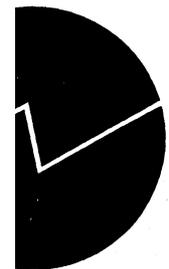


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**Impacts on Women's Work and  
Child Care Choices of  
Cash-for-Care Programs**

Documents



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## **Impacts on Women's Work and Child Care Choices of Cash-for-Care Programs**

**Abstract:**

This study assesses the short-term effects on women's combined work and child care choices of a novel Norwegian family policy program: the cash-for-care benefit ("kontantstøtte"). Based on cross-sectional data from two sample surveys carried out just before and just after the reform, multivariate analyses indicate that there has been a small decline in the work probability of most mothers after the reform, except among those at the highest educational level. Further there has been a shift from work combined with subsidised care to work combined with non-subsidised care, as well as a shift from full-time to part-time work. The impact differs according to educational level. As expected, the choices of mothers at the upper university level have become more dissimilar to the choices of mothers with low education, but somewhat surprisingly, the choices of mothers at the middle university level, and especially with teacher training background, have become more similar to the lowest educational group. Hence, there are increasing differences in behaviour even among university educated mothers.

**Keywords:** Maternal employment, child care, family policy, cash-for-care benefit.

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# 1. Introduction

In August 1998 a novel family policy programme was introduced in Norway: the cash-for-care benefit ("kontantstøtte"). All parents of 1-2 year olds who do not use subsidised day-care are entitled to the benefit, and parents who use part-time care may receive a reduced amount proportional to the hours of attendance.

The purpose of the reform was threefold: (i) to enable parents to spend more time with their children, (ii) to give parents more flexibility in their work and child care choices, and (iii) to distribute public transfers more equally between users and non-users of subsidised care. Prior to introduction the reform was fiercely debated, and opponents warned of several possible negative effects, mainly related to setbacks in gender equality and a shift of child care demand from high quality professional day-care to more informal arrangements based on private childminders.

Since cash-for-care programs are quite an innovation also internationally, there is little knowledge so far of its consequences. One exception is a study from Finland by Ilmakunnas (1997) who analyses the effects of a similar program that was launched in 1985 and fully established in 1990<sup>1</sup>. She finds that increasing benefit levels increase maternal care and decrease the use of public day-care, but that private day-care options are less affected by the size of the benefit. Studies of other aspects of child care demand are more abundant. In an analysis from a similar institutional country setting, Gustafsson and Stafford (1992) examine the effects of child care subsidies in Sweden. They find that subsidised child care encourages the market work of mothers of pre-school children, and when spaces are not rationed, a lower price encourages the use of public day-care. In addition there are several studies from quite different settings where the role of public policies is generally weaker and informal modes of child care are more important (see e.g. Blau and Robins 1988, Hoffert and Wissoker 1992, and Ribar 1992).

A major criticism of the Norwegian reform is that it had not been evaluated properly before introduction. It came as a result of the 1997 elections, bringing to an end the long-term rule of the Labour government, and introducing a centre coalition that had pledged to introduce a cash benefit for child care. Taking the criticism of poor ex-ante evaluation seriously, the government has commissioned a large-scale appraisal ex-post under the auspices of the Norwegian Research

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<sup>1</sup> The Finnish and the Norwegian schemes have many similarities, but there are also several differences. The main component of both programs is a flat rate basic payment, but the Finnish system also has a means-tested component and a siblings supplement. Besides many municipalities pay an additional amount that varies considerably. Unlike the Norwegian system, the Finnish cash-for-care benefit is taxable.

Council. The present paper reports results from the first stage of one of the projects included in the evaluation programme, and focuses on short-term effects on women's work and child care choices.

## **2. The labour market and family policy environment**

In a European comparative perspective, the Norwegian family policy programme is quite generous, and maternal employment is high. In 1997, the labour force participation rate among married and cohabiting mothers with a youngest child 0-3 years was 75 percent and 83 percent among mothers of 3-6 year olds (Statistics Norway 1998). This is higher than among women in general and also higher than among single women (mothers and non-mothers).

No doubt, the availability of long parental leaves and an increasing supply of high quality, subsidised day-care have made it easier for women to stay in touch with the labour market when they become mothers (Rønsen and Sundström 1999). In Norway, working parents have, since 1993, been entitled to 52 weeks leave with 80 per cent wage compensation or 42 weeks with full compensation in connection with childbirth<sup>2</sup>. The father may share most of the leave, except three weeks before birth and six weeks after delivery that are reserved for the mother. In addition, fathers are entitled to two weeks of unpaid paternity leave immediately after birth.<sup>3</sup>

Traditionally, most fathers have taken the two weeks of paternity leave, but very few have used the opportunity to share parts of the common parental leave period. To encourage the involvement of both parents in child care, an amendment in 1993 reserved four weeks of the leave extension for the father - the so called "daddy quota". These weeks are generally not transferable to the mother, and are lost if the father does not make use of them. Hence there is a strong incentive for fathers to take the leave, and judged by experience, the reform has been a success. In 1996, three years after introduction, almost 80 per cent of entitled fathers used the "daddy quota", and furthermore, the proportion of fathers who shared some of the common parental leave period had risen from four to 12 percent (Brandth and Jensberg 1998).

