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**THE ROLE OF THE PARENTAL-LEAVE PROGRAM
FOR SWEDEN'S HIGH RATE OF FEMALE LABOR-FORCE
PARTICIPATION AND FERTILITY**

by

Marianne Sundström

**Stockholms Universitet
Demografiska avdelningen
S-106 91 Stockholm**

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STOCKHOLM UNIVERSITY,
 DEMOGRAPHY UNIT,
 S-106 91 Stockholm, Sweden.
 Phone +46 (8) 16 31 36,
 FAX +46 (8) 15 68 38/15 95 22.

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Contents

	Page
Abstract	2
1. Introduction	3
2. The parental leave program	4
3. Data, statistical strategy and theoretical framework	7
4. Character of leave spells	11
5. Transitions from full-time leave	15
5.1 First exits from parent leave - results	15
5.2 Exits from resumed parental leave - results	19
6. Conclusions	20
Notes	23
References	25
Tables	27
Figures	30

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Abstract

By analyzing Swedish women's use of parental leave this paper carries further the study of public policy contributions to Sweden's record high fertility and female labor force participation in the early 1990s. A piecewise constant proportional hazard model is used to analyze the 'risk' of exiting from parental leave among female mid-low level employees of the Swedish Telephone Company. Within a competing risks framework I study how factors such as cohort, education, monthly wage, working hours, in-company training and duration affect the 'risk' of exiting from leave to full-time or part-time work or continued unpaid leave. The data used have been extracted from the personnel files of the Swedish Telephone Company and include all female employees who had any parental leave in 1983.

1. Introduction

In the late 1980s and early 1990s, Sweden had the highest female labor force participation rate (82.6 % in 1990) among European countries and also the highest total fertility rate next to Ireland and Iceland (2.13 in 1990). Sweden also have a relatively high mean age of women at first birth and a relatively high rate of second and third births among educated women. As was argued in Sundström and Stafford (1992) ~~this is likely to be the result of the comprehensive Swedish public policies, especially the separate taxation, the economic support to families with children, the extensive child-care system, the opportunities for part-time work and the parental leave program.~~ In combination with a high demand for labor, these policies encourage women to be gainfully employed at the same time as they reduce the costs of having children. The aim of this paper is to shed light on the role of the parental leave program for Sweden's 'world record'. To that end I use longitudinal data extracted from the personnel files of the Swedish Telephone Company to study women's use of parental leave and their return to work from leave in the period 1983-87. A piecewise constant proportional hazard model is used to analyze the duration of full-time leave spells as a function of cohort, education, working hours, monthly salary, duration and other factors. In particular, the resolution of spells have been analyzed as exits to full-time work, part-time work or to continued unpaid or partially paid leave within a competing risks framework.

While there are numerous American studies of women's time out of the labor force following first birth (Greenstein, 1989; Desai & Waite, 1991, have used hazard models and Klerman & Leibowitz (1990); Mott & Shapiro, 1983; McLaughlin, 1982, other methods), such studies from countries that have paid parental leave are rare. Bernhardt

(1987) and Korpi (1989) have studied Swedish women's reentry into full-time and part-time work following childbirth from the mid-1960s to 1981 using hazard models and Rønsen (1993) is a similar study for Norway over the years 1967-1988. The present study is, however, the first to apply this technique to the analysis of Swedish women's use of the built out parental leave system of the 1980s.

The parental leave program was introduced in 1974 when Sweden became the first country to give both mothers and fathers the right to paid leave from work at childbirth. Parental leave initially covered six months, but was successively extended in the following years to cover 12 months in the period studied and 15 months as of 1989.

Next section presents the parental leave program, its components and extensions, in further detail and discusses its impact on fertility and female labor force participation. In Section 3 I discuss the character of the data and present my statistical strategy and my theoretical framework. Section 4 describes the character of leave spells analyzed and presents a couple of illustrative female leave-work 'life histories'. In Section 5 I present the results from the analysis of the risks of transiting from full-time paid parental leave to full-time work, part-time work or to (partly) unpaid leave.

2. The parental leave program

Employed Swedish women have had the right to maternity leave at childbirth (3 months) with earnings related benefits since 1955, extended to six months in 1962.¹⁾ The current policy dates from 1974 when six month of parental leave was extended to fathers and the pay level was raised to 90 percent of gross earnings up to a ceiling.²⁾

Leave benefits can be shared by the parents. The benefit period was extended to ~~seven months~~ in 1975 and to ~~nine months~~ in 1978, the ninth of which was compensated at a flat rate equal for all recipients. ~~In 1980~~ benefits were extended to ~~twelve months~~ and in 1989 to ~~fifteen months~~. Since 1980 the three last months of entitlement have been at the flat rate (from 1987 SEK 60 per day).

As of 1974 benefits could be used full time or part time any time before the child is eight years old. Multiple births give a ~~right to six months' extra~~ benefits for each additional child. Also, benefits are taxable, pensionable and entitles those employed to paid vacation. Parents with no earnings prior to childbirth receive only the flat rate payment so the scheme provides women with a strong ~~incentive to be employed prior to childbirth and even to postpone birth until earnings are sufficiently high~~. Moreover, the government sector, the municipalities and firms in other sectors of the economy, such as the Telephone Company, have additional (parental) benefits according to local collective bargaining agreements. Thus, the Telephone Company pays a benefit supplement of 10 percent of the wage during the first 180 days of parental leave which makes the compensation of 100 percent of the wage during this time.

Since 1980, the parental leave system has encouraged a closer ~~spacing of children~~. This is because, beginning in 1980 the level of ~~monetary leave benefits would be at least as high as for the previous child if the next child was born within 24 months; in 1986 this limit was extended to 30 months and the rule became statutory and more widely known~~. (Before 1980 the benefits for leave with a subsequent child were based on the earnings record between births). The extension of the period between births that generates eligibility for

continued benefit level creates a more attainable birth interval (Hoem, 1990) and reduces the cost of part-time work or nonwork in between births.

