Parental Leave – Possibility or Trap?

Does Family Leave Length Affect Swedish Women’s Labor Market Opportunities?

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**Abstract**

Sweden is known for its family-friendly policies. The parental leave insurance is one important part of these policies, considered to reduce the work-family conflict for women. However, there is scarce knowledge about the effects a long family leave break may have on women’s occupational careers and the studies on the topic so far mainly refer to the period up to the early 1990s. In the present study, we focus on mothers’ leave-taking behavior in the period from 1974-2000 and estimate the relationship between family leave length and the transition rate to an upward occupational move upon return to work. Data from the nationally representative Swedish Level of Living Survey of 1999 and 2000 are used. The results indicate that women with leaves of 16 months or more were less likely to experience an upward occupational move once back on the job again. In a multilevel, multiprocess model including terms for unobserved time-constant heterogeneity, the main results remain, and we conclude that even after controlling for selectivity into different parental leave length, we find a negative effect of time out on subsequent career moves.
**Introduction**

Generous parental leave insurance has been seen as an important way to reduce the work–family conflict for women, not least in Sweden. Earlier research shows that employment continuity among mothers is more common in countries that support working mothers (Stier, Lewin-Epstein and Braun, 2001). An earnings-related parental leave policy encourages women to work before childbearing, and a comparatively long leave combined with job-security leads to fewer employment interruptions (Rønsen and Sundström, 2002; cf. also Dex et al., 1998, and Waldfogel, Higuchi and Abe, 1999). At the same time as generous leave entitlements increase women’s possibilities to keep the job held before childbearing, it may also lead to women being treated differently in the labor market. Long maternal leaves (or labor market exits) are a major reason for women’s labor market disadvantages (summarized in Stier, Lewin-Epstein and Braun, 2001:1732). Pettit and Hook (2005) have shown that, for mothers of young children, the positive relationship between long family leaves and employment turns negative at about 3 years of leave. Hence, when the entitled leave length in a country exceeds 3 years, as it does in Germany for instance, the probability that a mother will be employed again decreases. Perhaps partly as a consequence, statistical discrimination of mothers as a group also appears to be more common in Germany than in the U.S. and the U.K., where a traditional gender division of labor is common (Gangl and Ziefle, 2009).

Sigle-Rushton and Waldfogel (2007) suggest four types of explanations for the motherhood pay gap: i) skill atrophy, ii) the trade-offs women make
between flexibility and wages, iii) any real or expected differences in productivity or effort upon return to work, and iv) selection. These explanations can also be translated to a perspective in which career advancement, rather than wage, is the outcome. The Swedish parental leave insurance allows great flexibility in leave length with remaining job security, and women are typically on parental leave between 6 months and 2 years after child birth (Berggren, 2004). As a consequence, employers may use leave length to categorize women according to expected differing degrees of productivity or work effort. Any lower work effort among mothers compared to other women and men may be real or mistakenly perceived by employers and may cause employers to prioritize mothers with short leave experience when it comes to promotions and wage raises (as these mothers may be perceived to be more like other women and men). In addition, human capital depreciates when it is not used, and skill atrophy is likely to affect productivity upon return to work after a long time out. Some women may also choose not to advance in their career when they have small children and instead to prioritize stability and flexibility over career advancement and higher wages.

The selection hypothesis, the fourth explanation above, is based on the assumption that women who use long leaves may be less committed to work and that these women would be more likely to experience negative career consequences even if they did not have the opportunity to take a long parental leave. If this is the case, any observed negative effect of leave length on job career may in fact be a selection effect (if those choosing long leaves are women with low work commitment or productivity even before taking leave). On the other
hand, if leave length is not a good indicator of future work commitment, generous policies may lead to disadvantages for those using it to stay at home for an extended period.

Finding answers to the questions of a) whether parental leave length affects career opportunities and b) whether this is a selection effect is important for discussions of policy effects. If a long leave has negative consequences, then a very generous family policy may increase the disadvantages for women compared to men (as long as women use most of the leave) and increase the polarization between women, where women who take long leaves are the most disadvantaged. In the present paper, we focus on mothers. We analyze what kind of women take shorter versus longer leaves after childbirth and what consequences this has for their career.

Sweden is an interesting case to focus on in a study like this, as women are free to choose varying leave lengths suitable to their own family situation. As the focus of this paper is on time away from paid work in connection with childbirth – and any career-related consequences of such time away – we find it important not only to focus on legal parental leave days (which may be hard to demarcate and define), but also to include time out that is spent keeping house in the definition of leave, if it follows childbirth. As a consequence, we will use the terms family leave and parental leave interchangeably. Although the present paper focuses on Sweden, the results are interesting outside the country, particularly because many countries today are discussing how to help women combine work and family and therefore considering how to adjust their family policies in various
ways. The fact that we use an inclusive definition of leave also facilitates comparisons with other contexts. How family policies are constructed and used affects gender equality in the labor market as well as in the home.

**Women’s combination of work and family in Sweden**

Sweden is often presented as a successful example of family policies and an institutional setting that have facilitated the combination of high female labor force participation and relatively high fertility. Almost as many women as men work, and among women aged 25-44 with children under the age of seven, 82 percent are part of the labor force (Labour Force Survey, 2004). However, large differences between women and men remain. For example, 37 percent of all women with children age 3-6 work part-time, whereas the proportion of part-time workers among men is negligible. Furthermore, the Swedish labor market is clearly gender-segregated both by sector and occupation. Women make up 2/3 of all employed in the public sector, and only 1/3 of those employed in the private sector (Statistics Sweden, 2004). Women are employed in typically female industries such as care provision, services and education. Even though the gender wage gap declined during the 1970s, this development stagnated and it was not reduced further during the 1980s and 1990s (le Grand, Szulkin and Tåhlin, 2001).

