0.6517	1	5
educational level	3703	2.3241	0.5143	1	3
type of region	3703	0.8798	0.3252	0	1
region	3703	0.8345	0.3717	0	1
monthly net income	3703	11.4507	3.7120	1	25
partner's employment status	3703	2.0616	0.8644	1	3
work-related variables					
type of work contract	3703	1.7983	0.4013	1	2
sector affiliation	3703	0.1229	0.3283	0	1
leading position	3703	0.2792	0.4487	0	1
firmsize	3703	0.4464	0.4972	0	1
sex ratio of the profession	3703	1.6784	1.6784	1	3

Definition of the personal traits of character see table 1. Work-related variables: type of work contract: 0 = temporary contract or self-employed, 1 = permanent contract; sector affiliation: 0 = not in the public sector, 1 = public sector; leading position: 0 = not holding a leading position, 1 = holding a leading position; firm size: 0 = less than 50 employees at the location, 1 = >= 50 employees at the location; sex ratio of the profession: 1 = male-dominated, share of women < 30 %, 2 = balanced, share of women between 30 and > 50 %, 3 = female-dominated, share of females >= 50 %.

Sources: Federal Statistical Office 2007a; own calculations and illustration.

Table 3: Summary of the sample for model 3

	Obs	Mean	Std. Dev.	Min	Max
personal traits of character					
citizenship	2151	0.9196	0.2720	0	1
marital status	2151	0.1795	0.3838	0	1
number of children below the age of 7	2151	1.4551	0.6075	1	4
type of region	2151	0.8708	0.3355	0	1
region	2151	0.8252	0.3799	0	1
differences between the spouses					
age	2151	1.6629	0.5602	1	3
income	2151	1.2101	0.5718	1	3
educational level	2151	1.9279	0.5139	1	3
leading position	2151	2.5388	0.8909	1	4
sector affiliation	2151	2.9489	0.7283	1	4
firm size	2151	1.9112	0.6258	1	3
work contract	2151	2.2720	0.8127	1	4
sex ratio of the profession	2151	3.4124	1.8035	1	5

Definition of the personal traits of character see table 1. Differences between the spouses: age: 1=male is > 2 years older, 2 = 2 years or less age difference, 3= female is > 2 years older; income differences: 1 = male is in higher income category, 2 = same income category, 3 = female is in higher income category; educational level: 1 = male has higher educational level, 2 = same educational level, 3 = female has higher educational level; leading position: 1 = only male holds a leading position, 2 = both hold a leading position, 3 = none holds a leading position, 4 = only female holds leading position; sector affiliation: 1 = only male in public sector, 2 = both in public sector, 3 = none in public sector, 4 = only female in public sector; firm size: 1 = male in larger firm, 2 = same firm size, 3 = female in larger firm; work contract: 1 = female temporary contract or self-employed, male: permanent contract, 2 = both have a permanent contract, 3 = both have a temporary contract or are self-employed, 4 = female permanent contract, male temporary contract or self-employed; sex ratio of the profession: 1 = same share of women, 2 = female: male-dominared, male: female-dominated or balanced profession, 3 = female: balanced, male: male-dominated, 4 = female: balanced, male: female-dominated, 5 = female: female-dominated, male: balanced or male-dominated.

Sources: Federal Statistical Office 2007a; own calculations and illustration.

Table 4: Share of fathers using parental leave (%) across the values of the variables for the samples for models 1-3