Further, the parental insurance system includes three more benefits with the same income compensation; pay for care of children when they are sick (from 1974),³⁾ ten days of leave at childbirth for fathers exclusively (from 1980) and two days per year for parents' participation in day care and school activities (from 1986). All four benefit provisions are financed through general taxes with no direct costs to the employer of the parent who uses benefits. There is also, within the sickness insurance system, a pregnancy benefit for pregnant women who cannot continue to work due to health limitations (from 1980). In addition, Swedish parents have the right to unpaid leave of absence from work with full job security subsequent to the standard parental leave and until the child is 18 months (since 1978). Parents employed full-time further have the right to reduce their working hours to 30 hours per week until the child turns eight and to go back to full-time after three months' notice to the employer. The option is without compensation for loss of income but with full, but proportional, social benefits.⁴⁾ A prerequisite for reducing hours is that one has been employed full time with the employer for at least six months. The analysis in this paper is focused on the use of parental benefits for care of newborn children, but will also deal with unpaid leave and the reduced hours options.

Let me, finally, summarize the mechanisms by which the parental leave program may stimulates female labor force participation and fertility: (1) It encourages young women to be employed prior to childbirth in order to increase earnings that will be replaced by maternity benefits. (2) Any extension of the leave will increase the

proportion recorded as employed in official statistics since persons employed but absent from work during the survey period are classified as employed according to international conventions. (3) It reduces the cost of having children since the direct time costs of child care during a child's first year of life are covered. (4) As employed women on parental leave have job security, they are less likely to loose their job and will spend less time as nonemployed searching for a new job. (5) The leave program enables young women to plan for a relatively uninterrupted work career which will encourage them to invest in their human capital and raise their labor supply. (6) The rule which stipulated that an interval of maximum 24 and, later, 30 months between births generate eligibility for benefits at least as high as for the previous child has increased the tempo of childbearing and thereby possibly the number of children born. (7) The fact that leave benefits can be used intermittently and part time enables parents to adjust their work situations to deal with childcare problems, children's illness etc. Such difficulties might otherwise have lead women to drop out of the labor force. While points 1 and 2 have been illuminated in Sundström & Stafford (1992) and point 6 has been demonstrated in Hoem (1990), this study shows how the leave system is used in practice and, in particular, sheds further light on points 3, 4, 5 and 6 above.

3. Data, statistical strategy and theoretical framework

Previous studies of parental leave spells have relied on recall measures of work and leave history in combination with variables influencing program use (Bernhardt, 1987; Korpi, 1989; Haas, 1992; Näsman, 1993). By contrast, the data used in this study have been excerpted from personnel files of the Swedish Telephone Company,

which is a large government owned company operating all over the country. In 1986 the Company had 46,800 employees, the majority of which were men, but since then the number of employees has fallen. It has a low rate of turnover, only 4.1 % in 1986, including retirements but excluding short-term employees. In the 1980s, the number of employees with a gymnasium or a post-gymnasium education rose quickly and the Company took efforts to increase the internal courses and training for its personnel.

Data include all employees who had any parental leave during 1983. I focus on female employees (since very few men have long duration spells) who began their parental leave in 1983 and have rearranged the data in the form of life histories. The data have a limited set of personal variables for the employee herself (age, education, working hours, tenure, rank, monthly salary, company training received) but contains no information concerning her family. Their greatest strength is their very accurate histories of parental leave over the period of observation, which is January 1, 1983 to December 31, 1987. The records are very accurate and register, for example, minute details such as 19 percent of a day of leave for personal reasons or 25 percent of four specified days for unpaid leave. The combined history of work and leave quickly becomes very rich for purposes of analysis but very burdensome or even impossible to reconstruct for respondents in a retrospective survey.

As I cannot observe directly when a child arrives, my statistical strategy is to center on women's significant full-time leave spells, defined as those of 106 calendar days or more. These spells of more than three months primarily reflect, I presume, parental leave for a newborn child. Subepisodes no more than three days apart have been combined into a single episode and episodes of

six days (29 days for full-time work) or less have been disregarded as have leaves of less than 20 percent.

All in all, we observe 637 women to have 849 such spells, considered as births. Of these women, 436 (68 %) had one child within our five-year period of observation, 190 (30 %) had two children and 11 (2 %) had three children. We also see 648 spells of resumed leave.

My aim is to model the resolution of the leave spells. How long do the spells last or, in other terms, how is the exit intensity shaped as a function of spell duration, age, education and other personal characteristics? Analysis of spells is based on a (nonparametric) piecewise constant hazard model,⁵⁾ which has the advantage of flexibility in representing, for example, an exit intensity (influenced by the design of the parental leave scheme, see Section 2) which is initially flat, then rapidly rising at six months, then falling and rapidly rising again as the nine month eligibility limit is approached. The piecewise constant hazard model can easily pick up the two modes of spell duration, 6 and 9 months, which may be superimposed on the illustrative pattern just described.

The starting point is a significant leave spell, defined as 'a birth' starting after January 1, 1983, to avoid left-censoring. From this initial state "0" there are seven mutually exclusive exit states: (1) full-time work (> 85 % non-leave) (for at least 30 days), (2) full-time leave with partial earnings compensation from the leave program, (3) unpaid leave, (4) short part-time work (< 60 % non-leave) and partial income compensation, (5) short part-time work without benefits, (6) long part-time work (between 60 % and 85 % non-leave) and partial benefits and (7) long part-time work and no

benefits. Spells are censored when the employee leaves the Telephone Company or at the end of the period of observation (end of 1987).

