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# Individual Performance and Employment

## Behavior After Maternity Leave: Evidence based on Company Data

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Preliminary Version, please do not quote!

**Abstract:** We analyze maternity leave durations, transition probabilities within a competing risks model and exit probabilities after maternity leave. Our sample exists of 1200 first-time mothers working in a large German company. With personnel data we observe employment histories with specific information about for instance working time and wage developments. We estimate cumulative incidence functions in order to analyze the probabilities to move into different exit states. Results show that women get their first baby when they reach the peak of their career. Less than 50 percent of all first-time mothers return to the employer within the first four years after birth. The probability to return is higher for better performing mothers who have a higher attachment to the company. These women also exhibit lower exit probabilities afterwards. These findings show that human resource strategies to reintegrate young mothers after birth are not optimal and further analyzes have to be done.

**JEL-Classification:** J13, J22, M50

**Keywords:** female employment behavior, maternity leave durations, personnel data

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# 1 Introduction

The reintegration process of first-time mothers during and after maternity leave is one of the main challenges for human resource management in firms. Due to increasing female employment rates - especially of high qualified women - and skill shortages in many economic areas it is more and more important for firms to reintegrate female employees shortly after the birth of a child. The more a firm has invested into the firm-specific human capital of a woman the more it suffers from losing this knowledge due to childbirth. The success of reintegrating mothers after childbirth depends highly on the support for the work-life-balance of its employees. Several studies stress the negative impact of work-life conflicts respectively the positive impact of work-life facilitation on individual behavior and firm performance.<sup>1</sup> Steenbergen and Ellemers (2009) for instance find that work-family conflicts reduce individual productivity and lead to increasing health problems. Firms react differently on these challenges, some offer direct work-life-balance measures, others try to implement a company culture that leads to higher commitment of the workforce. In some firms work-life-balance depends on the direct leader-employee relationship. Major et al. (2008) find all these supportive instruments to have a significant impact on work interferences with family. In contrast, Ngo et al. (2009) state that the positive correlation of family friendly work practices on the firm performance and employee turnover rate is only driven by the positive impact of the overall firm climate. A similar result is found in Taylor et al. (2009) where formal work-family policies have no significant impact on work-life conflicts or facilitation.

For employees - besides the family life - the work life changes dramatically with the birth of a child, especially when it is the first child. Even women with a high attachment to the labor market may change their preferences and claim for work-life-balance measures. For example, time constraints due to child-care needs lead to lower flexibility at the workplace. In Germany only 13.6 percent of all children younger than three years have the possibility to visit formal daycare institutions (Federal Youth Survey 2006).<sup>2</sup> Although, fathers are also allowed to take long maternity leave breaks their participation in maternity leave is still very low. Additionally, 38.6 percent of women work part-time whereas only 8.2 percent of working men are in part-time jobs (OECD 2008). Hence, young mothers who participate in the labor market are in need of flexible working arrangements and good child-care availabilities but

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<sup>1</sup>Most of the studies are not able to solve the causality problem, hence results should be interpreted as correlations instead of actual causal effects.

<sup>2</sup>For more information on German daycare provision see Mühler (2008).

they also want to have the same career chances as their childless colleagues.

Both mothers and firms are interested in a good integration process after birth. Whether and how this process works is analyzed quantitatively in this paper. The main question is whether an employer is able to reintegrate those women who performed well before birth. We analyze maternity leave durations, the transition probabilities after a break and the exit probabilities after returning to the current employer. With multivariate estimations the determinants of returning to or leaving the company are analyzed with a special focus on pre-birth performance. The underlying hypothesis is that a good pre-birth match affects the return probability positively and the exit probability negatively.

In Germany the female participation rate has been increasing in recent decades but with 64.3 percent (OECD 2008) it is still low in international comparison. Fitzenberger and Wunderlich (2004) argue that the increase in female participation rates is mainly due to demographic effects and increasing part-time employment after childbirth. For German mothers Geyer and Steiner (2007) as well as Sommerfeld (2009) find a huge reduction in labor supply directly after childbirth which is never caught up in the following employment history. One reason is the generous maternity leave duration that was extended between 1986 and 1992 from six months to three years. Schönberg and Ludsteck (2007) as well as Ondrich et al. (1999) show that each increase in the job protection period led to a delay in the actual return of young mothers to their workplace. Hence, for German employers and employees the duration of the maternity leave break is important for the reintegration process. For instance, our data show that 12 percent of all first-time mothers leave the company directly after maternity leave. Schönberg and Ludsteck (2007) show that many women who return to their pre-birth employer exactly when the job protection period expires, leave the company 1 or 2 months later.<sup>3</sup> This leads to the assumption that longer maternity leave periods encumber the reintegration process and thus increase the exit probability after the return to the employer. The long availability of job protection leads to another phenomenon namely a relatively high percentage of second births within the first employment break. In our sample more than 40 percent of all women get a second child before they leave the first maternity leave spell. From an economic perspective this is a huge number since employment breaks are even longer than three years for these women. The direct transition from one maternity leave spell to another maternity leave spell should thus be taken into account when analyzing employment behavior after the birth of a child.

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<sup>3</sup>Whether the exit is forced by the women or the employer cannot be observed in the data.

For a better understanding of the return choices of women after birth, it is important to know something about the fertility decision of the observed mothers. On the one hand, women anticipate huge career drops after the birth of a child and thus act rational investing less in their pre-birth career or bringing forward the birth decision. On the other hand, they could anticipate to have no career prospects once they are mothers and hence delay the birth of the first child.<sup>4</sup> However, from the view of the employer it makes a difference if a woman gets a baby when she is at the beginning of her career or already on a higher level of her career path. In the first case investments in firm-specific human capital are still low and thus sunk costs from maternity leave break and from the possibility that she finally leaves the company are low, too. In the second case these costs are high and the company is more interested to keep this woman. This raises the question at which point in their career women working in the observed company decide to get the first child. In order to answer this, we compare pre-birth careers of first-time mothers with careers of comparable non-mothers in a first step.

We use personnel data of a large German company acting in the finance sector. The company is a good example because it offers a wide range of direct and indirect work-life-balance measures like for instance a newsletter for parents in maternity leave or advice and support for the search of daycare. Due to high wages and other popular HR practices the firm is seen as an attractive workplace and quit rates are relatively low (the female turnover rate is on average around 5 per cent). This leads to the assumption that the reintegration process in this company works well. The advantage of using one-company data is that human resource policies are the same for all women, i.e. results are not biased through employer heterogeneity (see Ichniowski and Shaw 2010 and Bartel et al. 2004). Furthermore, besides information about age, qualification, wage groups and tenure we are able to define very precise information about working times during and after maternity leave, hierarchies as well as promotions before birth.

The remainder of the paper is as follows: In the next section we derive hypotheses that we want to analyze in the empirical part. In section 3 the German institutional settings are introduced and section 4 discusses the data and gives first statistical summaries. The econometric approach is described in section 5 and empirical results are discussed in section 6 followed by the conclusions.

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<sup>4</sup>Actually, it is often assumed that career oriented women exhibit lower fertility rates and thus selectivity should be taken into account in empirical research.

## 2 Hypotheses

A common instrument to facilitate work-life-balance is part-time work. One has to distinguish between part-time work during maternity leave and thereafter. German legislation allows parents to work part-time while they are on maternity leave in order to give an incentive for an early return. On the other hand, part-time work is often seen as a negative signal, because these women are only working for financial reasons and have low motivation to perform well. Besides wage cutoffs due to employment breaks, part-time work can also lead to long lasting wage penalties (Connolly and Gregory 2009). Many women do not want to work fulltime even if they could, as Booth and van Ours (2009,2010) find for the Netherlands and for Australia. However, especially in Germany, where the availability of daycare for children is limited, fulltime jobs are often simply not eligible for mothers. Davey et al. (2005) finds for a sample of British nurseries, that a lot of part-time working women are highly committed to their employer, hence part-time work must not necessarily be a signal for a lower labor market attachment.

In our specific sample, around 30 percent of the mothers make use of the opportunity to work part-time during maternity leave. If a mother works part-time during maternity leave this does not imply that she remains in a part-time employment after her maternity leave period has expired and vice versa. We argue that part-time during maternity leave rather shows a positive sign towards high labor force attachment. Accordingly, we derive the hypothesis

H1: working part-time while in maternity leave has a positive impact on the reintegration process.

