

On the Sharing of Temporary Parental Leave

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Abstract

In this study, temporary parental leave (leave from work to take care of a sick child) is viewed as a household public good, produced with time inputs of the parents as only input. Assuming equal productivities in the production of temporary parental leave and equal utility functions of the male and the female, we apply different household decision-making processes to develop theoretical hypotheses that we test empirically. The empirical estimations are performed using a grouped data logit model and show that the decision making process of the spouses can be explained by a Stackelberg model with male dominance. However, we find that a stronger threat-point of the female pushes the intra household allocation of temporary parental leave towards greater sharing between the spouses. In addition, we find that an increase in the ceiling of the temporary parental leave insurance will further sharing of temporary parental leave in some families, while reducing it in others.

Keywords: temporary parental leave, Stackelberg model, bargaining power, sharing.

JEL-Code: D13, J13

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1.1 Introduction

The parental insurance system in Sweden is one of the most generous in the world and one of few systems that applies the same rules for both mothers and fathers. The insurance system allows mothers and fathers to take parental leave¹ and temporary parental leave.² The temporary parental leave insurance compensates parents financially when they have to be absent from work in order to take care of their sick children. As with the parental leave insurance, the replacement rate is 80% of the SBI (see note one). The temporary parental leave insurance covers parents of children 0-12 years old for up to 60 days a year.³ Both when it comes to parental and temporary parental leave, women take the majority of the compensated days, but there is a large difference in the distribution of compensated days between men and women in the case of the parental and the temporary parental leave. During the nineties, women have taken on average 90 per cent of the compensated days of parental leave, whereas the corresponding figure is 65 per cent for the compensated days of temporary parental leave. The gender equality is thus much more prominent when it comes to the distribution of temporary parental leave, in spite of the government's efforts to incite fathers to take more parental leave.⁴ A lot of research concerning factors influencing the distribution of the parental leave and the effects of parental leave on labour market outcomes has been undertaken.⁵ Researchers on the other hand have tended to neglect the temporary parental leave insurance. One possible explanation for the temporary parental leave having a more equal gender distribution than the parental leave might be that the former to a lesser extent than the

¹ Up to fifteen months at a replacement rate of 80 % of the sickness allowance based income from the time of the birth until the child is eight years old. The sickness allowance based income (SBI) is an approximation of the parent's present yearly income, but has a lower limit of 9,200 and an upper limit of 273,000 Swedish crowns a year (Hedlund 1999).

² All information about parental and temporary parental leave are taken from the homepage of the Swedish insurance board (RFV):

http://statistik.rfv.se/servlet/page?_pageid=1632&_dad=portal30&_schema=PORTAL30 (2003-09-05)

³ In special cases, the insurance period can be extended with another 60 days and in cases of serious illnesses, parents of children in the ages 12 to 16 can be compensated through the insurance.

⁴ For example, the so-called "daddy-month" was introduced in 1995 and extended to two months in 2002. This law reserves at least two months of the total parental leave available per child to the father and was passed to increase the proportion of parental leave taken by men (Ekberg et. al. 2003, "Nya Livet", No. 2 2002).

⁵ See e.g. Albrecht et al. (1999), Haas (1992), Näsman (1992), RFV (1993:3) and Sundström & Dufvander (1998).

latter is influenced by cultural and biological factors.⁶ Thus, it is sometimes argued that women, due to biological factors, on average have a higher productivity than men in parental leave.

When it comes to temporary parental leave however, it seems reasonable to assume that both parents will have equal productivities. Under this assumption, we will investigate the factors influencing the decision making process behind the distribution of temporary parental leave within the household.

The purpose of this paper is thus to analyse the process that determines the sharing of temporary parental leave between the spouses. The study is motivated, firstly, by the already mentioned lack of information regarding the sharing of temporary parental leave. Secondly, we argue that the official goal of gender equality set up by the Swedish government motivates the study. It is likely that knowledge about the process determining the sharing of temporary parental leave can be applied to other intra household decisions regarding the responsibilities connected with the rearing of children.⁷ If this indeed is the case, factors that generate a more equal distribution of temporary parental leave between spouses are likely to also generate more equality as regards the care of children in general.

The paper is outlined in the following manner: in section two we give a theoretical introduction in which we describe a selection of models that aim to explain the amount of time allocated to household and market work by the spouses. In section three we develop the base model used in this study. In section four we investigate different models of the household decision-making process and present testable hypotheses generated by these models. Our data are presented in section five and our hypotheses are tested in section six. In section seven, we introduce the concept of a threat-point and discuss its potential

⁶ The most obvious biological factor that might influence the distribution of parental leave is the fact that only mothers can breast-feed. A number of cultural factors might have influence, for example, women are often seen as more suited to take care of babies and it is often thought that fathers find babies less interesting than older children (see Ahrne & Roman 1997).

⁷ We cannot be sure that this is really the case. However, it seems rather unlikely that the decision-making process regarding the sharing of temporary parental leave should differ significantly from other decisions regarding the sharing of responsibilities for taking care of children.

influence on sharing. Descriptive statistics on the variables thought to influence the threat-point are given in section eight and the importance of the threat-point is investigated empirically in section nine. In section ten, we investigate the importance of the threat-point in different family types. Finally our conclusions are presented in section eleven.

1.2 Theoretical Background

In most models that intend to explain the behaviour of households and household members, it is assumed that Pareto efficient allocations will be reached. This can happen, for example, through maximisation of a family utility function and division of family resources by an altruistic head of the family (see Becker 1991), through a sharing-rule determined by the market and unearned incomes of the household members (Chiappori 1992), through co-operative bargaining (Manser & Brown 1990, McElroy & Horney 1981) or even through repeated non-cooperative decision making (Lundberg & Pollack 1994).⁸ However, it is possible that efficient allocations are not reached within the household. For example, a lot of individual decisions influencing family life are taken before the household is formed. One important example is educational decisions. Konrad & Lommerud (2000) point out that over-investment in education will occur if such investments are made non-cooperatively, which is the case if the investments are made before marriage. In addition, Lundberg & Pollack (2003) show that when a bargaining outcome today influences future bargaining power, the possible equilibria may well be inefficient. In addition, divorce legislation is relatively weak in Sweden (see note 14) and approximately one third of all marriages end in divorce, so it is likely that spouses calculate with the risk of being single later in life even if they are still members of a family.⁹ Therefore it is likely that spouses take their situation after a divorce into consideration when they make their present decisions and that a lower utility (i.e. inefficiency) today is accepted if it results in a sufficiently higher utility level in the

⁸ In a repeated non-cooperative model, both Pareto optimal and non-optimal outcomes will be among the possible equilibria (Lundberg & Pollack 1994).

⁹ In Sweden, the wealthier spouse is (in general) not obliged to pay alimony to the poorer spouse after a divorce. Child support (in general) has to be paid, the amount depending on the incomes and expenses of the respective spouses and on the need of the child (Acker *et al.*, 1992, *Familjerätt*, 1999).

future after a possible divorce.¹⁰ Factors like these indicate that efficiency within marriage may not always be reached.

In non-cooperative models of the family, equilibria need not be Pareto optimal, which makes these models less restrictive than other family-models. However, relatively few authors have used non-cooperative models of the family in the literature.¹¹ Lundberg & Pollack (1994) compare a repeated non-cooperative model to a one-shot non-cooperative model and conclude that corner solutions will be crucial for policy targeting in the latter. Konrad & Lommerud (2000) use a two-stage model in which the decisions in the first stage are taken non-cooperatively whereas decisions in the second stage are reached through Nash bargaining with non-cooperation as fallback. Bolin (1997) and Beblo & Robledo (2002) both develop and test Stackelberg models of the family, in which one spouse is dominating and therefore gets to be the leader in the Stackelberg game. In this study, our aim is to analyse what determines the sharing of temporary parental leave. In order to do this, the compatibility of our data with different theoretical models is tested. These models are developed in the following section.