Once a person has moved to one of these seven states, she can move on to another one of them or she may resume full-time paid leave, called state "8". We focus on exits from state "0" but also analyze exits from resumed leave (i.e. from state "8"). The seven possible destinations have been combined into three groups: (A) full-time work (state 1), (B) unpaid or partially paid leave (states 2-3) and (C) part-time work (states 4 to 7) (see Figure 1). The intensities, μ_i (and μ_j), of exiting from full-time leave (and from resumed leave, respectively) for any of these three destinations have been simultaneously estimated within a competing-risks framework.⁶⁾

The analyses are performed using as the time variable (full-time) days of parental benefits used, contrasted with calendar days since the start of leave (approximately, age of the child). Days of benefits used differ from calendar days passed because parental benefits may be used part time and because the woman may have brief subepisodes of work, sickness, vacation etc. within the leave period.

Our modeling of the leave/work behavior of the women of the Telephone Company is based on a theoretical framework developed in Hill & Stafford (1985), according to which couples are hypothesized to plan fertility and time use over (at least) the childrearing years. Their decision variables are (i) the number of children, (ii) the quality of children (level of care per child, produced by inputs of nonmarket time, market goods and services and number of children) and (iii) labor market hours. There are two important interactions, or 'lifetime' choices. First, there is the well-known trade-off between number of children and care per child: more children

increases the cost of quality and vice versa. Second, assuming on-the-job training to build up future earnings, there is an interaction between hours of work and the wage rate, so that lower lifetime labor market hours will reduce future earnings.

For our purposes, this implies that given the 'lifetime' plan and the number of children born, the length of parental leave will be determined not only by the direct costs of leave, as a function of benefit days available and compensation rate and of the cost of nonparental child care, but also by the indirect costs in the form of reduced future earnings due to a lower rate of human capital accumulation. These costs are, in turn, balanced against the desired level of child quality. The labor supply choice of full-time, part-time or continued (partly) unpaid leave will be part of the same weighing of loss of current and future earnings against child quality.

To provide a feel for the data and the flexibility of the parental leave program I present some illustrative cases in the next section.

4. Character of leave spells

Our data records are very detailed and resemble the information from a time-clock system. Let me present two illustrative cases: Employee A has a total of 38 leave entries for childcare and other reasons over the five year sample period. This is not atypical if it is remembered that even a part of a day on leave creates an entry in the file. The database problem is to organize these many entries into meaningful categories for analysis.

For our purposes the history begins at April 15, 1983 with a 180 day segment of full-time parental leave ending on October 11. A new segment of an additional 51 days of full-time parental leave concludes 1983, and a third full-time leave segment starting January 1, 1984 lasts 39 days. These three segments of full-time leave combine to make a 9-month spell of full-time leave, which is not surprising since this was the maximum of days with benefits equal to 90 percent of the wage in 1983. Also, it is not surprising that she took the first 180 days in one go, since she received 100 % income compensation during that period (see Section 2).

The day after the end of the 9-month leave, employee A starts on a 182-day spell of part-time unpaid leave with 60 per cent work ('reduced working hours'), ending on August 9, 1984. This was followed by a 145 day segment of part-time unpaid leave with hours of work at 75 percent of full-time. Within this second segment of reduced working hours a 5-day episode of full-time leave was drawn (presumably at the flat rate of 'compensation' since the 9 months of regular benefits had been used up). Several one-day episodes and part-day episodes of other leave occurred during these part-time work segments.

To define variables for analysis these detailed entries were simplified into the following: an initial 270 day full-time parental leave spell, followed by a 327 days spell of part-time work. We disregard the final train of single and part-day leave episodes.

The first part of this leave history would probably be recalled quite accurately through a respondent questionnaire, but the spells lasting beyond whole months and less than nine were frequent and

might be less easily recalled. Even for employee A the value of company records is quite apparent from the last part of her history.

Case B starts with a six month spell of full-time parental leave. The leave is further stretched out by a ten and a half month spell of part-time paid leave (at 25 percent compensation) coincident with unpaid leave (of 75 percent). This second spell ends with a return to half-time work for eight and a half months and after that sixty percent work for another two years and one month. This third spell of part-time work ends with a return to full-time work forty-nine and one-half months after full-time parental leave was initially taken. As with case A, during the second and third spells, a series of brief episodes of other leave for childcare were taken.

As mentioned in Section 3, there are 849 spells of full-time parental leave, considered as indicating births in our data set. However, if we for the time being disregard the leave spells which are right-censored (25) and those which are not fully replaced⁷⁾ (35), there remains 789 spells. In Figure 2 the exit frequencies of these spells have been represented as a function of spell duration as measured in benefit days used and in Figure 3 duration has been measured in calendar time. We see that exits are widely distributed over time and that there is a concentration of exits on 180 days and 270 days used. The 180th day concentration is likely to be an effect of the local collective bargaining agreement, mentioned in Section 2, according to which the employee receives 100 % income compensation during the first 180 days, while the 270th day spike is due to the fact that the 90 percent paid benefits end on that day. We also see (Figure 2) that only a minority of births are followed by a one shot exhaustion of 270 benefit days (about 16 percent) and that even fewer (6 percent only) use up all eligibility of 360 days, including

benefits at the flat rate, in one go. About 13 percent of spells exceed 9 months of benefits, implying that benefits at the flat rate financed part of these long duration spells. However, if we measure duration in calendar time (Figure 3), as much as 22 percent of leave spells lasted beyond the ninth month of the child. This suggests that the women stretched out the benefit days for a longer period in calendar time.

Turning to the exits from resumed leave and disregarding the right-censored spells, we see a similar but lower concentration of exits to the limiting days in the leave program (Figure 4).