In the introduction we already discussed the relevance of the timing of first birth with regard to the career. Two aspects are important in this context. First, the impact of the career orientation on the mother's post-birth behavior. We assume that a higher career orientation leads to better pre-birth performance and to a better reintegration process after birth, i.e. shorter maternity leave durations and higher return probabilities as well as lower exit probabilities after the return. Second, the attachment of a woman to the employer is important for the integration process. If both, the employer and the employee build a good match individual performance as well as career prospects are high and the exit probability is low. We assume that a high match quality leads to a better reintegration process.<sup>5</sup> We

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<sup>5</sup>How we measure career orientation and match quality is described in section 4.

thus derive hypothesis

H2: a high attachment to the employer has a positive impact on the reintegration process.

In the meantime it is a stylized fact that employment breaks due to the birth of a child lead to wage and career penalties (for German evidence see Beblo et al. 2006, Kunze and Ejrnaes 2004 and Schönberg and Ludsteck 2007; for international evidence see Herr 2007, Davies and Pierre 2005, Datta Gupta and Smith 2001, Budig and England 2001 and Waldfogel 1998). For instance, according to Kunze and Ejrnaes (2004) one year of maternity leave leads to a wage cut of 12% for a medium skilled woman in West Germany. Beblo et al. (2006) find that West-German mothers who return to full-time employment after a maternity leave break, face a wage cut of around 18%. On the one hand, the higher the pre-birth wage income the higher are opportunity costs for employment breaks which lead to hypothesis

H3a: high pre-birth wages lead to shorter maternity leave durations and higher return probabilities.

On the other hand, women with low pre-birth wages could be in need of financial resources and thus we derive hypothesis

H3b: low pre-birth wages lead to shorter maternity leave durations and higher return probabilities.

After maternity leave mothers get lower wages due to human capital depreciation. A higher amount of human capital leads to a higher depreciation of human capital during employment breaks. Additionally, high educated mothers face anyway higher wage losses during maternity leave, as argued above. Both factors lead to hypothesis

H4: the higher the education, the shorter the duration of maternity leave.

On the other hand, low education can be associated with low wage which leads to a shorter duration of maternity leave according to hypothesis 3b. This wage effect is counteracted with a longer maternity leave duration due to less depreciation of human capital compared to high educated individuals. Which effect dominates is unclear.

Human capital cannot only be generated through time and money spent for education. Human capital can also be generated through tenure. More tenure leads to higher wages,

which leads to shorter periods of maternity leave according to hypothesis 3a. The opportunity cost of not working are higher, due to higher income loss and higher human capital depreciation during maternity leave. The same holds for age, because there is a relation between age and tenure. Additionally, Lauer and Weber (2003) suggest that labor market oriented women delay the birth of their first child. Therefore, old age and long tenure at the birth of the first child could indicate high job attachment. This kind of women will return faster to the labor market after childbirth, according to the findings of Djurdjevic (2005) in her analysis with Swiss data. This leads to hypothesis

H5a: mothers with long tenure and old age, will make a short maternity break.

Human capital depreciation during employment breaks could also be very harmful for young mothers with short tenure. They would have to discount the loss in income over the rest of their entire lifetime. Therefore, a woman could decide to provide labor, even though her reservation wage is higher than her market wage. In such a case, the expected loss of discounted future earnings would be higher than the gap between the reservation and the market wage. Due to her earlier return, the mother will receive a dynamic rent as it is included in learning-by-doing models. These kind of models change the nature of optimal labor supply decisions, according to Blundell and MaCurdy (1998). Our final hypothesis states

H5b: the duration of maternity leave will be short for mothers with short tenure and young age.

### **3 Institutional settings**

German maternity institutions are relatively generous compared with other countries. For instance, it is possible to take maternity leave for up to three years which is one of the longest leave periods in western countries. In the economic literature it is often discussed that this long period is one of the reasons for the low labor market participation of German mothers (as an example see Ondrich et al. 1999). In order to give incentives for shorter real maternity leave breaks, in 2007 the German government introduced the so called parenting benefit (Elterngeld). It allows parents to receive 67 percent of their pre-birth net labor income (at



maximum 1,800 Euro per month) for up to 14 months.<sup>6</sup> Because our observation period covers the time period before parenting benefit was introduced we give a short overview about the institutions which existed during this period.

In general German maternity institutions are twofold. First, job protection during maternity leave break guarantees the mother to return to the pre-birth employer after the break. Second, financial benefits are paid as a compensation for child care efforts and financial penalties due to maternity leave breaks. Additionally, there are two different laws regulating when mothers have to or are allowed to take maternity leave breaks. The first is the "Maternity Protection Law" (Mutterschutzgesetz) which allows women to take a break from employment six weeks before and eight weeks after birth in order to protect her and the baby's life.<sup>7</sup> During this period the mother receives her full net labor income which is financed partly by the employer and partly by the health insurance.

The second is the "Parental Leave Law" (Elternzeitgesetz) which regulates the maternity leave job protection period and financial compensation during this period.<sup>8</sup> Job protection guarantees the parents to return to a comparable job which must not be the old workplace. Parents are allowed to take the job protection period until their child has reached its third birthday. Additionally, twelve months can be delayed until the child reaches the age of eight. According to the "Parental Leave Law", maternity benefits are paid if the parent on leave does not work more than the allowed amount of hours, lives in the same household and cares predominantly by itself for the child. Before 2001 a parent on maternity leave was allowed to work 19 hours a week at maximum. In January 2001 this upper bound was extended to 30 hours. Until January 2007 the parent on leave had the choice between receiving 300 Euro per month during the first 24 months or 450 Euro per month during the first 12 months. This maternity benefit was means-tested, i.e. it was paid to families with an annual net income less than 30,000 Euro in two-parent households and 23,000 Euro in single-parent households. Six months after birth these boundaries decreased to 16,500 (13,500) Euro plus 3,140 Euro for each additional child. Additional to maternity benefits families receive a monthly child allowance for dependent children of nowadays 184 Euro for the first and second child, 190 Euro for the third child and 215 Euro for the fourth and

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<sup>6</sup>The income basis is the average of the last 12 months before birth. If only one parent takes maternity leave parenting benefit is paid for 12 months and if each parent takes at least 2 months maternity leave parenting benefit is paid for 14 months.

<sup>7</sup>The post-birth break is obligatory whereas for the pre-birth period a women can apply for an exemption. In the case of giving birth to twins the after-birth period is extended to twelve weeks.

<sup>8</sup>Parents can partition maternity leave as they want. Since after-birth maternity protection is accumulated, the maximum leave period for fathers is three years minus maternity protection after birth.

all other children. Instead of the child allowance families can choose a tax exemption for dependent children which is more attractive for high income families.

According to a special company agreement parents working in the observed company are allowed to extend maternity leave up to 3.5 years and in some cases even up to 4 years. This agreement is valid since the beginning of the nineties and as it can be seen from the data it is used widely by company's mothers.

## 4 Data

We use personnel processing data from a large German company operating in the service sector. The observation period is June 2000 until March 2008. The data contains employment information of 13,744 individuals from whom we observe a 100 percent sample of 6,744 mothers who went at least once into maternity leave during the observation period and a random sample of 7,000 women who did not go into maternity leave during their employment between 2000 and 2008. The data set is provided in different files containing general information (master data), wage information, information about education, about working time and the birthday of the children.

The master data contains reports that are drawn from input data which personnel staff give into the system when something referring to the employee or the position the employee holds has changed. It involves information about the current employment category of the employee, the event why the input took place and two variables indicating the reason for the event. Additionally, the master data provides the birthday and whether the employee has a corporate title. Information about the occupation, the burden center and the position are also available, but are not used in this analysis. For every report the date when the input took place is known thus, employment histories can be derived from the data. The observation period begins in 2000 but for every woman the beginning of the employment relationship is documented.

The exact birthday of a child born during employment at the company is provided in a separate data file. It contains the birthday of 9,854 children. On average around 800 children are born per year. Unfortunately, there is no information about the exact birthday of the children before 2000. For those children the first day of the respective month is always used as the birthday. We observe one or more births from 6,018 mothers. Since the data include

6,744 mothers who were in maternity leave during the observation period information about births of 726 mothers are missing. Table 1 gives an overview of the number of children born per mother during her employment in the company. Over 90% of all mothers do not give birth to more than 2 children during the observation period.