1.3 The base model

In this study, temporary parental leave is viewed as a household public good, produced with the time of the parents as only input and where the time inputs of the respective spouses are perfect substitutes. We assume that both spouses want their sick children to be taken care of, but that neither spouse wants to supply the time. Hence both spouses will want to avoid taking temporary parental leave, i.e. we have a free-riding problem in the model. Spouses are assumed to have equal productivities in temporary parental leave, which means that comparative advantages will be given solely by the respective productivities in market work, which in this study is assumed to be given by the spouses' wages. The focus of our study is on how the production of temporary parental leave is shared and not on the absolute amount produced.

¹⁰ Since it is likely that spouses calculate with the risk of being divorced later in life while they still are married, we argue that the utility if divorced is a reasonable interpretation of the threat-point for Swedish individuals in bargaining models.

¹¹ See Lommerud (1997) for a more extensive overview.

In the model, utility stems from consumption of private income (i.e. indirect utility) and from “consumption” of a household public good produced with the time of the spouses as only inputs. The household public good is care for a sick child, which is assumed to be equal to temporary parental leave. In our model, the spouses can allocate time either to market- or to household work.¹² We thus have the time constraint

$$T_i = h_i + b_i \quad i = m, f \quad (1)$$

where T represents total time, h time spent on household production and b time spent in market work. m and f represent the male and the female spouse. The income of the respective spouses is given by

$$y_i = (T - h_i)w_i + ph_i\bar{w}_i \quad (2)$$

where wages are exogenously given.¹³ The second part of the income equation represents the compensation from the temporary parental leave insurance. \bar{w}_i equals w_i for wages up to the ceiling in the insurance, and thereafter equals the ceiling. The proportion of the income covered by the insurance is denoted p (at present 80 percent). Income generated by market work is considered a private good. The utility functions for the male and the female are assumed to be

$$\begin{aligned} U_m &= v(y_m) + g(h_m + h_f) \\ U_f &= v(y_f) + g(h_m + h_f) \end{aligned} \quad (3)$$

¹² For simplicity, we assume that all household production consists of producing temporary parental leave and that there is no leisure. We will return to the (empirical) problems connected to the latter assumption in section 5.1.

¹³ We disregard unearned income for two reasons. Firstly, unearned income will not affect the opportunity cost of taking a day of temporary parental leave and will therefore probably have little effect on the sharing between the spouses. Secondly, we do not have any empirical information on unearned income, which means that any effects it might have on the distribution of temporary parental leave cannot be captured with our data.

i.e. the utility functions of the spouses are separable. We assume that

$$\begin{aligned} v', g' &> 0 \\ v'', g'' &< 0 \end{aligned} \tag{4}$$

i.e. the utility functions are strictly concave. Since both spouses are assumed to have the same utility functions, all results from our model are due to the structure of the game and not to differences in preferences. As can be seen from the utility functions, the spouses have the same productivity in household work, whereas their productivities in market work are determined by their respective wage. The person in the household with the highest wage is thus assumed to have a comparative advantage in market work. The utility functions together with the income equations show that production of the household good results in a reduction of individual income and, consequently, a reduction of individual utility. Therefore, both spouses will prefer to lay the production of the public good on their partner. We now want to investigate how the spouses determine the amount of temporary parental leave that is to be produced by the time inputs of the male and the female spouse.

1.4 Predictions from different models

Having established a "base-model" we can now develop this model in different directions, depending on what assumptions we make about the decision making process of the spouses and the sharing of intra household resources. We will here investigate three particular cases, each generating an empirically testable hypothesis. We focus on models that can be empirically distinguished from each other and that generate hypotheses that are testable with our data.

1.4.1 The unitary case

In the unitary model, a family utility function is maximised and resources are shared between the family members. If we instead of assuming separable utility functions (as in section 3) assume that the framework of the unitary model applies, i.e. we assume that the family utility function takes the form

$$U = v(Y) + g(H) \quad \text{where} \quad H = h_f + h_m \quad \text{and} \quad Y = y_f + y_m \quad (5)$$

In order to maximise family utility, the spouses will specialise in market or household production in accordance with their respective comparative advantages.¹⁴ Since we have assumed that comparative advantages are given only by the wage rate, this implies that the spouse with the lowest wage has a comparative advantage in household work and should therefore take all temporary parental leave. This generates the testable hypothesis:

Hypothesis 1: *If the unitary model applies, the spouse with a comparative advantage in market work will take no temporary parental leave. All temporary parental leave will be taken by the spouse with the lowest wage, i.e.*

$$w_f < w_m \Rightarrow h_f > 0, h_m = 0$$

$$w_f > w_m \Rightarrow h_f = 0, h_m > 0$$

1.4.2 The non-cooperative Cournot case

We now assume that the spouses have identical utility functions as described in section 3. We assume that the spouses do not cooperate, but act independently to maximise individual utility. Both spouses have perfect information about the other spouse's strategies. Under these conditions, each spouse chooses a contribution to the public good in order to maximise his or her individual utility, taking the contribution of the other spouse as given (i.e. Cournot behaviour). The solution to this model is obtained by calculating the first order conditions of the spouses' utility functions, i.e.¹⁵

$$\frac{\partial U_i}{\partial h_i} = v'(y_i)(-w_i + \bar{w}_i p) + g' = 0 \quad i = m, f \quad (6)$$

By rearranging we get the expression

¹⁴ See Becker (1991), chapter 2.

¹⁵ This is the model of private provision of public goods, introduced by Bergstrom et al. (1986), applied to our context. See also Ermisch (2003) for a family application of this model.

$$\frac{v'(y_f)}{v'(y_m)} = \frac{w_m + \bar{w}_m p}{w_f + \bar{w}_f p} \quad (7)$$

We have assumed that comparative advantages are given by the wage rate. If wages are equal, the budget restrictions $y_i = (T - h_i)w_i + ph_i\bar{w}_i$ combined with the equality above generates a second testable hypothesis:

Hypothesis 2: *If the non-cooperative Cournot model applies both spouses will be supplying equal amounts of time to the public good if there are no comparative advantages, i.e.*

$$w_f = w_m \Rightarrow h_f = h_m^{16,17}$$

1.4.3 The Stackelberg case

We now assume that the male spouse, for example for cultural reasons, has a first mover advantage as regards the choice between household and market work. Therefore, each time a child in the household gets sick, the male spouse first chooses his contribution to the household public good (temporary parental leave). The female spouse thereafter adjusts her contribution to the male's. The female takes the decision of the male as given and therefore her first order conditions will, as in the non-cooperative model, be given by

$$\frac{\partial U_f}{\partial h_f} = v'(y_f)(-w_f + \bar{w}_f p) + g' = 0 \quad (8)$$

The second order derivatives of the female's utility function are given by

¹⁶ If wages are equal, the rhs of (7) equals 1. In order for this to be true for the lhs of the expression, the derivatives of the spouses' utility of income equations, have to be equal. For this to be true, their amounts spent on household work have to be equal, since we have already assumed that this is the case for their respective wages.