One major reason for existing gender inequalities in the labor market is the prevailing unequal division of childcare. Still, the large majority of women chose to have a family; during the past century, the proportion who have remained childless has varied between 10-15 percent, and cohort fertility has been stable at
around two children per woman even though period fertility has varied considerably (Andersson et al., 2008).

The Swedish parental leave policy is often mentioned as one of the main reasons why Sweden has managed to combine high female labor force participation with high fertility (Duvander, Ferrarini and Thalberg, 2006). The parental leave policy was introduced in 1974 and was one of the political reforms that transformed Swedish society; prior to this, Swedish society was based on a male-breadwinner model, afterwards it shifted to a dual-earner model. The benefits are paid out of the general tax system and imply no direct cost to the employer. All parents permanently residing in Sweden are entitled to parental leave.

At the time of the introduction, parental leave was set at 6 months, and the length of the leave was extended in steps during the 1980s until reaching 12 months in 1989.¹ The leave can be used up until the child’s 8th birthday, but the largest part of the leave is normally used during the child’s first years. Three additional months of parental leave are replaced at a low flat rate, and these months are often saved for extending summer vacations and the like during the child’s preschool years. During the 1990s, the flat rate was equivalent to around Euro 6 (60 SEK).

In the 1970s and 1980s, the benefits during parental leave amounted to a 90 percent replacement of earlier income up to a relatively high ceiling. During the economic recession in the 1990s, income replacement was reduced in steps to 75 percent of earlier earnings, but raised again to today’s 80 percent. The
replacement level is conditioned by a job-requirement, where the parent has to have been employed 240 days before the leave. Parents with no earnings before childbirth receive only the flat rate. Hence, there are strong incentives to postpone childbearing until young men and women are established in the labor market (Sundström and Duvander, 2002). As a consequence, studies have found that the propensity to have a child increases with income, for both women and men (Duvander and Olsson, 2001; Andersson, 2000).

It is possible to extend the leave by accepting a lower replacement rate, and therefore the actual leave often exceeds the above-mentioned benefit periods. For example, one may use 5 days of parental leave benefits per week and extend the leave period by 2 days every week. This is a very common strategy that is used especially by mothers, which is indicated by the fact that, in the late 1990s, women used an average of 16 months of leave from work while men used 2 months, although the variation is great (Berggren, 2004). This skewed division of leave between parents has been a matter of political concern and as a result, in 1995 one month of the parental leave was reserved for each parent. This meant that it was impossible for one parent (i.e. the mother) to use the whole leave period; if the other parent did not use his/her earmarked month, it would be forfeited. In 2002, one additional month was reserved for each parent. After introduction of the use-or-lose “daddy-month”, the share of fathers using leave increased (Sundström and Duvander, 2002).

As job security is guaranteed during parental leave, most parents return to work after the leave period, and the average age at which children start daycare is
1.5 years (Duvander, 2006). All children in Sweden are guaranteed publicly subsidized daycare of generally high quality, and as a consequence, enrollment among children over 1 year of age is high; in 2005, 83 percent of all children aged 1-5 were enrolled in public child care in Sweden (Swedish National Agency for Education, 2006).

**Who takes leave periods of various lengths and what are the consequences?**

**Results from earlier research**

Although generous parental leave policies promote women’s employment continuity, entitlement to long parental leave seems to lead to lower wages among women relative to men (Ruhm, 1998; Datta Gupta and Smith, 2002). When leave length is prolonged, women often extend their leaves accordingly (Lalive and Zweimüller, forthcoming; Rønsen and Sundström, 2002), and perhaps partly as a consequence, research indicates that women in countries with more extensive parental leave rights have greater difficulties reaching and maintaining powerful occupational positions (Mandel and Semyonov, 2005; 2006).

Although this finding has been contested (Korpi, Ferrarini and Englund, 2009), potential problems such as these were discussed when the leave policy was introduced in Sweden in the 1970s, i.e. the notion that a generous parental leave policy could lead to statistical discrimination of women, as they were expected to use the lion’s share of the leave. Studies of women’s leave taking behavior have shown that highly educated women have higher employment continuity and take shorter leaves than do lower educated women (e.g., Dex et al., 1998). Swedish
research shows that women with lower income take longer leaves (Hobson, Duvander and Halldén, 2006). In addition, women employed in the municipal sector tend to take longer leaves, and, on average, parents take longer leaves with the first child than with later children (ibid.).

Another potential reason for women’s lower earnings in countries with generous parental leave policies could be that women’s human capital depreciates during periods spent outside the labor market. Human capital depreciation may thus be a reason for women’s lower wages upon return to the labor market. Albrecht et al. (1999) compared the wage-related consequences of different types of time out for women and men in Sweden. If human capital depreciation is the sole explanatory mechanism for women’s and men’s lower wages upon return to the labor market, the kind of time out should not matter for subsequent wages (as long as it is not due to education). However, Albrecht et al. found that different types of time out have different effects on wages and that these effects vary by gender. Most importantly, the negative relationship between time out in parental leave and subsequent wage is higher for men than for women (see also Jansson et al., 2003). Albrecht et al. interpreted this as a signaling effect; by taking parental leave, Swedish men signal less career commitment to the employer and are penalized for this. Women, on the other hand, have traditionally taken most of the parental leave, and as most women in Sweden take substantial time off in conjunction with childbirth, their leave taking behavior does not signal anything to the employer, and consequently, their wages suffer less. In an earlier study, Stafford and Sundström (1996) find a negative effect of leave length on women’s
wages, but also here the effect is smaller for women than for men. In a study on Danish data, which controlled for unobserved time-constant heterogeneity, Datta Gupta and Smith (2002) found no lasting negative effect of children on women’s wages apart from the effect caused by reduced labor market experience.