After the different data files were put together we identify employment histories of 13,689 individuals with the help of 241,322 observations. Thereof, we observe 5,723 maternity leave periods which start after June 2000. We keep only women who have a regular employment before maternity leave, i.e. we drop apprentices, student apprentices and women with temporary contracts. For the empirical analysis all maternity leave periods which started after July 2004 were dropped, because otherwise the results would be biased due to right censoring (women who did not return from maternity leave until March 2008 are censored). Furthermore, we only analyze first births during employment in the company. Finally, we end up with 1,509 maternity leave spells. Summary statistics of the observed individual characteristics and their frequencies according to the exit states are displayed in table 5 in the appendix. In the following we introduce those characteristics that need a special description.<sup>9</sup>

## Wages

Since most of the wages paid by the company are negotiated in collective agreements we do not have information about individual wages but about the wage group an employee belongs to and the respective experience levels. Wages are determined by nine different collectively agreed wage groups and four non-collectively agreed wage groups, the latter are wage levels above the former and are related to the corporate titles. The experience level depends on tenure and is the second factor that determine the current collectively agreed wages.

The wage information is organized similar to the master data, i.e. when a change takes place we observe a report at that date. Fortunately this data starts before 2000 thus, for every woman we are able to observe wage profiles from the beginning of the employment relationship. As it can be seen from table 2 in the appendix, most observations lie between agreed wage group 5 and 8. The non-agreed wage groups are filled with less observations especially the two highest groups. However, we observe enough women in order to get interesting results for this groups of employees.

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<sup>9</sup>This excludes the variables age and tenure whose summary statistics can be seen in table 5

For the empirical analysis we created three dummy variables that indicate to which wage groups the individual belongs. Women belonging to collectively agreed wage groups 1 and 6 are assigned to the lowest wage groups ( $wage_1$ ), those belonging to collectively agreed wage groups 7 to 9 are allocated to the medium wage groups ( $wage_2$ ) and women who belong to the four non-collectively agreed wages are attributed to the highest wage groups ( $wage_3$ ). Thus, most individuals are assigned to the lowest (48%) and about 20% are assigned to the highest wage groups.

Since we can observe the wage group from the beginning of the employment we generate two variables that should indicate the attachment as well as the productivity of an employee. The average promotion since entrance into the company is the difference between the salary groups at the day of childbirth and at the day of entry into the company over the tenure until childbirth. This average is scaled into three groups. Mothers who are on average promoted by one wage group less than every 5 years ( $prom_1$ ). Mothers who are promoted between every second and every fifth year on average ( $prom_2$ ) and mothers who are promoted more often than every second year ( $prom_3$ ) on average.

## Education

The education file contains three variables which give information about school education, vocational training, academic studies and further training. The education information is the only data file which is not provided in a panel setting. The employees are motivated to record when they reached a new education degree. Thus, the available information should be the highest degree a person has ever reached. However, it remains unclear when the data is updated. Unfortunately, information is missing for some employees especially those women who left the company after maternity leave.<sup>10</sup> We imputed missing education information by calculating a person's probability to have a certain education degree. For the empirical analysis we quadruplicate these individuals, allocate to every observation a certain education degree and weight the observations with the mentioned probabilities.<sup>11</sup> As can be seen in table 3 the education distribution with and without imputed information is similar for the group of the mothers who are observed in the empirical analysis. Since we are interested in professional degrees we exclude schooling information from the analysis.

<sup>10</sup>The education information is available for 10,154 and missing for 3,590 individuals.

<sup>11</sup>Individuals with available education information get weight=1.

## **Individual Performance**

We are able to define three different performance measures. Since we can observe the wage group from the beginning of the employment, we generate a variable that should indicate the attachment as well as the productivity of an employee. The average promotion since entrance into the company is the difference between the wage groups at the day of childbirth and at the day of entry into the company. This average is scaled into three groups. Mothers who are on average promoted by one wage group less than every 5 years. Mothers who are promoted between every second and every fifth year on average and mothers who are promoted more often than every second year on average.

Furthermore, with the help of the data set we can identify employees in a leading position. We define a leading position as a position with personnel responsibility. Mothers in a leading position are assumed to have a good career performance. In table 5 it can be seen that these positions are rare for young women who have the potential to get pregnant.

Finally we are interested in a variable that compares the pre-birth career of a mother to similar females. Therefore, we condition on all available covariates and estimate the conditional probability that a mother is in a specific wage group. We repeat this for each wage group separately. Afterwards, we take the sum of all wage group probabilities which are lower than the actual wage group. Accordingly, we have the probabilities of already exploited wage groups or the relative wage position of a mother. If the relative wage position of a mother is high, many comparable females are in lower wage groups. Hence, the woman has a good past career performance.

## **Part-time during maternity leave**

Similar to the wage information we have no direct information about working hours but about the full-time equivalent (FTE). This variable does not only contain information about whether a woman is working part-time, but indicates the actual time spent on work. Zero means that the person is not working at all (e.g. during maternity leave) and one means that the person is working full-time.

As mentioned in the previous section the German maternity leave legislation allows women to work part-time during maternity leave. In our sample about 30 percent of all first-time mothers make use of this possibility. Unfortunately, we cannot observe whether

a women works part-time at her current workplace or is temporarily employed at another workplace. But solely the occurrence of part-time work reduces the depreciation of human capital due to the employment break and is a strong signal to the employer. For these reasons we define part-time during maternity leave as one of the various exit states and estimate the determinants for the probability that a woman chooses this way of reintegration.

## 5 Econometric Approach

Our empirical analysis analyzes the duration of maternity leave and the transitions to various exit states. Furthermore, we analyze the stability of employment after return to the firm and we account for the case that mothers may work part-time during their maternity leave spell. In the following, we formalize these transitions as the outcome of a two step competing risks model with multiple exit states. We do not think that we have sufficient identifying information to estimate the complex competing risks model, i.e. the hazard rates for the different exit states. Therefore, we resort to estimate the cumulative incidence for the transitions of interest.

### 5.1 Competing Risks Model

Our empirical analysis is based on a sample of employees who start a maternity leave spell after the birth of their first child. We are interested in modelling the following duration variables

$T_m$ : duration of maternity leave

$T_{eam}$ : duration of employment after return to firm and end of maternity leave

and we take account of different exit states. It is possible to work part-time at the firm during the maternity leave. Thus, we also take account of transitions into this state.

The first transition out of spell of maternity leave without part-time employment may occur to one of the following four exit states:

1. leave the company ( $T_{ml}$ )

2. next child ( $T_{mc}$ )
3. return to employment after maternity leave ( $T_{me}$ )
4. part-time employment during maternity leave ( $T_{mp}$ )

where  $T$  denotes the respective duration until the transition.

We treat both exits 1 and 2 as absorbing states for which we do not follow mothers after the exit from their first maternity leave. Even though we could follow the mother after exit 2 (in contrast to exit 1), we exclude this case from our analysis. This is because of a small sample size and because the length of second maternity leave spell may extend beyond the end of our sample period.

For exit state 3, we analyze the possibly right censored duration of employment after return until the exit to one of the exit states 'leave the company' and 'next child'.

Exit state 4 is a transient state during the maternity leave spell because it lasts at most until the maximum length of maternity leave. Mothers can exit to the three states 'leave the company', 'next child', and 'employment after maternity leave'. Analogous to exit state 3, we also analyze the possibly right censored duration of 'employment after maternity leave' in this sequence. We do this both for this sequence and for the sample involving this sequence and exit state 3 above (i.e. the union of all sequences ending in a return to employment).

The observed duration of maternity leave without part-time work ( $T_{ml1}$ ) is given by the duration until the first transition, i.e.

$$T_{ml1} = \min(T_{ml}, T_{mc}, T_{me}, T_{mp}) .$$

The observed total duration of maternity leave ( $T_m$ ) also involves the possible duration of part-time work during the maternity leave spell. Thus, we have a stage competing risk model, where

$$T_m = T_{ml1} + I(T_{mp} < \min(T_{ml}, T_{mc}, T_{me}))\min(T_{pe}, T_{pc}, T_{pl}) .$$

The observed duration of employment after the end of a maternity leave spell – with or without part-time work during the maternity spell – is given by

$$T_{eam} = \min(T_{ec}, T_{el}) .$$

Overall, our model involves in total three competing risks models with different exit states. Given the data available, it does not seem feasible to estimate the selection at the various stages based on credible identifying assumptions. Therefore, we resort to estimate the cumulative incidence for all exits of interest conditional on the selection of individuals observed in the data to start a certain spell.