¹⁷ This is under the assumption that all time that is not spent on temporary parental leave is spent on market work. This will not be true if, for example, one of the spouses works part time, but the other does not. We will return to this problem in the discussion connected to the empirical estimations.

$$\frac{\partial^2 U_f}{\partial h_f^2} = v''(y_f)(w_f + \bar{w}_f p)^2 + g'' \quad (9)$$

$$\frac{\partial^2 U_f}{\partial h_f \partial h_m} = g'' \quad (10)$$

By implicit derivation, the female's reaction function is given by

$$\frac{\partial h_f}{\partial h_m} = - \frac{g''}{v''(w_f + \bar{w}_f p)^2 + g''} < 0 \quad (11)$$

It can be seen from the sign of the female's reaction function that she will increase her contribution to the public good if the male spouse lowers his contribution and vice versa. Note that the reaction function in the non-cooperative Cournot case is zero. The Stackelberg leader maximises the utility function

$$U_m = v(y_m) + g(h_f(h_m) + h_m) \quad (12)$$

which leads to the first order condition

$$\frac{\partial U_m}{\partial h_m} = v'(y_m)(-w_m + \bar{w}_m p) + g' \left(\frac{\partial h_f}{\partial h_m} + 1 \right) = 0 \quad (13)$$

If we again look at the special case of no comparative advantages, that is when $w_m = w_f$, by combining the male's and the female's first order conditions we find that

$$\frac{\partial h_f}{\partial h_m} = \frac{v'(y_m)}{v'(y_f)} - 1 \quad (14)$$

Since we have already stated that the reaction function on the left hand side is less than zero, we know that this must also be true for the right hand side of (14). It follows that $v'(y_m) < v'(y_f)$, which in turn implies that $y_m > y_f$. Since we have assumed equal wages, the female must supply less time to the market than the male in order for this statement to be true. This generates our last hypothesis:

Hypothesis 3: *If the Stackelberg model with male dominance applies the male will contribute less to the public good than the female in the case of no comparative advantages, i.e.*

$$w_m = w_f \quad \Rightarrow \quad h_m < h_f$$

In both the Cournot and the Stackelberg case we found that the compensation from the temporary parental leave insurance does not influence sharing if wages are equal. However, it is likely that this will not be the case in households with income differences between the spouses. We will return to this in the empirical estimations.

1.5 Data

The dataset we use is a cross section from 1999 in which data from the Swedish Insurance Board (Riksförsäkringsverket) is combined with data from Statistics Sweden (Statistiska Centralbyrån). The data contains information about 3 percent of all Swedish individuals less than 50 years of age, a total of almost 270,000 adult individuals in more than 155,000 households. We have information on a number of socio-economic background variables of the parents (education, yearly income, age, sector) and also information on the number of children and data indicating the age of the youngest child in the family (see *table A1* for a complete list of all variables used in this study). Since the aim of the study is to investigate the decision making process of the household that determines the distribution of temporary parental leave, we exclude all households without children under 12 and all single-parent households. For the same reason, the entire household has been excluded if one of the household members had a missing value for any of the explanatory variables, if the household had more than two adults, or if the

two adults in the household were of the same sex.¹⁸ We have also excluded all self-employed individuals from the sample. Our dependent variable, *femshare*, gives the number of days of temporary parental leave taken by the woman as a share of the total number of days taken by the household during the year. We are only interested in what determines the *sharing* of temporary parental leave and, obviously, this cannot be determined unless the household actually took some temporary parental leave. Therefore, all households that have taken no parental leave at all during the year (almost 45% of the households) were excluded from the sample. It should therefore be noted that our results are valid only for those households that use the temporary parental leave insurance and not for other households.¹⁹ Our final sample contains 68,832 individuals in 34,416 households.

1.5.1 Empirical problems

In the theoretical section we argued that there is a connection between the spouses' hourly wages and the amount of temporary parental leave taken by each spouse. However, the conclusions that we drew regarding the connection between wages and the sharing of temporary parental leave were based on the assumption that all time that is not spent on temporary parental leave is spent working on the market. Of course, this assumption is not true. The untruthfulness of our assumption is not a problem as long as both spouses within a household spend equal amounts of time working on the market, since given that we control for their wages, their opportunity costs in terms of market work forgone are equal. However, consider the case in which one spouse works part-time and the other spouse does not. In this case, the spouse with the shortest working time will have a lower opportunity cost of taking a day of temporary parental leave, in spite of equal hourly wages. Since we do not have access to any information regarding the working time of the individuals, or their hourly wages, we cannot estimate the opportunity cost of a day of temporary parental leave (which we ideally would have

¹⁸ We do not have any information regarding whether the male and female are married or cohabiting. The word "spouse" should therefore not be interpreted to mean that the male and the female are actually married.

¹⁹ As was expected, there are fewer children, and the children are older in households that did not use the insurance. There are nearly no differences in income and sector, whereas more individuals who did not use the insurance are in the lowest and in the highest education categories, compared to individuals who did use the insurance.

wanted). Therefore, we have decided to use the yearly income instead. Since the yearly income is a function of both the number of hours worked and the hourly wage, we argue that yearly income is a better proxy for the opportunity cost of taking a day of temporary parental leave than is, for example, an estimated hourly wage for which working time is not taken into consideration.

We have access to the spouses' yearly market income, i.e. compensation from the social insurances is not included. Although yearly income is endogenous to the utilization of temporary parental leave (the more temporary parental leave you take, the lower your yearly income gets), we argue that this endogeneity problem is not severe since the income loss due to temporary parental leave is very small compared to yearly income in most families.

1.6 Empirical method and testing of hypotheses

In this section we present the results from the testing of our three hypotheses, developed in section 4. Since our dependent variable is a proportion, which ranges from zero to one, we use a so-called grouped data logit model to estimate our equations.²⁰ The grouped data model can be estimated using either a minimum chi-squared estimator (MCSE) or a maximum likelihood estimator (MLE). We use the latter, since our data contains a relatively large number of zeros and ones and the MCSE breaks down if any sample proportions equal exactly zero or one (LIMDEP handles these cases by subtracting or adding a small amount to these observations). The log-likelihood function for the grouped data binary choice model takes the form

$$\ln L = \sum_{i=1}^n n_i \{ P_i \ln F(X_i' \beta) + (1 - P_i) \ln [1 - F(X_i' \beta)] \} \quad (15)$$

²⁰ LIMDEP automatically recognizes grouped data. For more information, see the LIMDEP manual, chapter E 15.2.3 and Greene (2003), chapter 21.

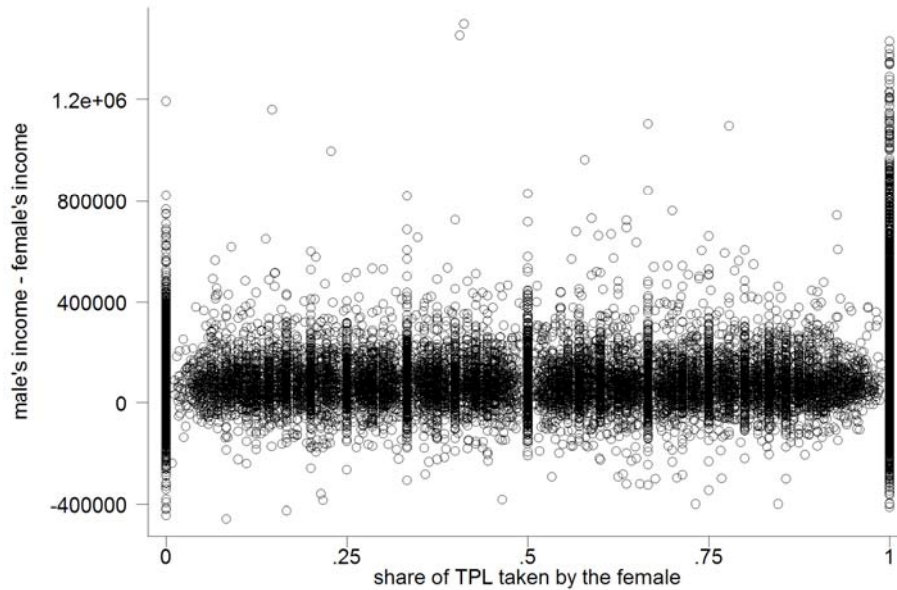
The only difference, compared to the normal binary case, is that we now estimate the probability that the proportion P_i equals one, instead of the probability that a binary dependent variable equals one (see Greene 2003).

A problem with both the MCSE and the MLE is that they underestimate the variance of the coefficients, resulting in very low standard errors. Therefore, some caution should be taken when interpreting the results, as some variables that are reported as being significant may in fact not be so. For more information, see Greene (2003).