This exit pattern indicates that the date of return from the leave is determined by remaining days of benefit and the replacement rate, i.e. the direct costs of further leave. It also suggests that the length of leave was determined beforehand to 180 days or 270 (calendar) days, but subject to alteration on requests from the woman. Indeed, a representative of the Telephone Company reports that in 1983-87 it was customary to replace women who took parental leave by an internal substitute and that the duration of the period was decided beforehand but typically set to 180 days, 270 days or 360 days at the request of the mother-to-be. In fact, there were long chains of substitutes and the arrangement served as a 'job rotation' system within the Company.⁸⁾ Obviously, the arrangement presupposes a high degree of substitutability between employees and also that actual dates of return had little importance to employer and employee. This is because if particular dates (e.g. March 1, April 15 etc.) had mattered, spell durations would more often have deviated from the limiting days, i.e. there would have been a higher degree of apparent randomness. No doubt, employers are more likely to practise this type of system when there is labor shortage, as was the case in

Sweden in 1984-90;⁹⁾ during the recession in 1991-93 the substitute system was no longer in effect.

5. Transitions from full-time leave

As mentioned, the intensities ('risks') of exiting from full-time parental leave (state 0) and from resumed leave (state 8) to full-time work, part-time work and to continued unpaid or partially paid leave have been estimated using a piecewise constant proportional hazard model. The fixed covariates are birth cohort, educational level, rank (position in the job-hierarchy), monthly salary and working hours, all referring to the state of things in January 1983. My timevarying covariates are tenure and days of company training (i.e., courses organized by the company). All covariates are categorical and have a limited number of levels of which we have selected one as a baseline level. Duration has been measured in days of parental leave benefits used as well as in calendar days. The results are presented as relative risks, i.e. relative to the baseline risk, which is set equal to 1.

5.1 First exits from parental leave - results

First of all, we see that women were very much more likely to end their first spell of parental leave by returning to full-time work than by going to part-time work or to have continued unpaid (or only partially paid) leave (Table 1). This is because if the woman was employed full time prior to the leave, the first return is most likely to be to full-time work and any exit from leave of at least 30 days will be registered as a return to full-time work in our data. Further, if the father takes any leave we would expect it to be brief and to occur when the child is at least six months old, since it is

common in Sweden to nurse babies up to six months and the mother is likely to work full-time while the father stays at home. Consequently, these first entries into full-time work are typically rather brief and followed by a return to full-time leave. However, if time is measured in calendar days (age of the child) the 'excess' risk of returning to full-time work falls by half in relation to the risk of continuing on (partially) unpaid leave (Table 2).

The related circumstances in combination with other factors also give rise to completely different duration patterns for the three destinations. We see, for example, that women who return to full-time work or continue on unpaid/partially paid leave have extra high exit intensities on the 180th, 270th and 360th day of benefits used, which are limiting days in the parental leave system. Clearly, the extra 10 % paid during the first 180 days makes women more likely to return after 180 days, probably sooner than they would have done otherwise. In particular, those who continue on unpaid leave are those most likely to exhaust all their 360 benefit days, including benefits at the flat rate, before making the transition, as could be expected.

Comparing these results to those obtained measuring duration in calendar days (Table 2), we see that exit intensities on the limiting days are high but lower than when measured in benefit days. Also, exit intensities when the child is 180 days old or less are lower than the exit intensities at less than 181 days of benefit used (except for part-time on the 180 day, see below). These findings suggests, first, that women stretched out their benefit days for a longer calendar period and, second, that the day of return is determined by days of benefit available and the compensation rate,

i.e. by the direct cost of further leave, rather than by calendar time as such.

By contrast, women who stretch their leave beyond 360 days of benefit are more likely to return to part-time work. One possible explanation for why they are able exceed their eligibility is that they may have 'banked' benefit days from a previous child. In addition, we see that women who worked part time in 1983 runs a higher 'risk' of exiting to part-time work, which also indicates that they have previous children to a higher extent than those who exit to full time or unpaid leave. Further, when duration is measured in calendar days, high exit intensities on the 180th day and the 360th day show up also for those exiting to part-time work (Table 2). Probably, these particular exiters have used less than 180 (or less than 360, respectively) benefits days on a part-time basis, but taken leave of absence from work of precisely 180 or 360 calendar days.

Moreover, women with more education are those least likely to continue their leave fully or partly unpaid and more likely to go full-time or part-time work in particular after the leave. These results are in line with previous research (e.g. Bernhardt, 1987 for Sweden and Greenstein, 1989, for the U.S) and indicate that indirect cost of further leave in the form of lower human capital accumulation also influence leave length. The overrisk of more educated women of exiting to part-time work, along with the longer leave spells seen for those exiting to part time, is consistent with substantial amount of paid work combined with a higher demand for (or greater ability to produce) child quality among more educated women found in a vast amount of research. For example, Gustafsson and Kjulin (1993) showed that highly educated women in Sweden spent more time caring actively for their children than less educated and that market work in

combination with use of public child care did not substantially reduce that time. Studies for the U.S. also show maternal education to increase time spent with children (Leibowitz, 1974; Hill and Stafford, 1980).

Furthermore, we see that the age of the mother affects the 'risk' of exiting from parental leave significantly only if time is measured in calendar days. Women of the older cohorts will terminate their leave earlier than the younger cohorts. Seemingly, this is at odds with our theoretical prediction since younger women have longer work horizons and therefore will incur a greater loss of human capital investments if they take longer leave. One possible reason for the finding is, however, that for the older women the births analyzed here to a greater extent are second and third births, than is the case for younger women. Since they worked prior to child-birth, the women with older children will already have arranged child care outside their home. If the child care is public, they will then have 'siblings priority' to a place for the youngest child and can therefore return to work sooner (of course, it is the age of the child that matters here, not benefits used).¹⁰⁾

Finally, tenure and monthly wage were not significant in any model of exits from the first leave spell. As far as wage is concerned, this may be due to the small wage dispersion among women in our sample (see Table 3) and to us being concerned, so far, mainly with exits that took place when the compensation rate was still 90 percent and little wage effect could be expected.