## 5.2 Cumulative Incidence

For each transition considered above, we have up to four exit states. Let  $J$  be the number of exit states, then the observed duration  $T$  in one state is given by  $T = \min(T_1, \dots, T_J)$ . The cumulative incidence for exit destination  $j = 1, \dots, J$  is defined as (see e.g. Arntz et al., 2007)

$$Q_j(t) = P(T_j \leq t, T_j < \min_{i \neq j} T_i) . \quad (1)$$

$Q_j(t)$  is the probability for an observation in the initial sample, i.e. the mothers starting in the respective state, that an exit to destination  $j$  is observed until time  $t$ . For  $t$  growing,  $Q_j(t)$  converges to the total probability of an observed exit to destination  $j$ , and the limit is below one, when transitions to multiple exit states occur.

The cumulative incidence function is identified in the data because it just describe the distribution of transitions observed in the sample. No further identifying assumptions are required.

In our empirical analysis, we graphical illustrations of the sample estimates of  $Q_j(t)$ , i.e. the shares of those who have exited to destination  $j$  by time  $t$ . We show these nonparametric estimates both for the entire sample and for different subgroups of interest. Furthermore, to account for the effects of the mothers's characteristics, we estimate probit models for the cumulative incidence function, where  $Q_j(t)$  is specified as a flexible function of observed covariates at the beginning of the spell and the time variable  $t$ . This way we estimate the interaction between covariates and time since beginning of the spell.



## 6 Empirical Results

### 6.1 Pre-birth career and fertility decision

In this section we analyze the question whether women get children early in their career or later on and whether the timing of the fertility decision depends on the career path. The data allows to compare the pre-birth career paths of first-time mothers with the career paths of women with similar characteristics (education, tenure, age) but who are still no mother. We run OLS-regressions with the current wage group as the dependent variable, Dummy variables for the time before birth (the reference group are women who we do not observe to get a child) as independent variables. Several other covariates like age, tenure and year are included in order to control for heterogeneity. Figure 1 shows the effect of getting a child between four and zero years before birth on the current wage group. Surprisingly, the curve increases above zero and stays there until half a year before birth. Obviously, those women who are going to get a baby earn significantly more compared to women in the same company who are not getting a baby but are comparable with regard to other characteristics. This could either mean that at the peak of their career women decide to have a family or women decide to reach a certain career level until they get a first baby.

### 6.2 Duration of Maternity Leave

Figure 2 shows the employment behavior of first-time mothers working in the company around their first birth. Point zero on the x-axis displays the birth. The curves on the left hand side reflect the employment rates before birth and the curves on the right side reflect the percentage of all women who gave birth to a child and left maternity leave into one of the cited destination states. In the first graph the curves represent the employment behavior of women who leave the company directly after maternity leave, give birth to a second child during the first maternity leave spell or return to the workplace after maternity leave. Only 47 percent of all first-time mothers return to the workplace, 41 percent give birth to a second child and 12 percent leave the company directly. The latter group exhibits remarkably shorter tenure before birth compared with all other women. This is first evidence for the hypothesis that women with a higher attachment to the company have higher return probabilities.

However, according to the patterns of after-birth curves, legal maternity leave possibilities are used to a high extend. After two years only about a third of those mothers who return to the workplace already left maternity leave and one year later still 40 percent of this group is in maternity leave. From all women who leave the company finally, more than 50 percent are still in maternity leave after three years.

Next we take a look at women who work part-time during maternity leave and whether they exhibit shorter maternity leave periods. The second graph shows the employment behavior for women who work part-time during maternity leave and those who did not work during maternity leave and moved directly into the next state. Overall, around 30 percent of all first-time mothers worked part-time during maternity leave. Two years after birth around 20 percent and three years after birth around 60 percent of these women left maternity leave. 30 percent of all women return to the workplace without working part-time and it's maternity leave duration is comparable to all mothers who return.

In order to look whether part-time during maternity leave extends maternity leave durations the third graph of figure 2 shows the employment behavior of all women who worked part-time during maternity leave according to their destination states. Overall, 57 percent of these women return to the workplace, 38 percent give birth to another child and 5 percent (only 23 women at all) leave the company directly after maternity leave. The most interesting group to compare are those women who return to the workplace. The main question is whether part-time work leads to shorter or longer maternity leave periods. In the first case it could be used as a probation period for women who are highly attached to the labor market but are unsure whether work-life-balance is possible with an early return. In this case part-time during maternity leave could be seen as a good instrument to reintegrate young mothers. In the second case women show also attachment to the labor market but they also keep the possibility to work zero hours again and return finally after a long period of maternity leave. Additionally, there is the possibility that these women work temporarily in other workplaces but the current one. The results show that two years after birth around 20 percent and three years after birth around 60 percent of women who work part-time during maternity leave and return to the workplace left maternity leave. This means at the beginning less women left maternity leave but after three years the fraction is similar to those women who did not work part-time during maternity leave.

In the multivariate analysis we estimate the probabilities of moving into one of the destination states and the impact of individual characteristics on these probabilities. Before

we discuss these results, Figure 3 shows some maternity leave durations in order to get an insight how certain characteristics have an influence on the employment behavior after birth. The graphs are similar to those shown in figure 2, but here only the durations of first-time mothers who return to their workplace after maternity leave is shown.

First of all we look at the durations for different age groups. As expected the group of women between 30 and 34 is the largest group. It stands out that in the youngest age group already around 45 percent of all women return after two years and 70 percent after three years. On the contrary, the percentages of the oldest age group are 21 and 53 percent, respectively. Obviously, older women take longer maternity leave breaks. With regard to tenure the group with 6 to 11 years of tenure is the largest. The percentages of all women who left maternity leave after two (three) years are 69 (40) for the low-tenure group, 66 (32) for the medium-tenure group and 54 (29) for the long-tenure group. Again, the "youngest" (with respect to tenure) exhibit shorter maternity leave periods.

Next we discuss the maternity leave durations for the different education groups.<sup>12</sup> The group of women with vocational training is the largest, those without a training degree and those with an academic degree are relatively less. Whereas women with training and women with training plus academic degree exhibit similar return rates, women with only an academic degree seem to return slightly faster and those without professional training slightly slower. The last characteristic we look at is the wage group where almost one half of the women are in the lowest wage groups. Surprisingly, we hardly observe differences between the three groups with regard to their maternity leave durations.

### 6.3 Transition probabilities for different exit states

The aim of this study is to find out whether women who performed better than their colleagues have a higher attachment to the company and thus higher probabilities to return and lower probabilities to leave the company after maternity leave. With multivariate estimations we can control for other characteristics and explore the impact of individual performance before birth. However, since the impact of other characteristics is also interesting table 7 shows the coefficients for the whole specification excluding the time dummies. We run estimations for the exit states return directly (without working part-time during maternity leave), leave directly, next child directly, part-time (during maternity leave), return after part-time, next

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<sup>12</sup>Note that the results are weighted in order to capture the imputation of missing education information.

birth after part-time. Because the number of observations for leave after part-time is too low (23 women at all) we do not run this regression. With the available variables we tried different specifications since some are expected to exhibit multicollinearity. But the exclusion or inclusion of different groups of covariates did not change the single results, thus, we only show results where we included all available covariates together.

Obviously, some covariates have no significant impact on the transition probabilities although an impact could clearly be expected. For instance the age has no influence on the return or leave probabilities for women who did not work part-time during maternity leave. Older women who work part-time exhibit a lower probability to return after maternity leave and a higher probability to give birth to the next child while in maternity leave. Since older women generally are more experienced and have accumulated more human capital their attachment to the labor market could be higher. Additionally, due to biological reasons they have an incentive to faster get pregnant again. Thus, first working part-time during maternity leave to keep attached to the employer and second get the next child very fast seems to be reasonable for older women. In the graphical analysis we find older women to take longer maternity leave periods which overall seem to have no impact on the leave probability.