1.6.1 Testing the unitary model

Our first hypothesis concerns the unitary model. We want to investigate whether comparative advantages determine the distribution of temporary parental leave, i.e. whether one of the spouses specialises completely in market work. Since we have assumed equal productivities in temporary parental leave, comparative advantages are determined solely by the spouses' respective wages. The spouse with the lower wage should therefore, according to the unitary model, take all temporary parental leave. *Graph 1* shows the share of temporary parental leave taken by the female as a function of the income differences between the spouses.

Graph 1. *Share of temporary parental leave taken by the woman as a function of income differences*



If the unitary model had applied, we would have expected a concentration of observations in the upper right hand corner of the graph for income differences that are positive (i.e. for families in which the female has the lower income and therefore takes all, or at least most of the temporary parental leave) and a concentration of observations in the lower left hand corner of the graph (for families in which the female has the higher income and therefore takes no, or nearly no, temporary parental leave). It is evident that the pattern in *graph 1* does not support the unitary model. Therefore, we reject the hypothesis that the unitary model explains the intra household sharing of temporary parental leave.

1.6.2 Testing the Cournot model and the Stackelberg model

Hypotheses two and three predict that for equal wages, ($\text{incdiff} = 0$), the spouses should take *i*) equal amounts of temporary parental leave if the Cournot model applies, and *ii*) the male spouse should take less temporary parental leave than the female if the Stackelberg model with male dominance applies. We start out by calculating the mean of the variable femshare for households in which the income difference between the spouses

was less than 9,000 Swedish crowns a year.²¹ The share of temporary parental leave taken by the female spouse is on average 61 per cent in these families, which is significantly larger than 50 per cent.²² This result therefore favours the Stackelberg model. However, in order to test hypotheses 2 and 3 more formally, we estimate a grouped logit model with the share of temporary parental leave taken by the female as dependent variable and the income difference of the spouses as only explanatory variable, i.e. we estimate the model

$$\Pr(\text{femshare} = 1 \mid \text{incdiff}) = \Lambda(\alpha + \beta \text{incdiff}) \quad (16)$$

The results of this estimation are given in *table A2* (see the appendix). We are interested in the special case of zero income differences. It turns out that the probability of the female taking all temporary parental leave in this case is 0.378, i.e. the estimated value of the constant term. In order to calculate the share of temporary parental leave taken by the female when income differences are zero, we calculate the value of the cdf of the logistic distribution for the constant term i.e.²³

$$\Lambda(0.378) = \frac{e^{0.378}}{1 + e^{0.378}} \approx 0.59 \quad (17)$$

That is, if there are no income differences, the female takes 59 per cent of all temporary parental leave taken by the household.²⁴ This result is significantly larger than 50 per

²¹ We decided to include more couples than only those who had exactly the same income when testing this hypothesis. The amount 9,000 was picked since by choosing this number we can include approximately the 10 % of the households in the sample with the smallest income differences (3,634 observations).

²² In 22 households the income difference was exactly 0. In these families, women took on average 65 % of all temporary parental leave.

²³ We also estimated a probit model and found a constant term of 0.238. The corresponding value of the normal cdf is 0.59, i.e. we find no differences between the models.

²⁴ The estimated value of the coefficient is 0.37809285. The 99 per cent confidence interval lies between 0.3779193 and 0.3782663. Clearly, both of these values inserted in the logistic distribution yield values larger than 0.50. Since the equal distribution, 0.50, predicted by the Cournot model is not included in the confidence interval, we conclude that we can separate between the models empirically and that the Stackelberg model cannot be rejected. However, as pointed out earlier, this confidence interval is likely to be too narrow, due to the underestimation of the variance.

cent, so once again we reject the Cournot model and find support for the Stackelberg model with male dominance.

1.7 Does bargaining power influence sharing?

In the previous section we concluded that all models but the Stackelberg model could be rejected, given our assumptions. Given that the male spouse is the Stackelberg leader, he first gets to choose his contribution to the public good and the female spouse adjusts her contribution to his. Since the time inputs of the spouses are perfect substitutes in the production of temporary parental leave, and since we have assumed that own income is a private good, one might ask why the male spouse should contribute to the public good at all under these circumstances. The reason is that the utility of being a part of the household must be larger than the utility in the so-called threat-point for both spouses, otherwise the spouse who gets less utility within the household will want to divorce (Ermisch 2003). Therefore, the extent to which the first mover advantage is exploited by the male spouse will depend on the spouses' respective threat-points. We assume that the threat-point utility is given by the utility after a divorce and we denote this utility by U_i^{TP} where $i = m, f$. At least the threat-point utility must be obtained for both spouses for the household not to be dissolved. Factors thought to influence the threat-point utility, i.e. the utility of the individual spouse after a possible divorce, are assumed to be given by

$$U_i^{TP} = v(y_i^*(a_i, e_i, s_i, y_i)) + g(H_i(n, a_c)) \quad (18)$$

i.e. we assume that the utility level after a divorce is a function of future income, y_i^* , which in turn is a function of the age, a_i , the education level, e_i , the labour market sector, s_i , and the current income, y_i of individual i . In addition, the utility level after a divorce is assumed to be a function of $g(H_i)$, i.e. the utility from temporary parental leave, which now has to be produced solely by the individual. The demand for temporary parental leave is assumed to be a function of n , the number of children, and a_c , the age of the youngest child. We will now investigate whether the threat-points of the spouses, or what we will refer to as their bargaining power, has any influence on the sharing of temporary parental leave. Factors that positively influence the utility after a divorce increases the

threat-point and, consequently, strengthens the bargaining power of the individual spouse while still within the relationship.

We expect that having a higher education will have a positive effect on future income and will therefore improve the threat-point utility of spouse *i*. Therefore, having a higher education will improve the bargaining power of the spouse and will consequently have a negative effect on the share of temporary parental leave taken by spouse *i*. Age is seen as a proxy for labour market experience and is therefore expected to improve the threat-point, and is consequently expected to have the same impact as education. Regarding labour market sector, we expect working in a private sector to have a positive influence on a spouse's bargaining power as regards the sharing of temporary parental leave. We define individuals working in private and public companies and government administration as working in the private sector, and individuals working in the county council and municipality sectors as working in the public sector. Although government administration is in fact a public sector, we believe that the employees in this sector have more in common as regards the situation at work with the privately employed than with the publicly employed, hence this division. We believe that individuals working in the public sectors are less likely to be "punished" for being absent due to temporary parental leave compared to individuals working in the private sector, the reason being that taking temporary parental leave is probably perceived as less deviant behaviour in public sectors since the majority of workers are women. Secondly, profits do not have to be made in these sectors. Therefore, working in the private sector can be expected to have a negative influence on the spouse's propensity to take temporary parental leave.

The effect of income is problematic since it is a variable factor and, especially for women who often work part time while they are part of a couple, it can be argued that the income level today does not contain very much information about the individual's utility level after a divorce. This might be true, but in spite of this we argue that an individual's present income contains information on his or her motivation and experience. Therefore, present income is expected to have a positive effect on future income and thereby a positive effect on the threat-point of the individual.

As was seen from the theoretical section, when wages are equal, the ceiling in the temporary parental leave insurance has no influence on the sharing of temporary parental leave. However, when wages are not equal, this may not be the case. Therefore, we have included variables indicating whether only the male, only the female, or both spouses have incomes above the ceiling of the temporary parental leave insurance. We argue that if both spouses have incomes below the ceiling, they have the same proportional loss of taking temporary parental leave, and therefore any effects related to income should be captured by the variable indicating income differences. However, if only one of the spouses has an income above the ceiling, the spouses' respective losses from taking temporary parental leave are no longer proportional and should therefore influence the sharing of temporary parental leave. If both spouses have incomes above the ceiling, the relative loss from taking temporary parental leave will depend on income differences. Due to the ceiling in the insurance, the higher the income, the higher the costs of taking temporary parental leave. Meyer (2005) shows a strong correlation between higher income and higher (absolute) utilization of temporary parental leave for women. The question is therefore what happens to sharing when both spouses have high incomes.