The finding that Swedish women’s careers suffer little from parental leave breaks is supported by Jonsson and Mills (2001) and Granqvist and Persson (2004) in their studies of job changes. In the former study, Jonsson and Mills focused on women’s return to work after a birth-related career break, and they did not find any effect of time-out length on women’s chances of getting a higher prestige job upon return to the labor market. In line with Jonsson and Mills, Granqvist and Persson (2004) used data from the Swedish Level of Living Survey (LNU) of 1991. They did not find that time out in family leave affected women’s career chances significantly, but they did find that, on average, women had about half the chance that men had of making an upward occupational move. In a similar vein, and using more recent data (i.e., LNU 2000), Korpi and Stern (2004) found that women experience fewer job moves than men do and that mothers with small children have the least job mobility of all. Kennerberg (2007) studied childless women in 1997, some of whom had a child by the follow-up in 2001. She found that women who had a child in the period were less likely to have changed to a highly qualified job during that same period compared to the reference category. Still, mothers were more likely to leave a low qualified job (and change to a job at an intermediate level) than were non-mothers.
Swedish studies and studies from other settings indicate that women’s original job position can affect the consequences of a leave (Granqvist and Persson, 2004; Jonsson and Mills, 2000; McRae, 1993; Smeaton, 2006). In Sweden, a negative effect on the propensity for upward mobility is found for women in high positions (Jonsson and Mills, 2000) and for women with high education (Granqvist and Persson, 2004).

Summing up, the majority of studies referred to above find small or no effects of parental leave length on women’s occupational careers. Most of the studies focusing on mothers are based on data from the early 1990s or before. In the 1990s, the Swedish economy changed dramatically, resulting in increased wage differences and increased unemployment. A larger share of women and men continued to higher education and thus entered the labor market later in life. At the same time, childbearing was postponed to higher ages (Andersson et al., 2008). These changes motivate a new study on the potential effect of different parental leave lengths for women. Here, we focus on mothers in a study of how time away from work in connection with childbirth influenced their career advancement in the period from the mid-1970s to the year 2000. We try to separate causal effects of family leave length on occupational mobility from selection effects by controlling for time-constant unobserved heterogeneity. In the following, this research approach is defined in more detail.
Research approach

The main aim of the present paper is to study if and how a time out on family leave affects women’s subsequent career prospects. We begin by estimating a model of the transition rate to an upward occupational move (once back at work after a time out on leave), focusing on the functional form of the indicator of time out on leave. We will refer to this hazard regression model as the career model. The questions we want to answer initially are whether career advancement opportunities decrease linearly by month out on leave and if they do not, whether there is there a threshold value at which the effect of time out becomes negative.

If we find that parental leave length has consequences for who changes to a job of higher prestige, then we would like to know what characteristics lead up to family leaves of long and short duration, respectively. We refer to this model as the family leave model. It could be that women who take long leaves have certain stable characteristics that separate them from those taking shorter leaves. These characteristics could be related to women’s work motivation and affect not only leave length, but also the desire and propensity to advance in their career. As characteristics like these are difficult to reveal in ordinary survey data, we need to go one step further. Therefore, we try to investigate the degree of selectivity into long family leaves by estimating a joint multilevel, multiprocess model that controls for unobserved time-constant heterogeneity. We measure unobserved time-constant heterogeneity by including woman-specific characteristics at different family leave periods and different career paths (see the Appendix for details).
Data and Methods

The data used in this study come from the Swedish Level of Living Survey of 1991 and 2000. The first Level of Living Survey (Levnadsnivåundersökningen – LNU) was conducted in 1968, and it has thereafter been replicated in 1974, 1981, 1991 and 2000. The basis for LNU is a random sample of 1/1000 of the Swedish population aged 18-75. The original sample has been followed in later surveys, and when older respondents passed the age limit, new young ones were added as were recent immigrants so that the sample would mirror the Swedish population.

A new feature of the 1991 survey was to collect retrospective data on employment, education and family changes. These retrospective histories were collected for individuals born in 1925 to 1965 and resulted in detailed biographies over employment careers – including reasons for time out – for those who ever had a job of six months or more. Any changes in family situation, including child births, were also registered. In the 2000 survey, these biographies were updated so that the period between 1991 and 2000 was covered and new (young and immigrant) respondents were added to the sample.

In the present study, we focus on women who gave birth to a child in the period from 1974 until 2000. We exclude those who gave birth to twins and we also exclude episodes for which time outside the labor market exceeds six years following childbirth. As mentioned above, our study only includes women who have ever had a job of six months or more. In this selected group of women, all who reported ever having given birth to a child and for whom we have valid
information on all important variables are included. All in all, 841 women are included in the analysis predicting family leave length, and these women produced 1401 valid leave periods according to our criteria. In the career model, 813 women are included, and they returned to the labor market a total of 1329 times after a family leave. The reason why there are more women in the family leave model than in the career model is that not all of the women who took leave (and therefore were included in the leave model) returned to the labor market afterwards. Out of a total of 1339 job episodes in the hazard regression model, 113 end with an event, i.e. with a change in prestige of at least 10 percent. If no event occurs, episodes are censored if or when a woman drops out of the work force (either permanently or periodically for at least one month), by the time of the interview, or at the very latest after 10 years from return to the labor market.

**Dependent variables**

The dependent variable in the career model is a +10 percent change in the standard international occupational prestige scale (SIOPS) from the job held at the time of return after child birth to any subsequent job (within a ten-year period). The SIOPS prestige scale was originally constructed by Treiman (1977; see also Ganzeboom and Treiman, 1996) and the underpinnings of the concept and the scale are that occupations differ in the degree to which they bring power and privilege to the holder. Also, the definition of what characterizes a high versus low prestige job appears to be fairly well understood and agreed upon around the world (ibid.). As the scale is fine graded, a 1-point change in prestige may mean very little in terms of increased power or privilege and therefore, we use a change
of +10 percent as the definition of an increase in occupational prestige or an upward occupational move (cf. Kurz, Hillmert and Grunow, 2006; Golsch, 2006).