Women who did not work part-time during maternity leave have lower probabilities to leave the company when they have longer tenure. This effect is even increasing with tenure. Since tenure can be seen as a proxy for the quality of the employment match and thus, for the attachment to the employer this result was expected although it is surprising that tenure has no significant impact on the other exit states.

According to the highest education degree there is no clear expectation for the transition probabilities. From human capital theory we assume that higher education leads to shorter employment breaks and the attachment to the labor market is higher. Whether education has an impact on the attachment and thus on the transition probabilities is not analyzed theoretically. For women with vocational training plus university degree who do not work part-time during maternity leave we find a positive impact of 5.7 percent on the probability to get pregnant again.<sup>13</sup> On contrast, women with vocational training exhibit a 10 percent lower probability to get pregnant again. Moreover, women with vocational training who work part-time during maternity leave exhibit lower probabilities to return or give birth to a next child afterwards.

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<sup>13</sup>The reference group are women without professional training.

Next, we discuss the results for the different wage groups. It stands out that there are no significant differences for the transition probabilities after part-time during maternity leave. However, the probability to work part-time during maternity leave increases with the wage group. This could either indicate that high wage earners are needed and thus the company asks for participation during maternity leave or these women use part-time as a probation period for later return. Surprisingly women in the highest wage groups also exhibit a slightly higher probability to leave the company directly. This could be due to better outside options which we unfortunately cannot observe. However, the coefficient is relatively low.

The variables we included as proxies for individual performance are expected to have a positive impact on the return probabilities and a negative impact on the leave probability. The reason is the strong attachment to the employer a woman should have when she performed well. Moreover, the employer should have a big interest to keep these women and thus, the human resource management should have a special focus on these women. In fact, our results confirm our expectation but they are not as strong as expected. While the relative wage position has a significant positive impact on the direct return probability and a significant negative impact on the leave probability women who have been promoted above average exhibit no different probabilities compared to the reference group. Moreover, women with below average promotions exhibit a slightly higher probability of two percentage points to return directly and a 3.3 percentage points lower probability to work part-time during maternity leave. Women with a leading position again exhibit a higher probability of around three percentage points to return directly. These results even change when interaction terms between time and the other covariates are included in the estimation but the main conclusion remains the same.<sup>14</sup>

## 6.4 Employment durations after the return to the company

In this section we discuss the employment behavior of women after they returned to the company after maternity leave. The motivation for this analysis are the relatively high exit rates in the first years after maternity leave compared with overall average exit rates. Figure 4 shows the survival curves of women who returned to the employer. In the first graph the survival rates are separated according to the exit states. Around 20 percent of

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<sup>14</sup>These estimation results are not included in the paper but are available on request

the returned women leave the company within the first years after maternity leave. Recall that the average female exit rate during the observation period is between 4 and 5 percent. Obviously, the integration process is not terminated with the return to the company. In order to know which women exhibit such an unstable after-birth employment we plotted the survival curves for different characteristics. Women who give birth to another child are now excluded.

Young women and women with less than 12 years of tenure exhibit higher exit rates than older and long-tenure women. For both groups the attachment to the employer could be lower which is a reasonable explanation. Besides the main characteristics we already included in the previous section, the behavior during maternity leave could also have an influence on the employment after maternity leave. Thus, we show the survival rates for mothers separated by their maternity leave durations. Surprisingly, those women who returned very fast namely within the first two years after birth have similar survival rates as their colleagues who stayed longer than three years in maternity leave. The best integration works for women with maternity leave durations between two and three years.

## 6.5 Exit probability after the return to the company

In table 8 the estimation results for the exit probability after return from maternity leave are shown. As discussed above the employment behavior during maternity leave is expected to play an important role. Therefore, we estimated various specifications with information about maternity leave durations and part-time work as well as part-time duration. The coefficients of the conventional covariates are robust to the different specifications. The exit probability decreases with age as already was seen in the graphical analysis. Women with vocational training and women in high wage groups have higher exit probabilities (in the latter group particularly those not working part-time as can be seen in the third column).

The individual performance is expected to have a negative impact on the leave probability which is confirmed by the estimations. The higher the average promotion since entry into the company the lower is this probability. But particularly the relative wage position has a notable impact. In the first two specifications the exit probability decreases by around 15 percentage points when the relative wage position increases from zero to one. This amount even increases to 19 percentage points in the third specification. Having a leading position has no significant impact.

As we mentioned before, two additional characteristics are important for these estimations. First, the previous maternity leave duration is expected to have a positive impact on the exit probability. On the one hand, mothers with long breaks are expected to have a lower attachment to the employer. On the other hand, the company could be interested in terminating the relationship due to high losses of human capital during the break. Second, women who worked part-time should exhibit more stable employment afterwards since they already proved the attachment to the employer and their human capital losses are presumably lower.

We include dummies for the duration of maternity leave as well as dummies for the duration of part-time work. Additionally, we include interaction terms for the duration of maternity leave and the occurrence of part-time during maternity leave. Finally, in the last column we present results for a specification with interactions between a part-time-dummy and all other covariates.

Obviously, the duration of previous maternity leave has no significant impact on the exit probability.<sup>15</sup> However, women who worked part-time during maternity leave and returned between the 31th and the 36th month after birth exhibit a decrease in exit probability of around 10 percentage points compared to women who returned in the first 18th months after birth (see the first column). Women who worked part-time and returned between the 19th and the 24th month display a 7 percent shorter exit probability. From the second column it can be seen that the duration of part-time work is positively related to the exit probability which is at first hand a counterintuitive result. However, including the duration leads to in absolute values higher and more significant negative coefficients of the interaction of part-time occurrence and maternity leave duration. The interpretation is as follows: part-time work during maternity leave leads to more employment stability afterwards especially for those who returned at the end of the second or the end of the third year after birth. But the longer a woman was in part-time (which depends on the whole maternity leave duration) the higher is the exit probability afterwards. The third column shows that the impact of working part-time is the same for almost all women. Exceptions are the positive impact of working part-time and having an academic degree and the negative effect of working part-time and being in the highest wage group.

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<sup>15</sup>This result remains robust even when the occurrence of part-time is excluded.

## 7 Conclusions

In this paper we analyze the employment behavior of young mothers with a special focus on their individual performance before birth and their attachment to the current employer. With personnel data from a large company detailed employment histories including maternity leave breaks can be displayed. With cumulative incidence functions we show maternity leave durations taking competing risks into account and estimate the determinants of various individual characteristics on the transition probabilities to different exit states. Since employment is relatively unstable after the return to the workplace, we analyze survival rates in the first year after maternity leave and estimate the exit probabilities in this period on individual characteristics.

Our results show that less than half of all first-time mothers return to the workplace and additionally, 20 percent of these women leave the company in the first year afterwards. The percentage of mothers who give birth to another child while they are in maternity leave is with 41 percent relatively high. Around 30 percent of all first-time mothers make use of the possibility to work part-time during maternity leave. This seem to be a successful way to return to the labor market especially for younger women. The exit probabilities after the return are dramatic, particularly for high-wage earners. To work part-time during maternity leave has also a positive impact on the employment stability afterwards. Probably, it is really used as a probation period and thus the company should motivate more women choose this way of reintegration.

As expected, the pre-birth performance measured for instance by the average amount of promotions since entry and the relative wage position has a positive impact on the return rate and a negative impact on the exit probability during and after maternity leave. However, results are not as clear as expected. Against the background of the overall low return rates, the loss of human capital due to births of children seems to be enormous. As most of the women get pregnant when they are at the peak of their career the loss is even higher. This result brings us to the conclusion that the loss of human capital due to childbirth is dramatic in this company. Unfortunately, there is no available data with which work-life balance measures could be evaluated quantitatively. Moreover, the lack of information about the mother's preferences and private circumstances makes it difficult to identify to which extend the company is in the position to deal with these problems.