We further argue that when trying to estimate the influence of bargaining power on the sharing of temporary parental leave it is not the absolute levels of the different factors assumed to influence the threat-point utility *per se* that determine the sharing of temporary parental leave, but rather the relative bargaining power of the respective spouses within the household. Therefore, we include differences in age, education and income between the spouses rather than individual levels of these factors, in our specification. For labour market sector, we have divided the households into four categories depending on whether both spouses work in a private sector, both work in a public sector or one of them works in either sector (the reference category being families in which the female works in a public sector and the male in a private sector). For education, we include both differences between the spouses and the level of education for the female. We include the level of education to control for differences in type of job

within sector and for the fact that the effect of differences in education might vary depending on what level these differences are on.

The last argument in the threat-point utility function, $g(H_i)$, works as a proxy for the production of the public good that the respective spouses will have to undertake in the case of a divorce. The more children the spouses have, and the younger the children are, the higher will the expected time input for the public good be.²⁵

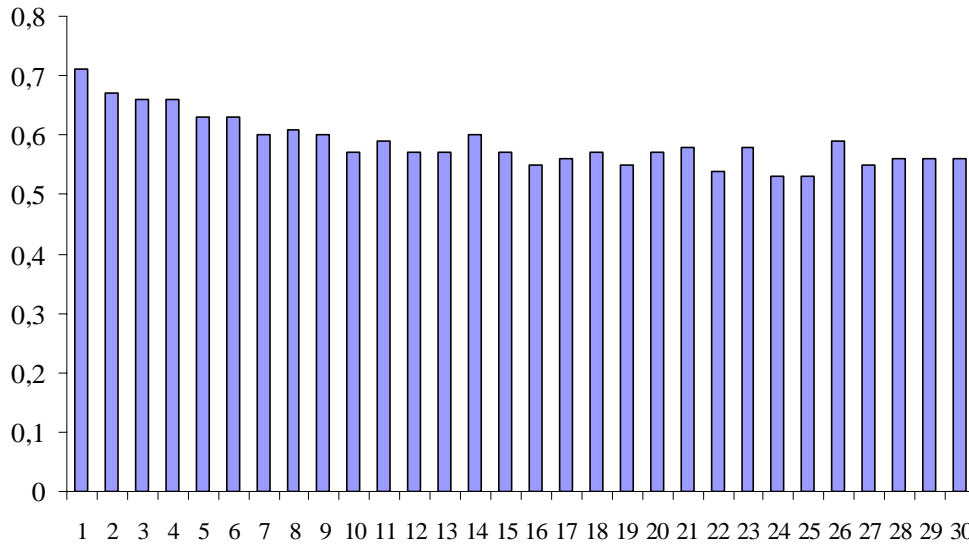
1.8 Descriptive statistics related to bargaining power

It is evident from *table A1* that women on average take more temporary parental leave than men (femshare is larger than 0.5 which would have been the equal distribution). Women have on average a higher education level than men, even though more men than women have the highest education level. In spite of the on average higher female education level, women's yearly income is, on average, almost 100,000 Swedish crowns lower than men's. One possible explanation is that women are more frequently employed in the public sectors (sectors 3 and 4), in which wages usually are lower, and that they on average are slightly younger than their spouses. In addition, women are more likely to work part-time than men.

In *graph 2*, we show how the share of temporary parental leave taken by the woman varies with the family's total utilization of temporary parental leave. As we can see, sharing seems to increase (i.e. the share taken by the female decreases) initially as the number of days increases, but this effect quickly disappears. Thus, *graph 2* does not support either increased specialization or increased sharing as utilization increases.

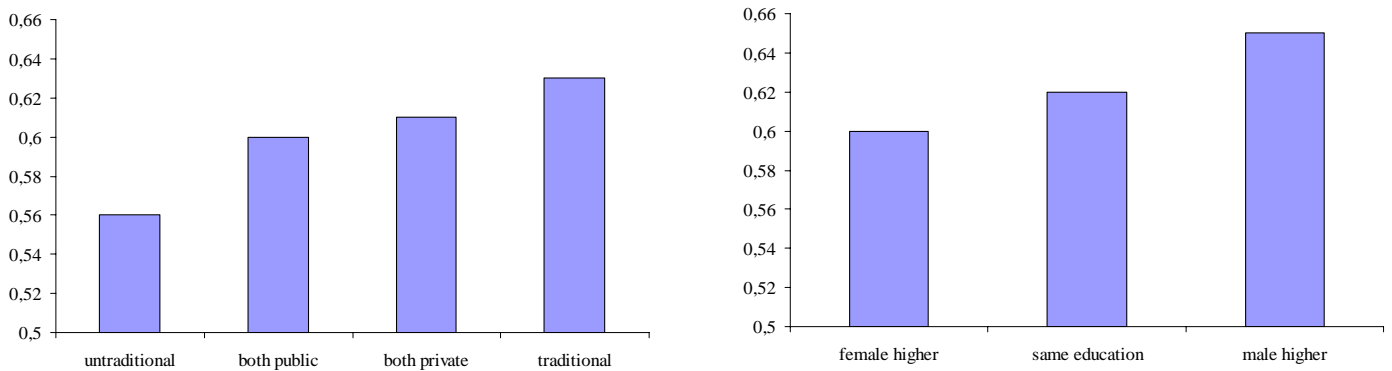
²⁵ The demand for temporary parental leave is usually highest when the child is between 2-6 years old. (RFV 2001:12)

Graph 2. Sharing as a function of total family utilization.



In *graph 3*, we show how sharing varies with differences in sector and education. Note that the scale does not start at zero.

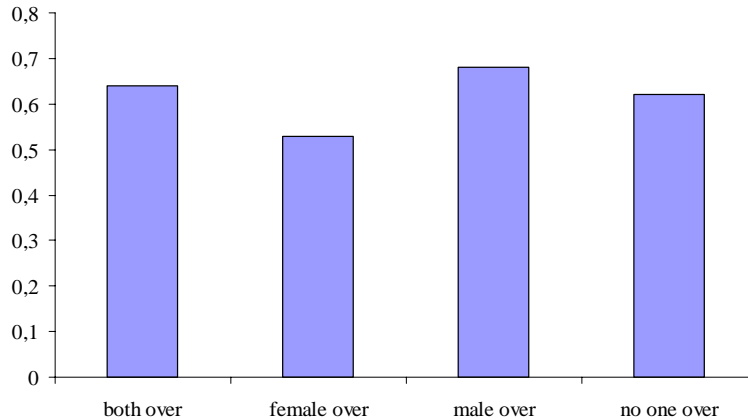
Graph 3. Sharing as a function of sector differences and education differences.



We can see that sector differences indeed influence the sharing of temporary parental leave. If the female works in the private sector and the male in the public sector, i.e. the untraditional division, spouses share the most. If the traditional pattern applies, the female takes the largest share. We can also see that the female takes a smaller part of the total amount of temporary parental leave if she has the highest education level, compared to when the male has the highest education level.

In *graph 4*, we show how sharing depends on the ceiling in the temporary parental leave insurance.