Initially, we try different specifications of the time out variable for family leave length in the career model. We use a linear term, a logarithmic term, a dummy for 12 months and a dummy for 15 months of leave. When we move on to estimate the leave model (i.e. the probit model), the dependent variable is a dummy for leave length of 15 months or less. As the leave also includes time spent keeping house, the leave length can be long (although here at most 72 months due to our selection criteria). In our sample, 63 percent of the women took a leave of at most 15 months.

Independent variables

In the leave model as well as in the career model, we control for calendar period i) when the leave started (for the probit model) or ii) when the woman is back on the job again (the hazard regression model). Dummy variables indicate whether the leave/job episode started in the 1980s or the 1990s, compared to the reference category, the 1970s. The breaking points for the time periods largely follow significant changes in the parental leave policy and the length of the entitled leave (see Figure 1). It also enables us to separate the 1990s – as mentioned above a time of recession in Sweden – from the earlier time periods.

Labor market experience is included as a continuous variable in both models, indicating number of years of experience. As earlier research has shown that women tend to stay out longer with the first child than with later children
(Hobson, Duvander and Halldén, 2006), we tested a dummy for first leave. This indicator was not significant and instead, leave behavior in relation to first and second births seems to be more similar than leave behavior for third and later births. In the current analyses, we therefore include a dummy for i) having a third or higher order child and ii) returning to work after time out with a third or higher order child in the probit and the hazard regression models, respectively.

In the career model, a dummy for higher education is included indicating any education at the college or university level. We also include a dummy for public sector. Finally, in the leave model, we include an indicator of whether the woman had yet another child in the same time out period, something that prolongs her time out.

One potential problem with the analysis presented here is that we are not able to control for work hours. Respondents working part-time are less likely to experience promotions (Kalleberg and Reskin, 1995), and if parental leave length is correlated with work hours to the extent that those taking long leaves are more likely to work short hours, it could be that it is work hours, not leave length, that produces the negative effect on upward occupational moves. We do have some information on work hours for a subsample of the data, namely, the data collected in 2000 (most of which refers to the 1990s). The indicator of work hours is fairly rough and refers to whether the respondent ‘on the whole’ worked full-time or part-time in a given job. When we compare overall work hours for those taking long versus short leave, it is clear that part-time work is more common among women who took long leave (not shown). Hence it could be that part of the reason
for the lower transition intensity to a job of higher prestige among those with long leave is due the higher frequency of part-time work among these women.

Results

In Table 1a and 1b, descriptive statistics for the variables included in the family leave model and the career model are reported. On average, the women in our sample took 15.6 months of leave. This estimate is biased upwards by some very long leaves and the median leave length was 12 months. In Figure 2, a Kaplan-Meier survival curve of time out on leave shows the proportion of mothers who, at a given point in time, have not returned to work after childbirth. This graph indicates that the return rate in the period from 12-24 months is high, and the vast majority of mothers are back at work two years after childbirth.

About 20 percent of the initiated leaves in our sample were for a third or higher order child and most of the reported leaves started in the 1980s and the 1990s (40 and 37 percent, respectively) (Table 1a). The average woman in our sample had a job with a prestige level of 40 (on a scale ranging from 17 to 78), and she has more than 7 years of labor market experience when she starts a leave. In Table 1b, descriptive statistics for the variables included in the hazard regression model are shown. The estimates for the control variables are similar to those reported in Table 1a, although slightly higher. As an example, more women returned to the labor market in the 1990s than those who left it in this same decade for logical reasons. Slightly more than 30 percent of the women in our sample have some university education.
In the first multivariate analysis (Table 2), we estimate a piecewise linear Gompertz (hazard regression) model of the transition intensity to a job of higher prestige after a time out on family leave. The process under study is depicted in Figure 3 as the career model. We start observing women when they return to work after a time out on family leave \( t_0 \). We observe them until they experience the determining event in focus, i.e. a positive change in prestige of at least 10 percent on the SIOPS prestige scale or until the episode is censored for other reasons (see above). In this model, we control for education, occupational prestige, experience, sector, whether the woman returns to work after spending time out after the birth of her third (or more) child, and whether the woman returns to the labor market in the 1970s (reference category), 1980s or 1990s. In this analysis, the functional form of leave is specified in four different ways. First, we estimate a model with a linear term, second we use a logarithmic term of time out, third, a dummy for at most 12 months of leave, and fourth and finally, a dummy for at most 15 months of leave.

In the first specification in Model 1, Table 2, we assume a linear relationship between time out on leave and subsequent career moves. Hence, in this model, we believe that if anything, women’s transition intensity to a job of higher prestige decreases (or possibly increases) with each month of earlier time out. Consequently, adding another month of leave to an earlier time out of 9 months has the same effect on the career as adding another month to a time out of, say, 24 months. This may seem unlikely, and as expected, we find no significant
relationship between time out – specified in this way – and subsequent upward career moves.

In the second model, we include a logarithmic term of time out. In this model, we assume that the effect of one additional month of time out is greater for shorter periods of leave than for longer periods of leave. This assumption is confirmed, and we find a significant negative logarithmic term of time out on leave.

At the next stage, we use dummies for time out on leave to verify at what stage leave length turns negative. In Model 3, we compare respondents on leave for at most 12 months to those on leave longer (the reference category), and in Model 4, respondents on leave for at most 15 months are compared to those on leave longer. We find significant effects in both models, indicating that women who took a leave of less than twelve months have a higher transition intensity to a job of higher prestige than those taking a longer leave. When we expand the group to include those taking up to 15 months of leave, these women have close to twice the probability of experiencing a positive job change compared to those taking longer leave (Exp(0.64)=1.90). The Log Likelihood value in Model 4 is the lowest among the models estimated, and we therefore use time out of at most 15 months when we estimate the leave model.