5.2 Exits from resumed parental leave - results

Turning to the risks of exiting from resumed parental leave, we see that the overall risk is much higher than for first exits (Table 4). This implies that resumed leave spells generally last much shorter time than first spells. Also, the overall risk of going to part-time work is higher than for first exits. This is what we would expect given that the work periods following late exits are longer and that part-time work dominates among Swedish mothers of children under three.¹¹⁾ It is also in line with the pattern among young Swedish women found in Sundström (1993) of continuous full-time work up to first birth and during parental leave, followed by a transition from full time to part time. The duration patterns resemble those observed for first exits with extra high intensities for the limiting days in the leave program, though here the spikes have been moved more to the later limiting days for obvious reasons. Further, we can see that the overrisk of exiting to part-time work among those who worked part-time in 1983, that we observed for first exits, for later exits is reversed to an underrisk, so that those who previously worked full-time have a higher risk of exiting to part-time. This is consistent with the mentioned transition from full time to part time among first-time mothers taking place after the end of parental leave. Thus, it seems that women who had a second or third birth have a higher risk of exiting to part-time work already after the first leave spell, while first-time mothers are more likely to go to part time after taking resumed leave.

Consistent with previous findings (e.g. Desai & Waite, 1991; Greenstein, 1989 for the U.S., previous Swedish studies have not included wage), we also observe a positive general effect of wage on the exit risk, i.e. women with higher wages run a higher risk of

terminating their resumed leave regardless of destination. One explanation for this is that since leave beyond the 270th day is only compensated at a flat rate of SEK 60 per day, longer leave is more costly to the woman the higher her wage is, irrespective of destination. Another possible explanation is, of course, the greater loss of human capital normally associated with longer absenteeism for those with higher wages.

6. Conclusions

In the late 1980s and early 1990s, Sweden combined high fertility with the highest female labor-force participation among industrialized countries. In this paper we have seen that the parental leave program, along with Sweden's other comprehensive public policies and high level of labor demand, is likely to have played an important role for this outcome. In particular, the size, generosity and flexibility of the parental leave system gives it the power to shape women's lifetime decisions on market work and childbearing. Thus, we have found a highly flexible usage of the parental leave benefits among the employed women of the Telephone Company. They were able to draw benefits on a part-time basis, to interrupt leave and to combine work and leave as they saw fit. In fact, we found that a common strategy of the women was to use the flexibility of the system to make the benefits last for as longer period in calendar time, e.g. beyond the child's first birthday. The popularity of this strategy indicates, in turn, that the wage penalties of longer leave are small in relation to the cost of market substitutes for child care of equal quality when the child is young.

These results further demonstrate the value of our company records. Without these detailed and accurate data it would have been

difficult to observe the multiple transitions back and forth between leave and work as well as the difference between benefit days used and calendar time passed, not to mention the detailed duration patterns and the spikes on the 180th, 270th and 360th day.

Interesting and possibly unique for Sweden is the finding that employed mothers seems to have a rather unrestricted choice between returning to full-time work and making use of the options of reduced working hours or that of fully or partly unpaid leave. Women who had previously worked part time did not have a lower probability of returning to full-time work in the end period of parental leave than had those who previously worked full time.

Further, we found the length of parental leave to be strongly affected by the direct cost of further leave as determined by days of leave still available in the system and by the compensation rate. In particular, women with higher wages were less likely to use leave benefits beyond the ninth month, which are compensated at a flat and low rate equal for all and therefore more costly the higher the wage is. Also, the indirect costs of further leave and less market work, in the form of lower human capital accumulation and reduced future earnings, were seen to influence leave length and hours worked at the return to work. Thus, women with more education were less likely to continue their leave without full pay. Similarly, the more educated run a higher 'risk' of returning to full-time or part-time work. They returned sooner, everything else equal. In addition, the cost of maternal child care is determined by the price of out-of-the-home child care. That the latter factor affect leave length is indicated by our finding that older women, for whom the births studied are more likely to have been of orders two or higher, had a higher 'risk' of ending their leave. Since all women worked prior to the birth

recorded, their older children most likely already had a place in the public day-care system and therefore they got priority for the youngest child and could return to work sooner. Since this finding seemingly contradicts the theoretical prediction, it highlights the importance of carefully examining the details of the public policies and taking into account how they influence opportunity costs when analyzing e.g. fertility behavior and female labor supply.

NOTES

- 1) However, since 1939 Swedish women were protected against dismissal on the grounds of marriage, pregnancy or child birth and since 1938 they were entitled to a lump sum maternity benefit at child birth equal for all (until 1974), supplemented by maternity relief to the most needy women and children (until 1955). For more information on the early Swedish legislation and reforms concerning motherhood and work, see Källemark (1980), Kolbe (1991) and Ohlander (1992).
- 2) The ceiling is set at 7.5 'base amounts'. The 'base amounts' is a unit for calculation of pensions etc. in the Swedish social security system. In 1985 about 1 percent of Swedish women and about 9 percent of Swedish males earned more 7.5 base amounts (National Insurance Board, 1987, p.3).
- 3) In March 1991 the income compensation for occasional care of children was reduced to 80 percent for the first two weeks. After that 90 percent is replaced, which still applies to the other parental benefits from the first day.
- 4) Government employees have had the right to their reduce their working hours to 50 % of full time for care of children up to twelve since 1970. Also, employed parents in the Telephone Company have more generous and flexible terms of employment than parents in many other sectors of the economy.
- 5) The model is a version of Cox's proportional hazard model; for a presentation see e.g. Hoem (1987). For an application to the competing risks case see e.g. Gomez de Leon & Potter (1989).
- 6) The estimated intensity can be written:

$$\mu_{ijk}(t)l(t) = a_{ij}(t)b_{ik}c_{il}(t)$$
 where i stands for destination ($i=1,2,3$ in our case), t is time (benefit days or calendar days), a is the effect of the number of benefit days used or calendar days passed, b_{ik} is the effect of a fixed covariate with k levels and $c_{il}(t)$ is the effect of a time-varying covariate with l levels. b_{ik} and $c_{il}(t)$ are relative risks.
- 7) Even if the leave was 100 % and the woman used 100 % of the benefits, she may not be entitled to compensation corresponding to her full-time salary because she may have had that salary for less than 240 days or worked part-time prior to childbirth.
- 8) Elisabeth Ekstrand, personal communication (May, 1993).

- 9) In the period studied the national Swedish unemployment rate for both sexes varied from 3.5 percent in 1983 to 1.9 in 1987 (The Swedish Labor Force Surveys, yearly averages 1983 and 1987).
- 10) Sweden has a comprehensive system of public day-care facilities: In 1987 about 70 % of children aged 1-6 years and 40 % of the 7-9 years had a place in public day care. The system is heavily subsidized, parents' fees cover on average 10 % of the running costs. As could be expected there is excess demand at the going prices; there are queues and queue-time most often is the age of the child. However, if a child has got a place within the public system, any younger siblings will get priority to a place (see Sundström, 1991, pp. 183-85). Children less than 12 months were rarely accepted, though, at the same time as the price of nonsubsidized daycare was high, especially for infants.
- 11) Among employed Swedish mothers of children less than 3 years old 59 % were employed part time in 1985 (The Swedish Labor Force Surveys, yearly averages 1985).

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Table 1
Simultaneously estimated competing 'risks' of exit from paid parental leave among female employees of the Swedish Telephone Company in 1983-87. Time is measured in benefit days used.

		Exit-specific effects		
		Exit to full-time	Exit to part-time	Exit to unpaid leave
<u>Overall rate</u> (per 10,000)				4.18
<u>Overall rate relative to col.3</u>		10.1	0.55	1
<u>Educational level</u>	1. No gymnasium	1	1	1
	2. Gymnasium 1-2 years	1.00	1.60	0.77
	3. Gymnasium 3 years	0.98	1.63	1.31
	4. More than gymnasium	1.87	15.21	0
<u>Working hours in 1983</u>	1. Full-time	1	1	1
	2. Part-time	0.75	1.70	0
<u>Benefit days used:</u>	1. - 105 days	0.05	0.13	0.04
	2. 106 - 169 days	0.67	0.66	1.14
	3. 170 - 179 days	2.06	0	1.56
	4. 180 days	91.38	0	121.03
	5. 181 - 259 days	1	1	1
	6. 260 - 269 days	5.86	1.11	0
	7. 270 days	159.97	12.95	57.63
	8. 271 - 359 days	3.21	2.64	1.64
	9. 360 days	183.83	0	699.94
	10. 361 - 400 days	27.72	135.37	0

Note: The model includes significant factors and interactions only. Cohort, salary and tenure were not significant and are therefore excluded here. Company training and rank were significant but meaningless and are therefore not displayed. Risks are given relative to the baseline level for each factor separately. This level is indicated by the value 1 (without decimals). Zero risks (without decimals) means that there are exposures but no occurrences.

Table 2

Simultaneously estimated competing 'risks' of first exit from paid parental leave among female employees of the Swedish Telephone Company in 1983-87. Time is calendar days.

		Exit-specific effects		
		Exit to full-time	Exit to part-time	Exit to unpaid leave
<u>Overall rate</u> (per 10,000)				9.86
<u>Overall rate relative to col.3</u>		4.75	0.19	1.00
<u>Educational level</u>	1. No gymnasium	1	1	1
	2. Gymnasium 1-2 years	0.92	1.36	0.70
	3. Gymnasium 3 years	0.88	1.41	1.21
	4. More than gymnasium	1.72	18.62	0
<u>Working hours in 1983</u>	1. Full-time	1	1	1
	2. Part-time	0.68	1.43	0
<u>Calendar days:</u>	1. - 105 days	0	0	0
	2. 106 - 169 days	0.46	0.48	0.27
	3. 170 - 179 days	1.06	0	0.20
	4. 180 days	64.78	10.88	34.30
	5. 181 - 259 days	1	1	1
	6. 260 - 269 days	2.11	0	0
	7. 270 days	84.27	54.87	14.20
	8. 271 - 359 days	3.40	3.08	0.48
	9. 360 days	66.69	80.48	50.70
	10. 361 - 600 days	9.49	28.25	10.82
		General exit effect		
<u>Cohort</u>	1. 1938-42		1.29	
	2. 1943-47		1.28	
	3. 1948-52		1	
	4. 1953-57		1.05	
	5. 1958-63		0.92	

Note: The model includes significant factors and interactions only. Tenure, salary and company training were not significant and thus excluded. Rank was significant but meaningless and is therefore not displayed here. Risks are given relative to the baseline level for each factor separately. This level is indicated by the value 1 (without decimals). Zero risks (without decimals) means that there are exposures but no occurrences.

Table 3

Monthly salary in January 1983 for women in our sample.