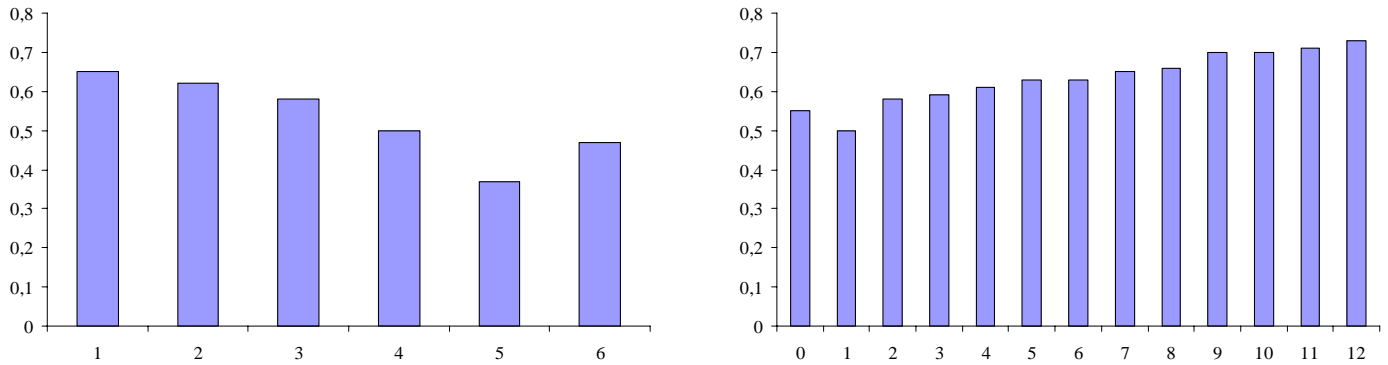
Graph 4. Sharing as a function of the ceiling in the insurance.



It can be seen that couples share more when only the female has an income above the ceiling and share less when only the male has an income above the ceiling. This was expected, since the price of taking temporary parental leave obviously is much higher for the person whose income is above the ceiling, compared to the person whose income is not so.

Lastly, in *graph 5*, we show how sharing varies with the number of children and the age of the youngest child.

Graph 5. Sharing as a function of the number of children and the age of the youngest child



Sharing seems to increase with the number of children and in families with five children, the male actually takes more temporary parental leave than the female. It should be noted though, that very few families have more than four children and consequently the values in the last two bars are based on very few observations. The share of temporary parental leave taken by the female seems to increase as the age of the youngest child increases. One reason might be that parents with older children usually are older themselves, and it may be the case that older couples have a more traditional intra household division of labour.

1.9 Empirical results on the effects of bargaining power on sharing

Since we have concluded that a Stackelberg model with male dominance best describes the intra-household sharing of temporary parental leave, we now want to investigate whether a better bargaining position of the female moves the distribution of temporary parental leave in the direction of greater equality. Therefore, we include the factors assumed to influence the utility after a possible divorce in the model, i.e. the future income and future demand for temporary parental leave. Since we do not have access to future income, or to the future demand of temporary parental leave, we instead include the variables that these are assumed to be functions of (as described in section 7) in our estimation.

We also include the variable *hnetto*, indicating the total number of days of temporary parental leave taken by the spouses. The reason for including this variable is that the expected future loss from taking temporary parental leave can be expected to increase with the absolute number of days of leave taken, the intuition being that most employers probably will not object if an employee is absent for one or two days a year (due to temporary parental leave) whereas extended, or more frequent, periods of absence might be viewed more negatively. Therefore, we might expect that the share of temporary parental leave taken by the woman is negatively influenced by this variable. An alternative hypothesis might be that spouses with children who are sick often specialize to a larger extent than other spouses. If this is the case, we would most likely see a positive effect on the share of days taken by the woman. Again, we estimate a grouped logit model with the share of temporary parental leave taken by the woman as dependent variable.²⁶ The results of the estimation are given in *table A3* in the appendix. It is the effects on the probability that the female takes all temporary parental leave that are estimated in our model. However, when discussing our results we will do this in terms of sharing, i.e. a variable that has a negative effect on the probability that the female takes all temporary parental leave is said to have a positive effect on sharing and vice versa.

As can be seen from the table, couples who have more children share more, whereas couples who have older children share less. One possible explanation for the former result might be that families in which the male spouse is more interested in taking care of the children also have more children. Since the number of days of temporary parental leave decreases with the age of the youngest child, there are also fewer days to share, which might explain the latter result. When controlling for differences in education, the share of temporary parental leave taken by the female increases with her education level. However, if she has a higher education level than the male, this increases sharing. If the male has the highest education level, sharing is reduced. We therefore conclude that having a higher education level than one's spouse has a positive effect on an individual's bargaining power.

²⁶ For comparison, we also estimated a grouped probit model. The estimated marginal effects did not differ between the two models.

All sector-difference categories have a positive effect on sharing compared to the case when the female works in a public sector and the male works in a private sector. Therefore, we conclude that families with this “traditional” sector-pattern are the most unequal as regards the sharing of temporary parental leave. Families with the “untraditional” sector-pattern, i.e. where the female works in a private sector and the male works in a public sector are the most equal in this respect. Families in which both spouses work in a public sector come “in between” the traditional and the untraditional family types. Lastly, families in which both spouses work in a private sector do not differ significantly from families with the “traditional” sector-pattern.

When only the male spouse has an income above the ceiling in the temporary parental leave insurance, we see a negative effect on the sharing of temporary parental leave, compared to families in which both spouses have incomes that fall below the ceiling. However, when only the female has an income above the ceiling, the spouses share more. From this we conclude that being the only person in the household with an income above the ceiling has a positive influence on that person’s bargaining power. The variable indicating that both spouses have incomes above the ceiling has a negative effect on sharing, i.e. the female takes a larger share when this is the case. The female absolute utilization of temporary parental leave increases with own income. This result is in line with Meyer (2005) where it is shown that that the female’s utilization increases with own income.

As the total number of days of temporary parental leave increases, spouses share more (as can be seen from the negative coefficient of the variable *hnetto*). We interpret this as evidence for increased motivation for the female to bargain in households with children who are often sick. However, this effect is very small.

To summarize, spouses share temporary parental leave more when the male works in a public sector and the female works in a private sector, or if both work in a public sector. Income differences have a negative effect on sharing if the male has the highest income,

but a positive effect on sharing if the female has the highest income. The results presented in *table A3* support the “hypothesis” outlined in section 7. We therefore conclude that bargaining power indeed influences the sharing of temporary parental leave.

1.10 Predicted sharing by “family type”

However, one might ask what happens with our hypotheses outlined in the theoretical section of this paper, i.e. what happens to the male spouse’s first mover advantage when we include the factors thought to determine the future wage, i.e. relative bargaining power, in the model? In order to investigate to which extent the threat-point influences the sharing of the spouses, we have calculated the predicted sharing for the family with equal expected future wages (i.e. no differences in the threat-point), the “average” family, the family in which the female can be expected to have a stronger bargaining power (“female strong”), and the family where the male can be expected to have a stronger bargaining power (“male strong”). The variables thought not to influence bargaining power (*hnetto*, *children*, *youngest*) are held at their means. We assume that spouses with the same socio-economic characteristics have the same expected future wage. However, we are aware that this may not be the case, since the effect of, for example, being of a certain age may very well have different effects for men and women. Unfortunately, we have no better way of approximating equal future wages. For the “average” family we have calculated predicted sharing for families with the characteristics that are most common in our sample. For the last two family types, we have chosen the categories that we believe indicate a strong bargaining power for the male and female respectively. For age differences and income differences in these family types we use the mean for all males (females) who have an income / age that is higher than their partner’s. In *table 1*, this information is summarized and the predicted share taken by the female for each family type is reported.

Table 1. Summary of the family types used for calculating predicted sharing.