The models estimated so far indicate that time out on family leave may have a negative effect on women’s subsequent career moves, at least if this time exceeds a year. However, we do not know whether this is due to women sorting themselves into long vs. short leaves based on their own career aspirations. In
order to try to get closer to an answer to this, we estimate a joint multilevel, multiprocess model of leave length and subsequent career outcomes. In Figure 4, the empirical processes under study are depicted. We first estimate a probit model where family leave length is regressed on calendar period, the woman’s labor market experience, her occupational prestige at the time of the birth as well as birth order of the upcoming child. The dependent variable is indicated by a dummy for leave of 15 months or less. We then estimate a hazard regression model as above. Hence, in this career model, the process under study starts when the woman is back on the job again after a time of leave (see t₀, Figure 3), and we estimate the transition rate to a change in occupational prestige of at least +10 percent.

At the next stage, we estimate the probit and the hazard regression models separately, then including an indicator for unobserved heterogeneity in each model (for a specification of the models, see the Appendix). Finally, we estimate a joint model with separate controls for unobserved heterogeneity in each of the two models as well as a term capturing any joint unobserved heterogeneity.

First, we estimate a probit regression model. In Table 2, Probit Model I, we find that it was more common for women to take a leave of 15 months or less in the 1970s than in the 1980s or 1990s. This can be explained partly by the fact that the legal parental leave length was shorter during the earlier period, but also by greater selectivity of women into the work force during the 1970s compared to later decades. In the model shown here, we include a dummy for having more than one child in the same leave period, and this quite naturally reduces the
likelihood that the woman will stay out for at most 15 months. Women working in the public sector are less likely to take leave of at most 15 months, and the higher the occupational prestige of the job the woman has, the more likely she is to take shorter leave. Women taking leave after the birth of the first or (when applicable) second child are more likely to stay out for more than 15 months than are those taking leave after the birth of a third or later child. Also, the greater the woman’s labor market experience, the less likely she is to take a leave of at most 15 months.

In the second model (Probit Model II), we include an indicator of unobserved heterogeneity, here referred to as $\mu$. The standard deviation of $\mu$ is 0.91 and significantly different from 0. This means that there are unmeasured mother-specific characteristics that affect all family leave periods a woman engages in. Not controlling for this unobserved heterogeneity leads to lowered standard errors, and for the indicator of occupational prestige, this meant that we got a false impression of its precision in the first model (as it loses in significance in Probit Model II compared to Model I).

Next, we estimate a hazard regression model where the event in focus is a positive change in occupational prestige of at least 10 percent. The log-hazard of such an event occurring decreases during the first three years upon return to the labor market (with a slope coefficient of -0.13), thereafter it increases somewhat during the remaining time period under study. None of the coefficients for the baseline duration pattern is significantly different from zero, mainly due to the very few respondents experiencing the determining event. Women are more likely
to experience a positive change in occupational prestige of at least 10 percent when they have some university experience. They are also less likely to experience such an event the higher their occupational prestige is to start with. This is mainly due to ceiling effects (i.e., it is easier to advance in a career at lower prestige levels than higher). Women working in the public sector are less likely to change to a job of higher prestige, and if they have three or more children, they are also less likely to advance. Mothers returning to the labor market in the 1980s and the 1990s are more likely to make such a move than are those returning in the 1970s.

When we look at our indicator of most interest, family leave length of at most 15 months, we find that women who returned to the labor market within this interval have a significantly higher transition rate to a higher prestige job than those staying out longer. In Hazard Model II, we take into consideration the fact that there may be unobserved characteristics at the mother level that influence a woman’s transition rate to a job of higher prestige. The standard deviation of the residual is significantly different from 0 at 0.98, but controlling for unobserved heterogeneity does not eliminate the effect of family leave length on the transition rate to a job of higher prestige. The results indicate that women who took leave of at most 15 months are about twice as likely to experience a positive change in occupational prestige during the studied period compared to those who took longer leave.

In the model above, leave length is treated as if it had been an exogenous covariate. If we instead assume that there are unmeasured mother attributes that
affect both leave length and any changes in occupational prestige, the above
model is not appropriate. As an example, assume that women who have an
instrumental approach to work are more likely to take long leaves and also to put
less effort into the job once they are back from their leave, then this will lead to a
lower transition rate to upward prestige changes for these women compared to
other women. If a significant group of women act like this and if we are unable to
take this into account using the variables included in the model, then the indicator
for family leave length is correlated with the residual and leave length may be
endogenous to changes in occupational prestige. In order to correct for this, we
estimate a joint multiprocess model of family leave length and occupational
prestige changes. In this model, the correlation between the two residuals and ,
or joint unobserved heterogeneity, is estimated. Results from this model are
shown in the sixth column of Table 2. The correlation coefficient is far from
significant, and the estimates in the joint model change little, even if the standard
errors again increase somewhat. When it comes to family leave length, the
variable of most interest in our analyses, the coefficient for leave length,
decreases somewhat and is only significant at the ten percent level. Still, based on
the fact that the change in the coefficient’s size is small (compare columns 4, 5
and 6) and that the correlation coefficient in the joint model is not significant, we
assume that the first model (column 4) fairly well captures the relationship
between family leave length and changes in occupational prestige. Hence,
controlling for unobserved heterogeneity, we still find a negative effect of leave
length, indicating that women who take a leave of more than 15 months are
significantly less likely to experience a change in occupational prestige, all else
being equal.\textsuperscript{8}

**Concluding discussion**

According to earlier research, time out on family leave does not affect Swedish
women’s advancement opportunities and wages to any great extent (e.g., Albrecht
et al., 1999; Granqvist and Persson, 2004; Jonsson and Mills, 2000). However,
most of this research is based on data up until the early 1990s. In the present
study, we use retrospective data from the Swedish Level of Living Survey (LNU),
covering the period from 1974 to 2000. We find that women are more likely to
experience a change in occupational prestige of at least 10 percent if they return to
work within a period of at most 15 months from childbirth. This finding is
supported by an analysis showing a significant curvilinear relationship between
leave experience and career opportunities, indicating that staying out another
month is more negative for the career at shorter periods of time out than at longer
periods.