	Sample for model 1	Sample for model 2	Sample for model 3
personal traits of character			
age			
22 - 32 years	3.76	4.33	5.60
33 - 43 years	6.11	6.56	8.38
44 - 54 years	5.17	6.14	6.15
citizenship			
German or dual citizenship	5.52	6.00	7.42
foreign citizenship	2.85	3.58	5.38
marital status			
married	5.28	5.77	7.78
cohabiting	4.27	5.14	7.15
number of children below the age of seven			
one	5.35	5.93	7.50
two	5.13	5.63	7.05
three or more	3.15	3.78	5.83
education			
low: no formal education	5.76	8.60	
medium: primary or secondary education	4.22	4.81	
high: tertiary education	6.85	7.07	
n.a.	0.00	0.00	
type of region			
agglomerated or urbanized	5.26	5.85	7.71
rural	3.85	4.26	4.11
region			
western Germany	5.09	5.56	7.07
eastern Germany	5.15	6.18	8.19
partner's employment status			
not employed	2.82	3.39	2)*
part-time employment	6.25	6.52	6.52
full-time employment	7.41	7.79	7.79
n.a.	-	-	-
work-related characteristics			
monthly net wage			
0 - 500 Euro	3.09	8.25	12.96
500 - < 1300 Euro	3.71	4.72	7.32
1300 - < 2600 Euro	5.55	5.72	7.21
2600 - < 4000 Euro	5.70	5.71	7.24
4000 Euro or more	7.42	7.42	7.19
n.a.	4.24	4.83	-

	Sample for model 1	Sample for model 2	Sample for model 3
sector affiliation			
public sector		8.95	10.42
private sector		5.18	6.74
n.a.		-	-
leading position			
yes		7.68	9.13
no		4.85	6.43
n.a.		-	0.00
firm size			
small: less than 50 employees		4.04	5.03
large: at least 50 employees		6.97	8.92
n.a.		3.00	3.00
type of work contract			
temporary or self-employed		3.38	3.93
permanent		6.29	8.13
n.a.		0.00	0.00
sex ratio of the profession			
male-dominated: share of women < 30 %		5.24	6.95
balanced: share of women between 30 and 49,9 %		5.43	6.40
female-dominated: share of women > 50 %		7.06	9.18
n.a.		-	-
differences between the spouses			
age differences			
male partner is more than 2 years older	5.07	5.70	7.44
less than 2 years age difference	5.22	5.72	7.27
female partner is more than 2 years older	3.76	4.49	5.61
n.a.	-	-	-
income differences			
male partner has a higher income	5.11	5.37	6.83
same income category	3.67	5.26	6.84
female partner has a higher income	6.46	10.79	13.71
n.a.	2.55	4.83	5.13
educational level			
male partner has higher educational level	5.29	5.82	7.43
same educational level	4.98	5.51	7.02
female partner has the same educational level	5.23	6.78	8.89
n.a.	0.00	0.00	0.00

(please turn over)

	Sample for model 1	Sample for model 2	Sample for model 3
occupational position			
only male partner holds a leading position			6.42
both hold a leading position			13.61
only female partner holds a leading position			5.82
none holds a leading position			11.39
n.a.			3.57
sector affiliation			
only male partner is employed in the public sector			7.07
both are employed in the public sector			14.47
only female partner is employed in the public sector			6.71
both are not employed in the public sector			6.84
n.a.			6.84
firm size			
male partner is employed in the larger firm			9.82
same firm size category			6.94
female partner is employed in the larger firm			3.95
n.a.			9.59
work contract			
female: temporary or self-employed, male: permanent			5.35
female: male-dominated profession, male: femaledominated or balanced profession			9.76
female: balanced, male: male-dominated			8.44
female: balanced, male: female-dominated			6.73
female: female-dominated, male: male-dominated or balanced			5.67
n.a.			-

Model 1: N=4453, using parental leave: 227 (5.10%); Model 2: N=4009, using parental leave: 227 (5.67%); Model 3: N=2355, using parental leave: 171 (7.26%)

Sources: Sources: Federal Statistical Office 2007a; own calculations and illustration.