Family type	Characteristics	Predicted share taken by the female
Equal future wage	Lower secondary education Same education Both in private sector No income difference No age difference No incomes above the ceiling	58.6
Average	Higher secondary education Same education Both in private sector Income difference = 100,33 Age difference = 2.11 No incomes above ceiling	59.2
Female strong	>3 years of university Female highest education Untraditional sectors Income difference = - 58,6 Age difference = - 2.76 Female's income above ceiling	48.0
Male strong	Elementary schooling Male highest education Traditional sector Income difference = 127,9 Age difference = 3.80 Male's income above ceiling	66.3

The predicted share taken by the female in different family types shows that relative bargaining strength indeed seems to matter. For families with the same expected future wage, we find that the female takes almost 60 per cent of all temporary parental leave, i.e. the Stackelberg model cannot be rejected. For the average family type and for families in which the male has a stronger bargaining power, we find the same results: the Stackelberg model cannot be rejected. However, if the female is stronger, we can reject the Stackelberg hypothesis. This can be seen as evidence for the first-mover advantage being erased when the female's bargaining power is strong enough. Although this is an interesting result, it is hardly one of any importance, since there exists only one single family in our sample with these characteristics (and then we have only specified that the

female has to have a higher income and age than her spouse, not how much higher).²⁷ Thus, *table 1* shows that the relative strength of the spouses indeed matters for the utilization of temporary parental leave. The stronger the male's bargaining power, the less sharing takes place within the household. It is noteworthy, that when the female has a strong bargaining power compared to her husband, the spouses take approximately equal amounts of temporary parental leave, whereas when the male has the stronger bargaining power, the female takes a larger share.²⁸ We therefore conclude that inequality in the sharing of temporary parental leave works through two different channels: Firstly, the male seems to have some sort of advantage, cultural or otherwise, that lets him take a smaller share of temporary parental leave (this is what we have called Stackelberg leadership). Secondly, due to the differences in socio-economic characteristics of men and women, women take a larger share of temporary parental leave (this is what we have called differences in bargaining power). We do not know whether women choose their socio-economic characteristics so as to enable them to take more care of the children, or if they have to take care of the children (for cultural reasons) and are therefore forced to socio-economic characteristics that make them weaker than their spouses.

1.11 Conclusion

Our aim in this paper has been to investigate the decision making process determining the intra household sharing of temporary parental leave. By modelling the decision to take temporary parental leave by the spouses and by applying different assumptions regarding the decision making process we generated three testable hypotheses. When testing these hypotheses empirically we were able to reject the unitary model and the non-cooperative Cournot-model. We could not reject the Stackelberg model with male dominance empirically and therefore concluded that this model best explains our data.

In a next step, in order to test whether the bargaining power of the spouses had any influence on the decision making process regarding the sharing of temporary parental

²⁷ If we drop the age restriction (since age differences are not significant in our estimation), the number of families increases to twelve.

²⁸ We also calculated predicted sharing if the female had the stronger bargaining power and income and age differences were the same as when the male is stronger (-2.11 and -100,33 respectively). This did not change predicted sharing (rounded off to one decimal).

leave, we included differences between the spouses in factors expected to influence the threat-point, i.e. the utility level after a divorce. These factors had the expected empirical results, which led us to conclude that the bargaining power of the spouses indeed influences the sharing of temporary parental leave.

Finally we also calculated the expected share taken by the female for four different family types and found that the first-mover advantage of the male spouse was erased if the female had a stronger bargaining power on all accounts. However, since this rarely happens in practice, this result is of a more theoretical interest.

The Stackelberg leadership of the male indicates that the woman still has the main responsibility for the children in a household. However, the male seems to be more prone to share the temporary parental leave when he works in a public sector.²⁹ Both of these results indicate that cultural factors, both within the family and on the labour market, have a strong influence on the sharing of temporary parental leave (and probably on other intra-household decisions as well). Such factors are difficult to influence through policy, but the passing of the so-called daddy month law that reserves at least two months of the parental leave to the father might be an attempt at such influence.

One often suggested solution to the problem of inequality regarding parental leave is to increase the income ceiling in the parental insurance (i.e. for both temporary parental leave and parental leave). We saw that the ceiling in the insurance indeed influences the sharing of temporary parental leave: spouses share more if only the female has an income above it and less if both spouses or (in particular) only the male spouse has an income above it. Therefore, increasing the ceiling would have an influence in the direction of greater equality in families in which only the male spouse has an income above the ceiling (approximately 32 per cent of the families in our sample). For example, by increasing the ceiling to 300,000 crowns, about 27 per cent of the men who are now above the ceiling would fall below it in these families. However, in families in which

²⁹ Of course it might be the case that men who are more "family oriented" choose to work in the public sectors, i.e. we cannot determine in which way the causality goes.

only the female has an income above the ceiling, the same increase in the ceiling would reduce the number of families in which only the female has an income above the ceiling with 45 per cent. In addition, by increasing the ceiling in the temporary parental leave insurance, families in which both spouses previously had incomes above the ceiling will change into families in which this is only the case for one of them. Since men in general have higher incomes than women, the person with the income above the ceiling (after an increase) will in most cases be the male.³⁰ Consequently, by increasing the ceiling in the temporary parental leave insurance, one increases sharing in some families (where the male previously was the only person with an income above the ceiling, but now has an income below it) but reduces it in others (where previously no one had an income above the ceiling, but now only the male does, alternatively, where previously the female had an income above the ceiling, but now no one does). However, since the number of families in which an increase in the ceiling of the temporary parental leave insurance has a positive effect on sharing is larger than the number of families in which sharing is reduced, an increase in the ceiling is likely to have an aggregated positive effect on the sharing of temporary parental leave.

³⁰ There were 1,527 families in which both incomes were above 273,000 and 958 families in which both incomes were above 300,000. Of the 569 families that changed status, 69 per cent were turned into families in which only the male had an income above the ceiling, in 16 per cent of the cases only the female had an income above the ceiling and in 15 per cent of the cases both had incomes below 300,000.

1.12 References

- Acker, J., Baude, A., Björnberg, U., Dahlström, E., Forsberg, G., Gonäs, L., Holter, H. & Nilsson, A. (1992). *Kvinnors och mäns liv och arbete*. SNS Förlag. Stockholm.
- Ahrne, G. & Roman, C. (1997). *Hemmet, barnen och makten - Förhandlingar om arbete och pengar i familjen*. SOU 1997:139
- Albrecht, J. W., Edin, P-A, Sundström, M., Vroman, S. B. (1999). Career Interruptions and Subsequent Earnings: A Re-examination Using Swedish Data. *The Journal of Human Resources*. 34. 294-311.
- Beblo, M. & Robledo, J. R. (2003). *The Wage Gap and the Leisure Gap for Double Earner Couples*. Mimeo, ZEW Mannheim.
- Becker, G. S. (1991). *A Treatise on the Family*. Cambridge, Harvard University press.
- Bolin, K. (1997). A Family with one Dominating Spouse. In Persson, I. & Jonung C. *Economics of the Family and Family Policies*. Routledge, New York.
- Bolin, K. (1996). *An Economic Analysis of Marriage and Divorce*. Lund Economic Studies 62. Team Offset, Malmö.
- Chiappori, P-A. (1992). Collective Labour Supply and Welfare. *The Journal of Political Economy*. 100, 437-67.
- Ekberg, J., Eriksson, R. & Friebe, G. (2003). *Sharing Responsibility? Short- and Long-term Effects of Sweden's "Daddy-Month" Reform*. Paper presented at the ESPE conference, New York, June 2003.
- Ermish, John F. (2003). *"An Economic Analysis of the Family"* Princeton University Press. New Jersey.
- Familjerätt - Information om lagreglerna. (1999). Justitiedepartementet, Regeringskansliet. ISBN 91-38-31555-6
- Greene, W., H. (2003). *Econometric Analysis*. Fifth edition, Prentice-Hall international Inc.
- Haas, L. (1992). *Equal Parenthood and Social Policy – A Study of Parental Leave in Sweden*. State University of New York Press. Albany.
- Hedlund, B. (1999). Din ekonomi 1999. *VälfärdsBulletinen Nr 1 1999*. http://www.scb.se/Grupp/Allmant/_dokument/A05ST9901_03.pdf (2005-05-02)

Konrad, K. A & Lommerud, K. E. (2000). The bargaining family revisited. *Canadian Journal of Economics* 33, 471-87.

LIMDEP reference manual. Version 8.0. Econometric Software Inc. Castle Hill. Australia.

Lommerud, K. E. (1997). Battles of the sexes: Non-Cooperative Games in the Theory of the Family. In Persson, I. & Jonung C. (Eds): *Economics of the Family and Family Policies*. Routledge, New York.