Earlier exploratory analyses indicate that women who take long leave may
also be more prone to work part-time once they are back on the job again. Due to
limitations in the data, we are not able to include this indicator in our final
analyses. However, by controlling for education, initial occupational prestige,
work experience, sector, number of children and time period of return, we hope to
be able to eliminate most of the bias derived from the lack of information on work
hours. Indeed, results from the final model, which is an attempt to control for
unobserved heterogeneity, indicate that the finding of a negative effect of time out of more than 15 months is not all due to selectivity into long vs. short leaves among mothers. Hence, even though we may assume that women who stay out for a longer period may have lower work ambitions from the outset than do those staying out for a shorter period, our results indicate that women who stay out longer than 15 months have greater difficulties advancing to a higher prestige job than do those staying out for a shorter time, net of any individual specific characteristics that are stable during the measured period.

Our result of a negative effect of time out on the work career to some extent contradicts findings from earlier studies. We believe that this is in part due to the way parental leave length has been measured in earlier studies, where the assumption has been that the relationship between time out and subsequent career opportunities or wages is linear, i.e. that adding another month of time out means the same for short leaves as it does for long leaves. The difference in findings from our study compared to earlier research may also be related to the time period studied and the fact that we are able to include the 1990s, a period of economic recession, in our analyses.

So what does this finding tell us? Is it a problem that women may experience reduced career opportunities if they stay out of work longer than 15 months after childbirth? It is not our objective to give a definitive answer to this question, but one conclusion could be that it is relatively unproblematic to take a leave of up to a year, and it seems that any negative effect of time out starts when the leave length exceeds the average leave taken by women in Sweden. However,
it is worth noting in this context that we focus on mothers only. We do not know, based on the analyses estimated here, whether women with parental leave experience are worse off in their career than are women who lack such experience. It could be that a long legal parental leave period leads to statistical discrimination of all women as long as they are in their fertile years (i.e., if investing in men is considered safer among employers due to the lower risk of men taking considerable leave). Although this lies outside the focus of this study, it is an important question for future research.

What, then, can explain our finding of a negative effect of time out on family leave on upward occupational moves? There are several potential mechanisms that can produce this pattern. First, it could be that women’s on-the-job skills deteriorate during longer periods of time out and that this results in a lower transition intensity to a higher prestige job for those with long leave experience. Second, it could be a signaling effect. Taking long leave may signal lower career ambitions to the employer, and this may lead to greater difficulties in acquiring the skills or competencies associated with a change to a job of higher prestige. It could also be that women’s work ambitions change as a consequence of having a child and that they are less eager to advance in their career during the period when they have small children. Even though this may be a reality in some cases, a recent longitudinal study indicates that this is a transitory stage and that work ambitions increase again as the child leaves the early pre-school period (Evertsson and Breen, 2008).
If skill deterioration were to be the main explanatory factor, as in the first example above, we might expect a linear relationship between time out and job changes, so that skill deterioration or human capital depreciation would increase proportionally for each month out. An alternative hypothesis would be an increasing effect of time out on the career, as we may assume that skills deteriorate slowly at first and then at an increasing rate over time. Whatever the relationship, it is difficult to see why we would find such a clear threshold effect of time out if skill deterioration is the main explanatory factor for the lower transition intensity to a higher prestige job among those with long leaves. Although human capital deterioration as well as a temporary change in work commitment among recent mothers surely may contribute to the observed lower transition rate to an upward move for women taking long leave, we find it most difficult to ignore the potential signaling effect. Considering that a leave of 15 months is comparatively long, even in Sweden, staying out of the labor market for a longer time than this most likely signals a lower work ambition to the employer, and this affects the woman’s future career prospects. It is worth noting, however, that any threshold value such as this is context dependent and may occur at much shorter periods of time out in countries with fewer possibilities to take a long leave, or at even longer periods of time out in countries where extended family leaves are common (cf. Pettit and Hook, 2005).

Summing up, although there is still a great deal we do not know about the relationship between family leave length and job mobility, the present analysis has brought us a step closer to understanding this relationship. Even in a country
such as Sweden, known for its family-friendly policies, women’s careers suffer if they stay out on parental leave for longer periods of time. This is worth considering, particularly because we now again face a period of economic downturn when leave experience may be one of the indicators employers use to estimate their employees’ expected future work and career commitment.
References


Figure 1. Development of the parental leave benefit days 1974-2007

Children born from 1995 - 30 days can not be transferred to the other parent. Children born from 2002 - 60 days can not be transferred to the other parent.

Figure 2. Kaplan-Meier survival curves of mothers’ time out from work after child birth (at a given month since birth)
Figure 3.

Birth of a child

Job

Time out

Family Leave Model

Career Model

$t_0$

Figure 4.

Birth of a child

Job

Time out

Family Leave Model

Career Model

$t_0$
Table 1a. Descriptive statistics for the parental leave model (with time out on leave as the dependent variable). N=1401

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental leave length</td>
<td>15.6</td>
<td>9.5</td>
<td>0¹</td>
<td>72</td>
</tr>
<tr>
<td>Third child (or higher)</td>
<td>0.20</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Parental leave 80s</td>
<td>0.40</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Parental leave 90s</td>
<td>0.37</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Prestige level</td>
<td>40.2</td>
<td>12.9</td>
<td>17</td>
<td>78</td>
</tr>
<tr>
<td>Experience in years</td>
<td>7.6</td>
<td>4.1</td>
<td>0.17</td>
<td>23.75</td>
</tr>
<tr>
<td>Experience lt 4 years</td>
<td>0.20</td>
<td>0</td>
<td>0</td>
<td>1</td>
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</tbody>
</table>

¹ Of all women included in the analyses, 2 reported 0 leave.