## A References

- [1] Bartel A., C. Ichniowski, K. Shaw (2004), "Using "Insider Econometrics" to Study Productivity", *American Economic Review*, Vol. 94, No. 2, pp. 217-223.
- [2] Beblo M., S. Bender, E. Wolf (2006), "The Wage Effects of Entering Motherhood, A Within-firm Matching Approach", *ZEW Discussion Paper*, No. 06-053.
- [3] Booth A., J. C. van Ours (2009), "Hours of Work and Gender Identity: Does Part-Time Work Make the Family Happier?" *Economica*, Vol. 76, No. 301, pp. 176-196.
- [4] Booth A., J. C. van Ours (2010), "Part-Time Jobs: What Women Want?", *IZA Discussion Paper*, No. 4686.
- [5] Budig M.J., P. England (2001), "The Wage Penalty of Motherhood", *American Sociological Review*, Vol. 66, No. 2, pp. 204 - 225.
- [6] Federal Youth Survey (Bundesjugendstatistik) 2006 - Vorlage für das Spitzentreffen der Jugendminister von Bund und Ländern am 02.04.2007. *OECD Employment Outlook 2008 - Statistical Annex*
- [7] Connolly S., M. Gregory (2009), "The part-time pay penalty: earnings trajectories of British women", *Oxford Economic Papers*, Vol. 61, pp. 76-97.
- [8] Datta Gupta N., N. Smith (2001), "Children and Career Interruptions: The Family Gap in Denmark", *IZA Discussion Paper*, No. 263.
- [9] Davey B., T. Murrells (2005), "Returning to work after maternity leave: UK nurses' motivations and preferences", *Work, employment and society*, Vol. 19, No. 2, pp. 327-348.
- [10] Davies R., G. Pierre (2005), "The family gap in pay in Europe: a cross-country study", *Labour Economics*, Vol. 12, pp. 469-486.
- [11] Djurdjevic D. (2005), "Women's Labour Supply after Childbirth: An Empirical Analysis for Switzerland", *Darmstadt Discussion Papers in Economics*, No. 144.
- [12] Fitzenberger B., G. Wunderlich (2004), "The Changing Life Cycle Pattern in Female Employment: A Comparison of Germany and The UK", *Scottish Journal of Political Economy*, Vol. 51, No. 3, pp. 302-328.

- [13] Geyer J., V. Steiner (2007), "Short-Run and Long-Run Effects of Childbirth on Mothers' Employment and Working Hours Across Institutional Regimes: An Empirical Analysis Based on the European Community Household Panel" IZA Discussion Paper Series, No. 2693.
- [14] Ichniowski C. and K. Shaw (2010), "Insider Econometrics: A Roadmap for Estimating Empirical Models of Organizational Design and Performance", forthcoming as an NBER Working Paper.
- [15] Kunze A. (2002), "The Timing of Careers and Human Capital Depreciation", IZA Discussion Paper Series, No. 509.
- [16] Kunze A., M. Ejrnaes (2004), "Wage Dips and Drops around First Birth", IZA Discussion Paper Series, No. 1011.
- [17] Lauer C., A.M. Weber (2003), "Employment of Mothers After Childbirth: French-German Comparison" ZEW Discussion Paper, No. 03-50.
- [18] Major D., T. Fletcher, D. Davis and L. Germano (2008), "The influence of work-family culture and workplace relationships on work interference with family: a multilevel model", Journal of Organizational Behavior, Vol. 29, pp. 881-897.
- [19] Muehler, G. (2008), "Institutional Childcare - An Overview on the German Market", ZEW Discussion Paper No. 08-077, ZEW Mannheim.
- [20] Ngo H., S. Foley and R. Loi (2009), "Family friendly work practices, organizational climate, and firm performance: A study of multinational corporations in Hong Kong", Journal of Organizational Behavior, Vol. 30, pp. 665-680.
- [21] Ondrich J., C.K. Spiess, Q. Yang, G.G. Wagner (1999), " Full time or part time? German parental leave policy and the return to work after childbirth in Germany", Research in Labor Economics, Vol. 18, pp. 41-74.
- [22] Schoenberg U., J. Ludsteck (2007), "Maternity Leave Legislation, Female Labor Supply, and the Family Wage Gap", IZA Discussion Paper Series, No. 2699.
- [23] Sommerfeld K. (2009), "Older Babies - More Active Mothers? How Maternal Labour Supply Changes as the Child Grows", Schmollers Jahrbuch, *forthcoming*.

- [24] Taylor B., R. Delcampo and D. Blancero (2009), "Work-family conflict/facilitation and the role of workplace supports for U.S. Hispanic professionals", *Journal of Organizational Behavior*, Vol. 30, pp. 643-664.
- [25] Van Steenbergen, E. and Naomi Ellemers (2009), "Is managing the work- family interface worthwhile? Benefits for employee health and performances", *Journal of Organizational Behavior*, Vol. 30, pp. 617-642.
- [26] Waldfogel J. (1998), "The Family Gap for Young Women in the United States and Great Britain: Can Maternity Leave Make a Difference?", *Journal of Labour Economics*, Vol. 16, No. 3, pp. 505-545.

# Appendix

## Tables

Table 1: Number of children born per mother during her employment in the company.

Number of Children	Frequency	Percent
1	2,762	45.90
2	2,752	45.73
3	440	7.31
4	55	0.91
5	6	0.10
6	3	0.05
Total Number of Children	9,854	

Table 2: Frequency of salary group and experience level (drawn from the original data set without any transformations; SG - Salary Group, NU - Non-agreed Wage Group).

Salary Group	Experience Level											Total	
	1	2	3	4	5	6	7	8	9	10	11		Missing
Temporary Personnel	0	0	0	0	0	0	0	0	0	0	0	315	315
Internship	0	0	0	0	0	0	0	0	0	0	0	507	507
Vocational Training	559	1,620	1,827	0	0	0	0	0	0	0	0	4,722	8,728
Collectively agreed wage 1	0	0	0	0	0	1	2	3	1	0	0	0	7
Collectively agreed wage 2	0	1	5	5	6	6	6	30	6	0	0	0	65
Collectively agreed wage 3	7	15	12	15	22	33	49	54	209	34	0	0	450
Collectively agreed wage 4	176	289	478	225	146	149	237	271	310	734	36	0	3,051
Collectively agreed wage 5	471	972	1,809	1,901	1,488	1,256	1,340	1,241	1,203	1,124	2,525	0	15,330
Collectively agreed wage 6	0	0	742	1,496	2,114	2,569	2,970	2,996	2,911	2,693	5,997	0	24,488
Collectively agreed wage 7	0	0	0	1	747	1,363	2,145	2,462	2,671	2,764	7,159	0	19,312
Collectively agreed wage 8	0	0	0	0	0	4	759	1,162	1,529	1,694	6,115	0	11,263
Collectively agreed wage 9	0	0	0	0	0	0	0	0	607	827	4,355	0	5,789
Non-collectively agreed 4	0	0	0	0	0	0	0	0	0	0	0	3,788	3,788
Non-collectively agreed 3	0	0	0	0	0	0	0	0	0	0	0	1,097	1,097
Non-collectively agreed 2	0	0	0	0	0	0	0	0	0	0	0	189	189
Non-collectively agreed 1	0	0	0	0	0	0	0	0	0	0	0	23	23
Total	1,213	2,897	4,873	3,643	4,523	5,381	7,508	8,219	9,447	9,870	26,187	10,641	94,402

Table 3: Frequencies and Percentages of highest education

	Frequency	Percent	Percent (weighted)
Missing	410		
No Professional Education	68	6	5
Vocational Training	575	52	53
Academic Degree and Vocational Training	343	31	31
Academic Degree	113	10	11

Table 4: Meta data file (all variables are dummies).