Table 5: Results of the logistic regression models 1 and 2

		Model 1	Model 2
		Odds Ratio	Odds Ratio
personal traits of character			
age		1.26*	1.17
age^2		1.00	1.00
ditizenship	German or dual citizenship	1.89**	1.81**
	foreign citizenship	1.00	1.00
marital status	married	1.00	1.00
	cohabiting	0.83	0.92
number of children below the age of 7		0.90	0.98
educational level	low	1.00	1.00
	medium	0.34***	0.26***
	high	0.42**	0.30***
type of region	agglomerated or urbanized	1.00	1.00
	rural	0.69	0.66
region	western Germany	1.00	1.00
	eastern Germany	1.05	1.12
partner's employment status	not employed	1.00	1.00
	part-time employment	2.04***	1.98***
	full-time employment	2.57***	2.44***
monthly net income		1.01	0.94**
work-related characterstics			
type of work contract	temporary contract or self-employed		1.00
	permanent contract		1.51*
employed in the public sector	yes		1.35
	no		1.00
leading position	yes		1.50**
	no		1.00
firm size	less than 50 employees		1.00
	50 or more employees		1.65***
sex ratio of the profession	malde-dominated: share of women < 30 %		1.21
	balanced: share of women between 30 and 49,9 %		1.00
	female-dominated: share of women > 50 %		1.46*

 *** p<0.01; **p<0.1; *p<0.1 Reference categories take the value 1.00.

Model 1: N=4208, using parental leave: 217 (5.2 %); the sample includes men aged 22-54 who live in heterosexual partnerships and have at least one child below the age of one in the family. Likelihood ratio test (prob) 0.000***; McFadden's PseudoR^2 : 0.041.

Model 2: N=3702, using parental leave: 210 (5.7 %); the sample includes employed men aged 22-54 who live in heterosexual partnerships and have at least one child below the age of one in the family. Likelihood ratio test (prob) 0.000***; McFadden's PseudoR^2 : 0.057.

Sources:Federal Statistical Office (2007a) ; own calculations and illustration.

Table 6: Results of the logistic regression model 3

		Odds Ratio
personal traits of character		
citizenship	German or dual citizenship	1.52
	foreign citizenship	1.00
marital status	married	1.00
	cohabiting	1.16
number of children below the age of 7		0.97
type of region	agglomerated or urbanized	1.00
	rural	0.44**
region	western Germany	1.00
	eastern Germany	1.10
differences between the spouses		
age differences	male partner is more than 2 years old	1.16
	less than 2 years age difference	1.00
	female partner is more than 2 years older	0.73
income differences	male partner has higher income	0.83
	same income level	1.00
	female partner has the higher income	2.45**
educational level	male partner has higher educational level	1.14
	same educational level	1.00
	female partner has the higher educational level	1.32
leading position	only male partner holds a leading position	0.68
	both hold a leading position	1.00
	only female partner holds a leading position	1.04
	none holds a leading position	0.54**
sector affiliation	only male partner employed in the public sector	0.46**
	both employed in the public sector	1.00
	only female partner employed in the public sector	0.45**
	both employed in private sector	0.60*
fim size	male partner employed in the larger firm	1.79***
	same firm size category	1.00
	female partner employed in the larger firm	0.60*
work contract	female: temporary or self-employed, male: permanent	0.53*
	both permanent	1.00
	both temporary or self-employed	0.83
	female: permanent, male: temporary or self-employed	0.34***
sex ratio of the profession	both employed in a profession with the same share of women (reference category)	1.00
	female: male-dominared profession, male: female-dominated or balanced profession	1.03
	female: balanced, male: male-dominated	1.00
	female: balanced, male: female-dominated	0.73
	female: female-dominated, male: male-dominated or balanced	0.65**

*** p<0.01; **p<0.1; *p<0.1 Reference categories take the value 1.00.

Model 3: N=2151, using parental leave: 158 (7.4 %); the sample includes men aged 22-54 who live in heterosexual, dual-earner partnerships and have at least one child below the age of one in the family.

Likelihood ratio test (prob) 0.000***; McFadden's PseudoR^2 : 0.075.

Sources: Federal Statistical Office (2007a); own calculations and illustration.