Table 1b. Descriptive statistics for the career model (with an upward career move as the dependent variable).

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std dev</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental leave length</td>
<td>15.6</td>
<td>9.6</td>
<td>0</td>
<td>72</td>
<td>1329</td>
</tr>
<tr>
<td>Third child (or higher)</td>
<td>0.20</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1329</td>
</tr>
<tr>
<td>Back at work 80s</td>
<td>0.38</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1329</td>
</tr>
<tr>
<td>Back at work 90s</td>
<td>0.43</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1329</td>
</tr>
</tbody>
</table>

Time dependent covariates

<table>
<thead>
<tr>
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<th>Std dev</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>High education</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>1630</td>
</tr>
<tr>
<td>Prestige level</td>
<td>40.9</td>
<td>13.1</td>
<td>17</td>
<td>78</td>
<td>1630</td>
</tr>
<tr>
<td>Experience in years</td>
<td>8.3</td>
<td>4.6</td>
<td>0.17</td>
<td>27.17</td>
<td>1630</td>
</tr>
</tbody>
</table>

Table 2. The transition intensity to a change in occupational prestige of at least +10 percent after a time out on parental leave. Models show different specifications of leave length, controlling for education, occupational prestige, labour market experience, sector, 3rd or later child and decade of return to the labour market (see Table 3, HM I).

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
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<td></td>
<td></td>
<td></td>
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<td>Linear term</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logarithmic term</td>
<td></td>
<td>-0.41 **</td>
<td>0.50 **</td>
<td>0.64 ***</td>
</tr>
<tr>
<td>&lt;=12 months</td>
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<td></td>
</tr>
<tr>
<td>&gt;=15 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln-L</td>
<td>-782.32</td>
<td>-780.97</td>
<td>-780.20</td>
<td>-778.80</td>
</tr>
</tbody>
</table>
Table 3. Probit and hazard regression models of the determinants of family leave length and later career advancement among mothers.

<table>
<thead>
<tr>
<th></th>
<th>Probit Model I</th>
<th>Probit Model II</th>
<th>Hazard Model I</th>
<th>Hazard Model II</th>
<th>Joint Model</th>
</tr>
</thead>
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<tr>
<td>Leave in 1980s</td>
<td>-0.44 ***</td>
<td>-0.56 ***</td>
<td>-0.56 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.14)</td>
<td>(0.14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leave in 1990s</td>
<td>-0.99 ***</td>
<td>-1.28 ***</td>
<td>-1.28 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.15)</td>
<td>(0.15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;1 child while on leave</td>
<td>-1.39 ***</td>
<td>-1.95 ***</td>
<td>-1.95 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.24)</td>
<td>(0.36)</td>
<td>(0.36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public sector</td>
<td>-0.16 **</td>
<td>-0.21 **</td>
<td>-0.21 **</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.11)</td>
<td>(0.11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational prestige</td>
<td>0.01 ***</td>
<td>0.01 **</td>
<td>0.01 ‡</td>
<td>0.01 ‡</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td></td>
</tr>
<tr>
<td>3rd+ child</td>
<td>0.26 ***</td>
<td>0.28 **</td>
<td>0.28 ***</td>
<td>0.28 ***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.11)</td>
<td>(0.12)</td>
<td>(0.12)</td>
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<tr>
<td>Experience</td>
<td>-0.02 **</td>
<td>-0.03 **</td>
<td>-0.03 **</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.82 ***</td>
<td>1.16 ***</td>
<td>1.17 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.14)</td>
<td>(0.22)</td>
<td>(0.23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration spline 0-36</td>
<td></td>
<td>-0.13</td>
<td>-0.08</td>
<td>-0.07</td>
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<tr>
<td></td>
<td></td>
<td>(0.12)</td>
<td>(0.13)</td>
<td>(0.13)</td>
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<tr>
<td>Duration spline 36-72</td>
<td>0.08</td>
<td>0.12</td>
<td>0.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.16)</td>
<td>(0.16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration spline 72+</td>
<td>0.12</td>
<td>0.15</td>
<td>0.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.16)</td>
<td>(0.16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-2.20 ***</td>
<td>-2.34 ***</td>
<td>-2.34 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.51)</td>
<td>(0.59)</td>
<td>(0.63)</td>
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<td></td>
</tr>
<tr>
<td>High education</td>
<td>0.84 ***</td>
<td>0.98 ***</td>
<td>0.97 ***</td>
<td></td>
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<tr>
<td></td>
<td>(0.24)</td>
<td>(0.29)</td>
<td>(0.29)</td>
<td></td>
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<tr>
<td>Occup. prestige</td>
<td>-0.07 ***</td>
<td>-0.08 ***</td>
<td>-0.08 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
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</tr>
<tr>
<td>Experience</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
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<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
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<tr>
<td>Public sector</td>
<td>-0.78 ***</td>
<td>-0.90 ***</td>
<td>-0.91 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.20)</td>
<td>(0.25)</td>
<td>(0.26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd+ child</td>
<td>-0.95 ***</td>
<td>-1.03 ***</td>
<td>-1.03 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.27)</td>
<td>(0.31)</td>
<td>(0.31)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Returns in the 1980s</td>
<td>0.64 **</td>
<td>0.71 **</td>
<td>0.71 **</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.29)</td>
<td>(0.33)</td>
<td>(0.33)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Returns in the 1990s</td>
<td>0.96 ***</td>
<td>1.01 ***</td>
<td>1.00 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.30)</td>
<td>(0.34)</td>
<td>(0.35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plength &lt;=15 months</td>
<td></td>
<td>0.67 ‡</td>
<td>0.67 ‡</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.22)</td>
<td>(0.26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual μ</td>
<td>0.91 ***</td>
<td></td>
<td>0.91 ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td></td>
<td>(0.12)</td>
<td></td>
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</tr>
<tr>
<td>Residual δ</td>
<td>0.98 **</td>
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<td>0.98 **</td>
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<tr>
<td></td>
<td>(0.41)</td>
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<td>(0.41)</td>
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<tr>
<td>Rho μδ</td>
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<td>0.04</td>
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<tr>
<td></td>
<td>(0.33)</td>
<td></td>
<td>(0.33)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln-L</td>
<td>-843.25</td>
<td>-821.18</td>
<td>-778.80</td>
<td>-777.61</td>
<td>-1598.78</td>
</tr>
</tbody>
</table>