<b>Dependent Variables</b>			
<b>Characteristic</b>	<b>Variable</b>	<b>Description</b>	
Duration of Maternity Leave	<i>year</i> <sub>1</sub>	Dummy for return from maternity leave within the 1 <sup>st</sup> year	
	<i>year</i> <sub>2</sub>	Dummy for return from maternity leave within the 2 <sup>nd</sup> year	
	<i>year</i> <sub>3</sub>	Dummy for return from maternity leave within the 3 <sup>rd</sup> year	
Exit	<i>exit</i> <sub>1</sub>	Dum. for leaving job 1 year after return from mat. leave	
<b>Explanatory Variables</b>			
<b>Characteristic</b>	<b>Variable</b>	<b>Categories</b>	<b>Description</b>
Age Group	<i>age</i> <sub>1</sub>	Young Age	Aged under 30 years
	<i>age</i> <sub>2</sub>	Medium Age	Aged between 30 and 35 years
	<i>age</i> <sub>3</sub>	Old Age	Aged over 35 years
Tenure Group	<i>tenure</i> <sub>1</sub>	Short Tenure	Tenure under 6 years
	<i>tenure</i> <sub>2</sub>	Medium Tenure	Tenure between 6 and 12 years
	<i>tenure</i> <sub>3</sub>	Long Tenure	Tenure over 12 years
Wage Group	<i>wage</i> <sub>1</sub>	Low Wage Group	Up to collectively agreed wage group 6
	<i>wage</i> <sub>2</sub>	Medium Wage Group	Between collectively agreed wage group 7 and 9
Promotion	<i>prom</i> <sub>2</sub>	Seldom promotion	Less than once every 5 years on average
	<i>prom</i> <sub>2</sub>	Medium promotion	Once between 2 and 5 years on average
	<i>prom</i> <sub>3</sub>	Frequent promotion	At least once every 2 years on average

Table 5: Summary statistics for different characteristics by exit states (percentages are in parentheses)

Exit States	Return		Next Child		Leave		Total	
Total	713	(47.2%)	616	(40.8%)	180	(11.9%)	1,876	(100.0%)
Age								
Age $\leq$ 30	157	(22.0%)	84	(13.6%)	60	(33.3%)	301	(19.5%)
30 < Age $\leq$ 35	347	(48.7%)	293	(47.6%)	77	(43.8%)	717	(47.5%)
Age > 35	209	(29.3%)	239	(38.8%)	43	(23.9%)	491	(32.5%)
Tenure								
Tenure $\leq$ 6	132	(18%)	101	(16%)	60	(33%)	293	(19%)
6 < Tenure $\leq$ 12	313	(44%)	246	(40%)	72	(40%)	631	(42%)
Tenure > 12	268	(38%)	269	(44%)	48	(27%)	585	(39%)
Education (note that numbers are weighted)								
Without professional training	59	(6%)	55	(5%)	22	(3%)	146	(5%)
Vocational Train.	581	(57%)	520	(49%)	434	(58%)	1,525	(54%)
Univ. & Voc. Train.	282	(28%)	350	(33%)	211	(28%)	843	(30%)
Academic Degree	91	(9%)	142	(13%)	77	(10%)	307	(11%)
Wage Group								
Low Wage	350	(49%)	250	(41%)	105	(58%)	705	(47%)
Medium Wage	134	(19%)	165	(27%)	38	(21%)	337	(22%)
High Wage	229	(32%)	201	(33%)	37	(21%)	467	(31%)
Average Promotion Since Begin Employment								
Seldom Promotion	261	(37%)	198	(32%)	89	(49%)	548	(36%)
Medium Promotion	344	(48%)	305	(50%)	68	(38%)	717	(48%)
Freq. Promotion	108	(15%)	113	(18%)	23	(13%)	244	(16%)
Leading Position								
Leading Position No	686	(99%)	601	(98%)	179	(100%)	1,466	(99%)
Leading Position Yes	10	(1%)	10	(2%)	1	(0%)	21	(1%)
Relative Wage Position								
Mean	43.7		42.4		35.7		42.2	

Table 6: Average yearly exit rate of non-mothers

Period	Dropout Rate
2001 - 2007	4.87%
2002 - 2007	4.40%
2003 - 2007	4.81%
2004 - 2007	4.82%

Table 7: OLS estimations for different exit states (standard errors are in parentheses)

Variable	Return directly	Leave directly	part-time	Next birth directly	Return after part-time	Next birth after part-time
Age	-.025 (.020)	-.015 (.009)	-.018 (.024)	.014 (.014)	-.084** (.034)	.063** (.027)
Age squared	.000 (.000)	.000 (.000)	.000 (.000)	-.000 (.000)	.001** (.000)	-.001** (.000)
Tenure	.004 (.004)	-.018*** (.003)	.006 (.006)	.000 (.004)	-.006 (.007)	.000 (.007)
Tenure squared	-.000 (.000)	.001*** (.000)	-.000 (.000)	.000 (.000)	.000 (.000)	-.000 (.000)
University degree	-.002 (.031)	-.002 (.009)	-.025 (.045)	-.035 (.028)	-.128** (.056)	-.015 (.056)
Vocational training	-.032 (.025)	-.002 (.007)	-.042 (.037)	-.109*** (.022)	-.160*** (.045)	-.122*** (.043)
University and vocational training	.009 (.033)	-.001 (.011)	.033 (.048)	.057** (.030)	.114* (.058)	.064 (.056)
Lowest wage groups	.009 (.015)	.003 (.006)	-.052** (.021)	.014 (.013)	.023 (.027)	.014 (.025)
Highest wage groups	-.023 (.017)	.017*** (.006)	.093*** (.026)	-.000 (.014)	-.021 (.025)	.007 (.025)
Rel. wage position	.047* (.028)	-.055*** (.011)	.050 (.042)	-.070*** (.024)	-.047 (.048)	.004 (.045)
Promotion below average	.027** (.013)	.002 (.006)	-.033* (.019)	-.008 (.012)	-.030 (.022)	.025 (.022)
Promotion above average	.008 (.019)	-.005 (.008)	-.015 (.027)	.018 (.015)	-.019 (.029)	.025 (.028)
Leading position	.031** (.015)	-.000 (.005)	-.031 (.019)	-.020* (.011)	.004 (.026)	-.008 (.024)
Time dummies	yes	yes	yes	yes	yes	yes



Table 8: OLS estimations of the exit probability after return from maternity leave (standard errors are in parentheses)

Variable	Leave after return from maternity leave					
Age	-0.054**	(.026)	-0.052*	(.027)	-0.055**	(.026)
Age squared	.001**	(.000)	.001*	(.000)	.001**	(.000)
Tenure	-.006	(.006)	-.006	(.006)	-.008	(.007)
Tenure squared	.000	(.000)	.000	(.000)	.000	(.000)
University degree	.011	(.027)	.014	(.027)	-.029	(.036)
Vocational training	.034**	(.016)	.035**	(.017)	.022	(.023)
University and vocational training	-.023	(.031)	-.024	(.032)	.008	(.042)
Lowest wage groups	-.014	(.017)	-.013	(.017)	-.009	(.022)
Highest wage groups	.061***	(.019)	.057***	(.020)	.084***	(.032)
Rel. wage position	-.151***	(.037)	-.154*	(.037)	-.190***	(.048)
Promotion below average	.035*	(.020)	.038*	(.021)	.040	(.026)
Promotion above average	-.029*	(.017)	-.026	(.017)	-.044*	(.024)
Leading position	-.012	(.017)	-.010	(.017)	-.018	(.023)
Duration ML 19-24 months	-.019	(.038)	-.006	(.039)	-.038	(.030)
Duration ML 25-30 months	.008	(.043)	.022	(.044)	-.005	(.033)
Duration ML 31-36 months	.020	(.030)	.034	(.030)	-.018	(.025)
Duration ML 37-42 months	-.003	(.026)	.009	(.027)	-.009	(.024)
Duration ML 43-48 months	.051	(.039)	.063	(.040)	.047	(.035)
PT*ML 19-24 m.	-.066*	(.036)	-.164**	(.064)		
PT*ML 25-30 m.	-.059	(.051)	-.154**	(.071)		
PT*ML 31-36 m.	-.099***	(.027)	-.212***	(.059)		
PT*ML 37-42 m.	-.041	(.027)	-.134**	(.058)		
PT*ML 43-48 m.	-.052	(.056)	-.138**	(.076)		
Duration PT 7-12 m.			.065	(.053)	.050	(.162)
Duration PT 13-18 m.			.086*	(.048)	.058	(.160)
Duration PT 19-24 m.			.096*	(.058)	.036	(.156)
Duration PT 25-30 m.			.144**	(.064)	.081	(.168)
Duration PT 31-36 m.			.122**	(.058)	.058	(.163)
Duration PT 37-42 m.			.097*	(.058)	.042	(.153)
Duration PT 43-48 m.			.050	(.056)	.003	(.161)
PT*Age					-.006	(.005)
PT*Tenure					.005	(.003)
PT*vocational training					.016	(.033)
PT*uni					.099*	(.055)
PT*uni + voc. train.					-.083	(.064)
PT*lowest wage gr.					-.025	(.030)
PT*highest wage gr.					-.065*	(.038)
PT*Leading position					.021	(.032)
PT*prom. below av.					-.021	(.038)
PT*prom. above av.					.043	(.033)
PT*rel. wage pos.					.121	(.075)
constant	-.131***	(.017)	-.176***	(.028)	-.101***	(.017)