	%
- 4,999	0.5
5,000 - 6,199	23.2
6,200 - 6,599	36.6
6,600 - 7,099	31.2
7,100 -	8.5
Sum	100.0

Table 4

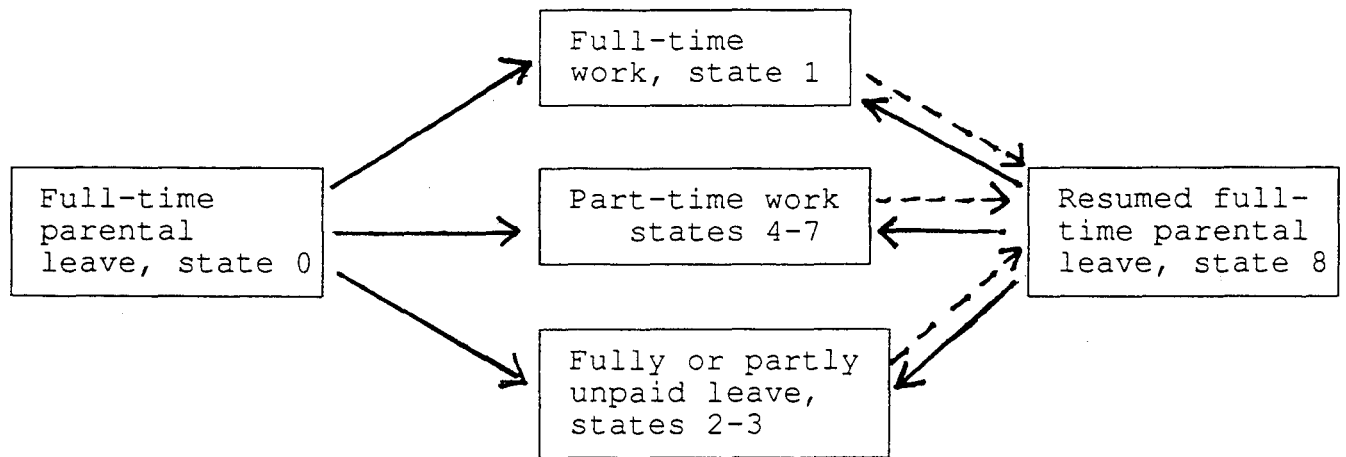
Simultaneously estimated competing 'risks' of exit from resumed paid parental leave among female employees of the Swedish Telephone Company i 1983-87. Time is total days of benefit used.

		Exit-specific effects		
		Exit to full-time	Exit to part-time	Exit to unpaid leave
<u>Overall rate</u> (per 10,000)				10.2
<u>Overall rate relative to col.3</u>		4.10	1.66	1
<u>Working hours in 1983</u>	1. Full-time	1	1	1
	2. Part-time	1.80	0.38	1.67
<u>Benefit days used:</u>	1. 106 - 169 days	0.39	0.72	1.58
	2. 170 - 179 days	1.59	0.66	3.27
	3. 180 days	4.52	5.66	46.43
	4. 181 - 259 days	1	1	1
	5. 260 - 269 days	2.12	3.35	1.66
	6. 270 days	21.16	24.68	35.62
	7. 271 - 359 days	1.15	3.66	3.16
	8. 360 days	55.87	28.50	356.02
	9. 361 - 500 days	1.13	7.93	9.26
		General exit effect		
<u>Monthly wage in 1983</u>	1. 5,000 - 6,199		0.92	
	2. 6,200 - 6,599		1	
	3. 6,600 - 7,099		1.08	
	4. 7,100 -		1.42	

Note: The model includes significant factors and interactions only. Cohort, rank, company training and tenure were not significant and are therefore not included here. Risks are given relative to the baseline level for each factor separately. This level is indicated by the value 1 (without decimals).

Figure 1

States, transitions and intensities estimated.



Note: The intensities estimated are indicated by continuous lines.

Figure 2. Exits from parental leave among female employees of the Swedish Telephone Company