NOTE: Asymptotic standard errors in parentheses; Significance: ‡=10%; **=5%; ***=1%.
Appendix

The stochastic variation that generates heterogeneity in our models is specified as a residual specific to the mother that is constant over her life course. Hence, in order to be able to estimate a model where we can identify the standard deviation of the unobserved heterogeneity component, we preferably need multiple outcomes on at least some of the observations. This prerequisite is met, as about 40 percent of the women in our sample have more than one child/parental leave period during the studied period (see also below). The models are estimated using the program aML (Lillard and Panis, 2003a). The residual (or the heterogeneity component) is integrated out using a numerical integration algorithm based on the Gauss-Hermite Quadrature and in estimating the model, we used 6 support points (for details see Lillard and Panis, 2003b, p. 130ff).

The model of leave length is estimated with the following probit model:

$$L^*_j = 'X_j + + j$$

where $L^*_j$ indicates the propensity that a woman will take leave $j$ ($j=1,2,\ldots,J$) of at most 15 months. If $L^*_j < 0$, the woman takes leave of 15 months or less ($L_j = 0$) and if $L^*_j \geq 0$, the woman takes leave of 16 months or more ($L_j = 1$). $X_j$ captures observed characteristics at the woman and ‘leave’ level. Unmeasured characteristics are in part woman specific and constant across all $J$ leaves, and in part specific to single leaves. We assume that is normally distributed and Cov($\cdot$, $j$)=0 and Cov($\cdot$, $X_j$)=0.

The hazard model is a piecewise linear Gompertz model:

$$\ln h_j(t) = T(t) + 'X_j(t) +$$

where subscript $j$ refers to the episode upon return to work after child $j$, $\ln h(t)$ is the log-hazard of experiencing an upward occupational move at time $t$, $T(t)$ captures the baseline
hazard duration dependence, \( X(t) \) represents covariates which shift the baseline hazard and \( \epsilon \) represents the heterogeneity residual. As \( \epsilon \) is specific to respondents, its value is constant over work episodes. We assume that \( \epsilon \) is normally distributed with mean 0 and variance \( \sigma^2 \) and that it is uncorrelated with other observable covariates.

In order to address the potential identification problem that arises from the fact that the probit model and the hazard regression model have a large set of variables in common (cf. Puhani 2000), we include an instrumental variable in our joint model (comparable to a Heckman two-stage selection model). Little and Rubin (1987: 230) state that in order for the Heckman model to work, variables are needed in \( x_2 \) that are good predictors of \( y^*_2 \) and do not appear in \( x_1 \), that is are not associated with \( y_1 \) when other covariates are controlled. In our case, there is one variable included in the probit model that does not occur in the hazard regression model and that can be assumed to be unrelated to the outcome of the hazard model (i.e. a change in occupational prestige of at least 10 percent). This variable is if the woman has a second (or more) child within the same time out period (\( >1 \) child while on leave). We know for certain that giving birth to another child soon after the birth of the first will affect the time a woman spends away from work. However, there is no reason to assume that this will affect the transition rate to an upward occupational move when the woman is back on the job again, once we control for other covariates. Hence the indicator \( >1 \) child while on leave is used as the instrument in our model.
Endnotes

1 In 2002 the leave was extended with another month and today, the leave is 13 months. This will however not be captured by the analyses estimated in this paper as the collected data ends in the year 2000.

2 By using a fixed effect approach, the authors control for stable factors that are different between different men and women (for instance between fathers and non-fathers) and consequently, selection effects into fatherhood/motherhood can not explain their findings.

3 The data used in this study is a random sample of employees from the previous Swedish National Telephone company.

4 This age limit refers to the surveys used in this paper, i.e. the ones from 1991 and 2000. In earlier surveys the age limit was 15-75 years of age.

5 An episode or ‘spell’ denotes the time period between two successive events (Blossfeld, Hammerle & Mayer 1989). In our study, an episode designates the time period from $t_0$ – return to the labour market after a time out, to $t_1$ – a change in occupational prestige of at least +10 percent (cf. Figure 1).

6 Although respondents were asked to report from their first job of six months or more, about five of them interrupted this job after a few months to have their first child. This is why labour market experience in Table 1 has a minimum of 0.17 years or two months.

7 The estimates of the control variables are not shown in this table but they vary little from the estimates in Table 3, Hazard Model I and for Model 4, Table 2, they are identical.

8 In addition to the variables used in the model here, we have estimated models where we include a control for starting a new job upon return to the labour market. Although this variable is significant and positively related to subsequent career moves, it did not affect the relationship between parental leave length and upward occupational moves. As this variable may be endogenous to subsequent career moves, we did not include it in the final analysis.

9 We also estimated the models with 12 support points and this changes the estimates very little.