# Figures

Figure 1: Wage difference before birth

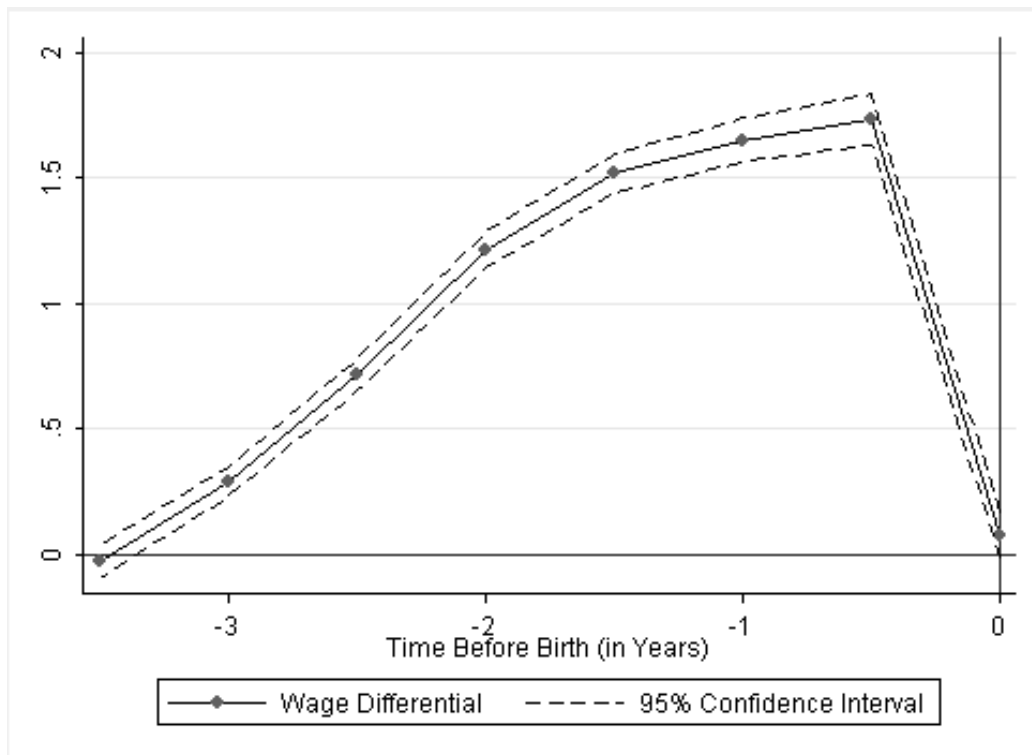
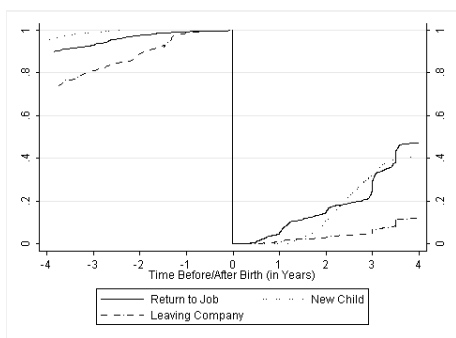
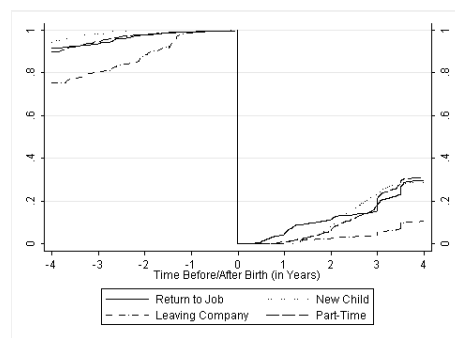


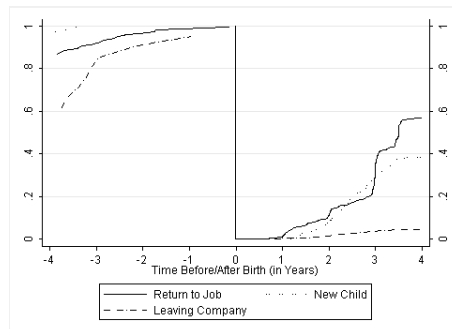
Figure 2: Employment behavior around first birth



by destination states

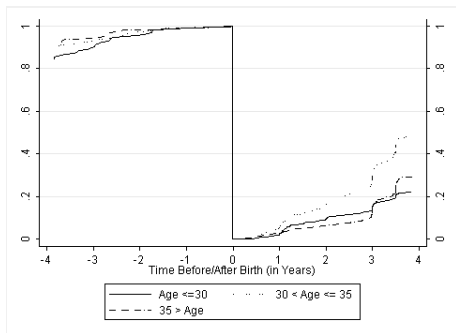


by destination states including part-time

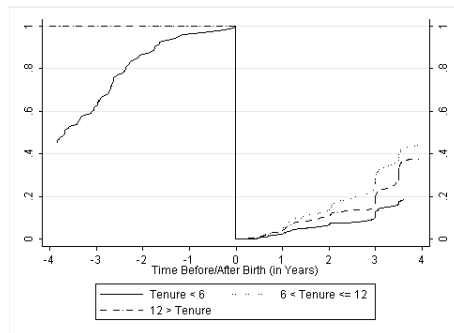


by destination states, only part-time workers

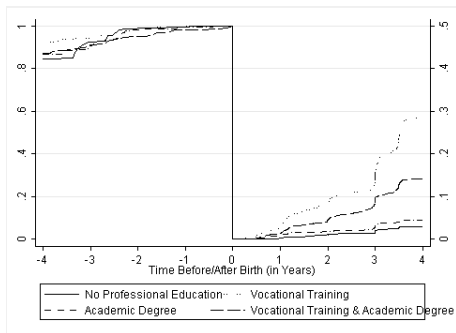
Figure 3: Employment behavior of women who return to the company



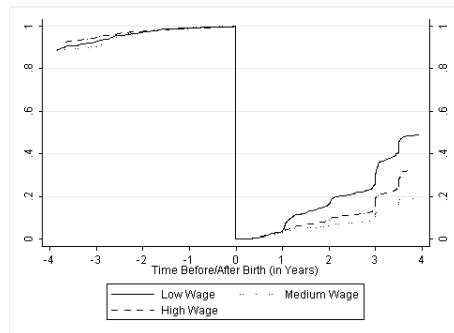
by Age



by Tenure



by Education

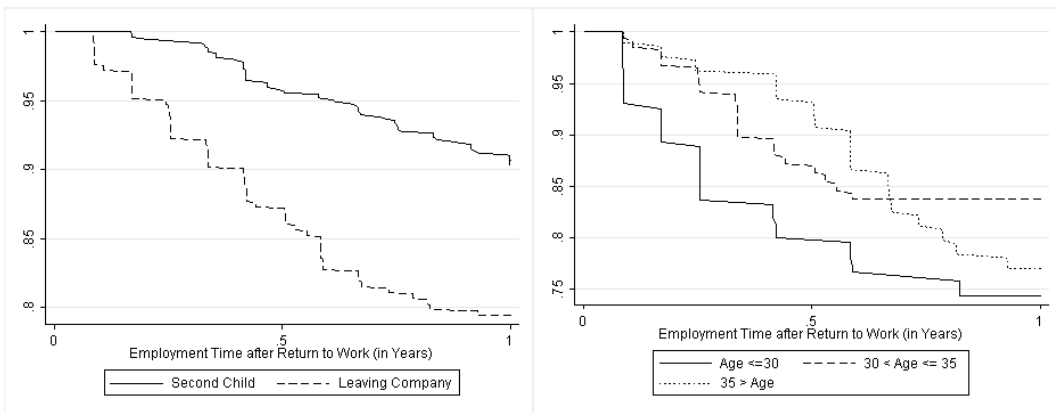


by Wage groups

Figure 4: Employment rates after maternity leave by different characteristics.

Total

by Age



by Tenure

by Duration of Maternity Leave