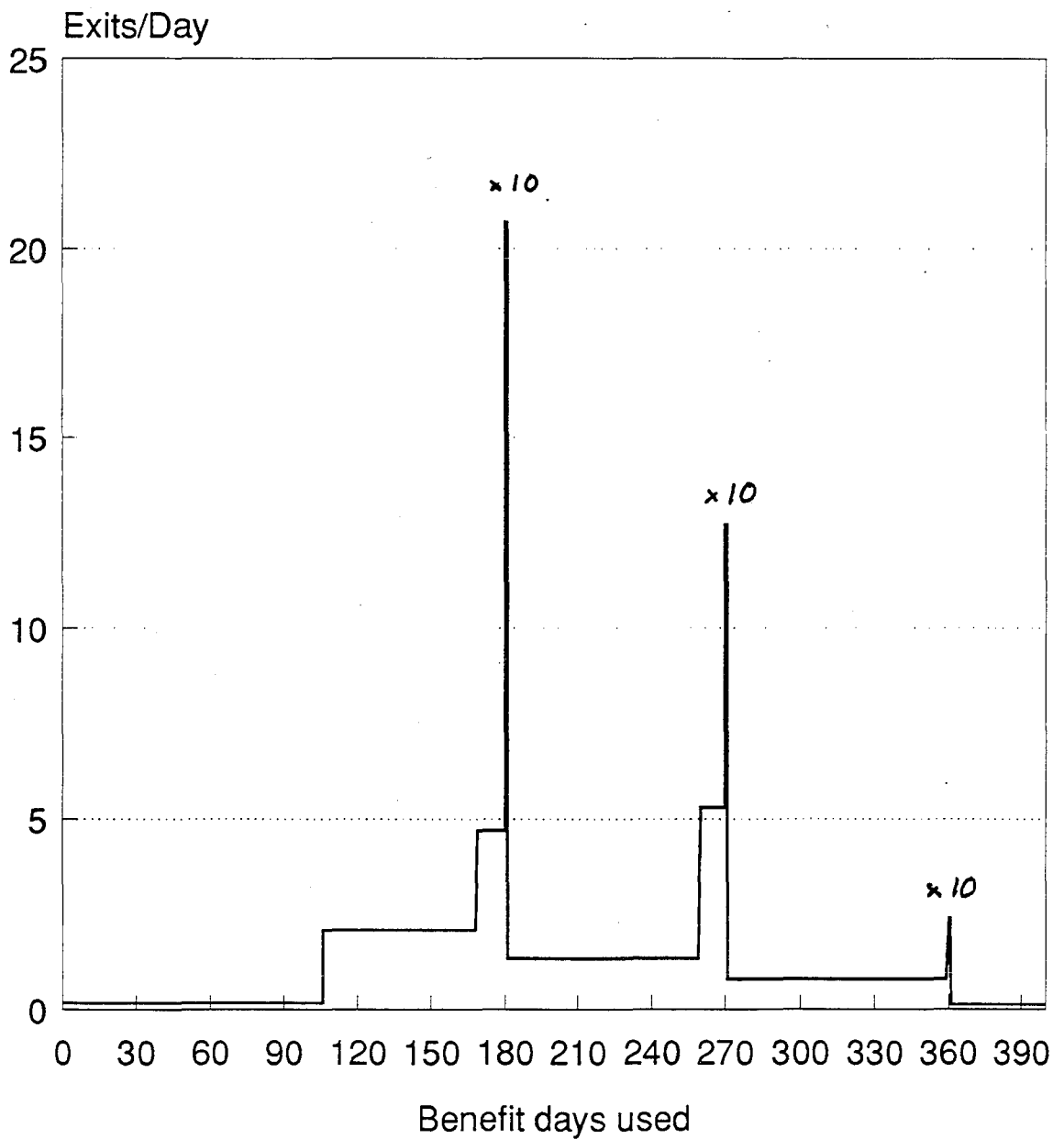


Figure 3. Exits from parental leave among female employees of the Swedish Telephone Company

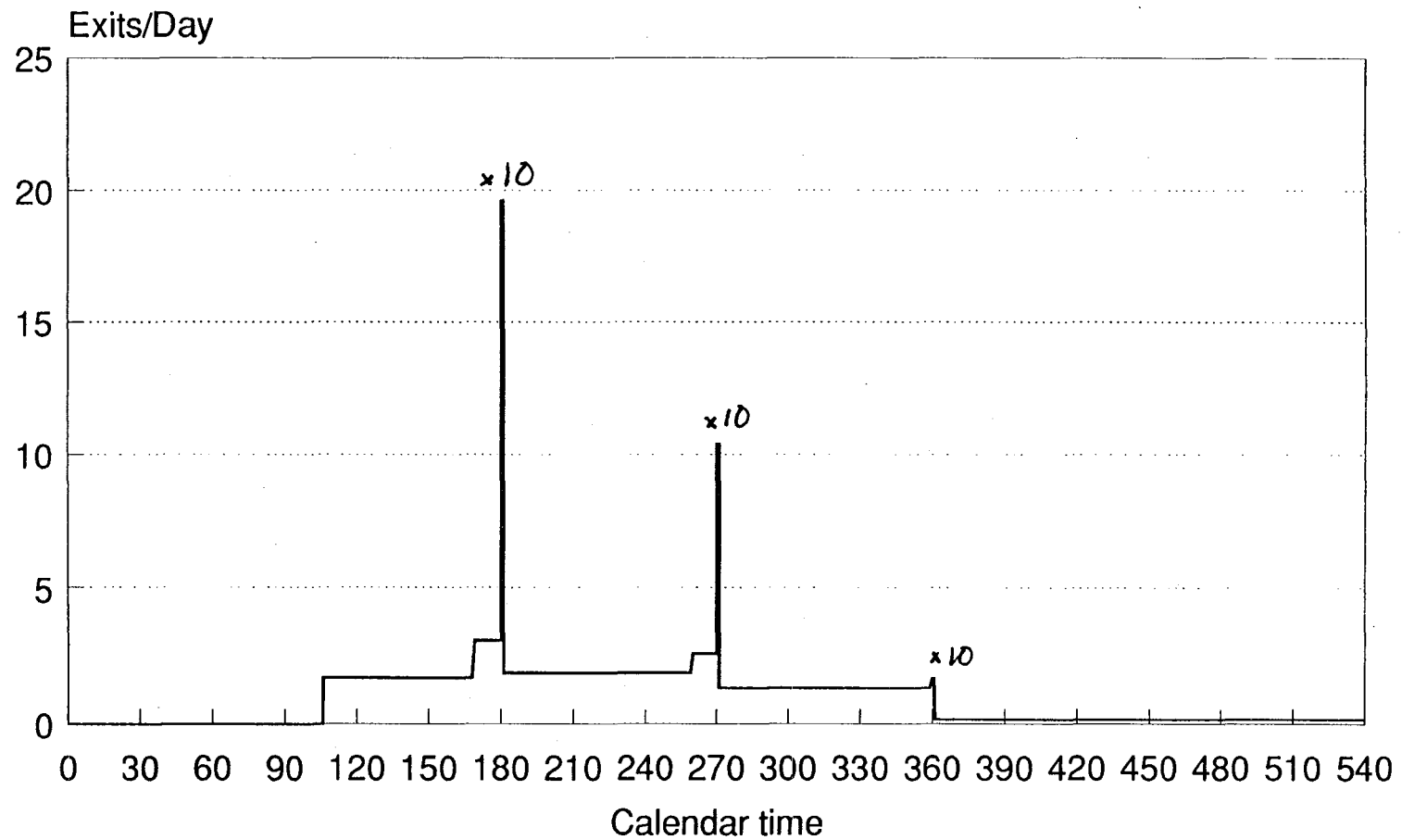


Figure 4. Exits from resumed parental leave among female employees of the Swedish Telephone Company