Lundberg, S. & Pollack, R. A. (1994). Noncooperative Bargaining Models of Marriage. *The American Economic Review*. 84. 132-37.

Lundberg, S & Pollack, R.A. (2003). Efficiency in Marriage. *Review of Economics of the Household*. 22. 153-168.

Manser, M. & Brown, M. (1980). Marriage and Household Decision Making. *International Economic Review*. 21, 31-44.

McElroy, M. B. & Horney, M. J. (1981). Nash-Bargained Household Decisions: Toward a Generalisation of the Theory of Demand. *International Economic Review*. 22, 333-49.

Meyer, A. (2005). *Studies on the Temporary Parental Leave Insurance*. Lund University. Lund.

Nya Livet - En Tidning om Jämställdhet för Blivande Mammor och Pappor. (2002).
www.naring.regering.se/fragor/jamstalldhet/

Näsman, Elisabet (1992). *Parental leave in Sweden - a workplace issue?* Stockholm. Stockholm research reports in demography No. 73.

RFV: *Vilka pappor kom hem? – En Rapport om Uttaget av Föräldrapenningen 1989 och 1990 för Barn Födda 1989*. RFV Informerar. Statistisk Rapport Is-R, 1993:3.

RFV: *Är barnen sjukare? Ökad användning av den tillfälliga föräldrapenningen 2001*. RFV Analyserar 2001:12.

RFV: http://statistik.rfv.se/servlet/page?_pageid=1632&_dad=portal30&_schema=PORTAL30 (2005-05-02)

Sundström, M. & Dufvander, A. Z. (1998). Föräldraförsäkringen och jämställdheten mellan kvinnor och män. In *Välfärdens Genusansikte*. Persson, I. & Wadensjö, E. (eds) SOU 1998:3 Arbetsmarknadsdepartementet.

1.13 Appendix

Table A1. Descriptive Statistics

<i>Variable</i>	<i>Definition</i>	<i>Mean (std. dv.)</i>		
		<i>Men</i>	<i>Women</i>	<i>Total Sample</i>
Femshare	<i>Share of days taken by the female</i>	0.62 (0.39)	0.62 (0.39)	0.62 (0.39)
Hnetto	<i>Total number of days taken in household</i>	10.25 (11.1)	10.25 (11.1)	10.25 (11.1)
Education1	<i>1 if elementary</i>	0.15 (0.35)	0.095 (0.29)	0.12 (0.33)
Education2	<i>1 if lower secondary</i>	0.41 (0.49)	0.40 (0.49)	0.40 (0.49)
Education3	<i>1 if higher secondary</i>	0.12 (0.32)	0.15 (0.35)	0.13 (0.34)
Education4	<i>1 if <3 years of university</i>	0.17 (0.37)	0.21 (0.41)	0.19 (0.39)
Education5	<i>1 if >3 years of university or PhD</i>	0.16 (0.36)	0.15 (0.36)	0.15 (0.36)
Educdiff1	<i>1 if female highest education</i>	0.14 (0.35)	0.14 (0.35)	0.14 (0.35)
Educdiff2	<i>1 if same education (+/- one level)</i>	0.76 (0.43)	0.76 (0.43)	0.76 (0.43)
Educdiff3	<i>1 if male highest education</i>	0.10 (0.30)	0.10 (0.30)	0.10 (0.30)
Sector1	<i>1 if private company (private)</i>	0.76 (0.42)	0.43 (0.49)	0.60 (0.49)
Sector2	<i>1 if government administration (private)</i>	0.059 (0.24)	0.04 (0.20)	0.05 (0.22)
Sector3	<i>1 if municipality (public)</i>	0.080 (0.27)	0.37 (0.48)	0.23 (0.42)
Sector4	<i>1 if county council (landsting) (public)</i>	0.027 (0.16)	0.11 (0.32)	0.069 (0.25)
Sector5	<i>1 if public company (private)</i>	0.069 (0.25)	0.044 (0.20)	0.056 (0.23)
Secdiff1	<i>1 if male in public & female in private sector.</i>	0.034 (0.18)	0.034 (0.18)	0.034 (0.18)
Secdiff2	<i>1 if both spouses in public sector.</i>	0.073 (0.26)	0.073 (0.26)	0.073 (0.26)
Secdiff3	<i>1 if both spouses in private sector.</i>	0.48 (0.50)	0.48 (0.50)	0.48 (0.50)
Secdiff4	<i>1 if female in public & male in private sector.</i>	0.41 (0.49)	0.41 (0.49)	0.41 (0.49)
Ind_inc	<i>Individual income (thousands, \$1 ≈ 7sek)</i>	277 (150)	178 (68.9)	227 (125)
Incdiff	<i>Male inc - Female inc (thousands)</i>	100.33 (149.05)	100.33 (149.05)	100.33 (149.05)
Age	<i>Individual age (years)</i>	37.5 (5.5)	35.4 (5.2)	36.5 (5.5)
Agediff	<i>Male age – Female age (years)</i>	2.16 (3.60)	2.16 (3.60)	2.16 (3.60)
Fem_over	<i>1 if only female above ceiling in tpl insurance</i>	0.023 (0.15)	0.023 (0.15)	0.023 (0.15)
Male_over	<i>1 if only male above ceiling in tpl insurance</i>	0.32 (0.47)	0.32 (0.47)	0.32 (0.47)
Both_over	<i>1 if both spouses above ceiling in tpl ins.</i>	0.044 (0.21)	0.044 (0.21)	0.044 (0.21)
Children	<i>Number of children ≤ 12 years</i>	1.95 (0.73)	1.95 (0.73)	1.95 (0.73)
Youngest	<i>Age of youngest child (years)</i>	4.85 (3.16)	4.84 (3.16)	4.84 (3.16)
N		34,416	34,416	68,832

Table A2. Grouped logit estimates of the probability that the female takes all temporary parental leave.

<i>Variable</i>	Coefficient	Marginal effect
Constant	0.378 (0.014)***	0.089 (0.003)***
Incdiff	0.998D ⁻³ (0.875D ⁻⁴)***	0.236D ⁻³ (0.206D ⁻⁴)***
<i>Observations</i>	34,416	
<i>Log-Likelihood</i>	-22,839	

*Standard errors in parentheses *significant at 10%, **significant at 5%, ***significant at 1%.*

Table A3. Grouped logit estimates of the probability that the female takes all temporary parental leave

<i>Variable</i>	Coefficient	Marginal effect
Constant	0.230 (0.060)***	0.054 (0.014)***
Children	-0.102 (0.016)***	-0.024 (0.004)***
Youngest	0.065 (0.004)***	0.015 (0.001)***
Education2	0.156 (0.040)***	0.037 (0.009)***
Education3	0.166 (0.047)***	0.038 (0.011)***
Education4	0.121 (0.049)***	0.049 (0.011)***
Education5	0.261 (0.052)***	0.060 (0.012)***
Educdiff1	-0.087 (0.038)**	-0.021 (0.009)**
Educdiff3	0.090 (0.041)**	0.021 (0.009)**
Secdiff1	-0.187 (0.063)***	-0.045 (0.015)***
Secdiff2	-0.123 (0.046)***	-0.029 (0.011)***
Secdiff3	-0.037 (0.025)	-0.008 (0.006)
Agediff	0.002 (0.003)	0.000 (0.001)
Incdiff	0.222D ⁻³ (0.993D ⁻⁴)**	0.523D ⁻⁴ (0.234D ⁻⁴)
Fem_over	-0.273 (0.077)***	-0.066 (0.019)***
Male_over	0.328 (0.031)***	0.076 (0.007)***
Both_over	0.155 (0.060)***	0.036 (0.014)***
Hnetto	-0.012 (0.001)***	-0.003 (0.000)***
<i>Observations</i>	34,416	
<i>Log-Likelihood</i>	-22,426.01	

Standard errors in parentheses *significant at 10%, **significant at 5%, ***significant at 1%.