When the cash-for-care scheme was introduced in August 1988 only one-year olds were eligible for the benefit, but from January 1999 all children aged 12 to 36 months were included in the programme. The benefit is a monthly, tax-free flat rate payment of NOK 3.000 (approximately EUR 360), and is roughly equivalent to the state subsidy for a place in a day-care centre. To be eligible for the full benefit, the child must not attend a publicly funded day-care centre on a full-

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<sup>2</sup> Eligibility requires employment during 6 of the last 10 months prior to birth.

time basis (more than 32 hours per week). Parents of children that attend part time may receive a reduced benefit (80, 60, 40 or 20 percent of the full amount), depending on stipulated weekly attendance. The right of a partial amount for part-time users is regarded as an important device to fulfil one of the main intentions of the program, to give parents more flexible work and child care arrangements. Based on a similar reasoning, there is no obligation for parents who claim the benefit to stay at home and care for the children themselves. They are quite free to buy any other form of child care, as long as it is not publicly subsidised.

One of the concerns of the opponents of the cash-for-care program was the perceived shift in family policy from incentives that encouraged the father's involvement in child care to incentives that were believed to mainly affect mothers (see e.g. Leira 1999 for a discussion). The experience so far shows that the new scheme is very popular in the sense that a large majority of parents with children in the eligible age group claims the benefit. In the spring of 1999, about four months after the scheme was fully established, parents of 75 percent of 1-2 year olds received the benefit (Reppen and Rønning 1999). In August 1999 the proportion had increased to more than 80 percent. However, only five percent of the recipients were fathers (Dagsavisen, 26.08.1999).

Another concern of the opponents has been its effect on the child care market, as subsidised day-care centres have always been in short supply in Norway. But following quick expansions during the 1980s and the 1990s, the coverage rate reached 50 percent at the end of 1997 (Statistics Norway 1999)<sup>4</sup>. There is still a large geographical variation in coverage, however, and while some municipalities may be close to full supply, others are still far off<sup>5</sup>. The coverage rate also increases with the age of the child, and at the end of 1997 it was 40 percent among 1-2 year olds and 73 percent among 3-5 year olds.

Day-care centres may be owned and run either as public or private enterprises. However, both forms of ownership receive state subsidies as long as the centre is publicly approved. The municipality is responsible for approving and supervising private day-care centres, and in many cases (almost 50 percent) it also supports these enterprises economically (NOU 1996:13). In the 1990s, private day-care centres have accounted for most of the expansion, and today they

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<sup>3</sup> Wage compensation is now often granted, following local negotiations.

<sup>4</sup> The coverage rate is defined as the proportion of pre-school children with a subsidised place. If leaving out children who are usually cared for by parents on parental leave (0-12 month olds), the coverage rate was 60 percent.

<sup>5</sup> Between counties, coverage in 1997 varied from 44 percent to 61 percent, with Oslo, Sogn og Fjordane and Finnmark having the highest rates. Between municipalities, the difference in coverage is even larger. In 1995-96 the Ministry of Children and Family Affairs estimated the demand for day-care services to comprise 70 percent of 3-5 year olds and 65 percent of 1-2 year olds (NOU 1996:13).

constitute about half of all day-care centres in the country (Statistics Norway 1999). Since, however, private centres are usually smaller than public centres, the proportion of children in private care is lower, about 40 percent.

The expenses for a publicly approved day-care place are thus shared between the state, the municipalities and the parents. At the end of the 1980s, the stated intentions were for the state to pay 40 percent of the cost, while the remaining 60 percent should be divided equally between parents and municipalities (Stortingsmelding nr. 8, 1987-88). Because of the fast expansion in private centres, the average municipality share has, however, been lower and the average parental share higher. In 1994, for example, parents paid 44,5 percent of the cost in private day-care centres and 28,8 percent in public centres. The owner, i.e. the municipality or the private enterprise, sets the parental price. Traditionally, municipality prices have depended on family income, while private centres charge flat rates. Today, about half the municipalities also charge flat rates. In 1998 average parental payment in large cities and suburbs was about NOK 3500 (about EUR 420) per month in private centres and slightly less in public centres (Statistics Norway 1998b). The price for a toddler may be higher than for older pre-school children, and there is usually a siblings discount.

One of the consequences of the cash-for-care reform was to substantially raise the relative price of subsidised care, since parents who buy that kind of care forego a sizeable cash benefit. Hence, there were fears that parents would switch from professional care to other more informal arrangements. Consequently, further expansions of the day-care sector could come to a halt, and in the worst case, some centres might even have to close down. In this scenario parents could end up having fewer child care choices instead of more, since it may become even harder to get a place in a day-care centre for those who wish to do so.

So far there is little evidence of a downsizing of the professional day-care sector. While preliminary figures for 1999 do point to a slight reduction in the number of 1-2 year olds in day-care centres, this has almost been compensated for by a similar increase in the attendance of 3-5 year olds (Statistics Norway 2000)<sup>6</sup>. The long-term trend of increasing coverage rates in all age groups has, however, now been broken.

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<sup>6</sup> Compared to the December 1997 figures, the preliminary figures for December 1999 show a reduction of almost 5000 children or about 4 percent in the age group eligible for cash-for-care benefit, children 1-2 years old.

### 3. A framework for impact assessment

The cash-for-care programme obviously changes the opportunity structure of parents in a significant manner, by enlarging the budget restriction and changing the relative price of day-care. To assess the effects on mothers' work and child care choices, my point of departure is a simple, standard time allocation model in which the father's labour supply is regarded as predetermined and, hence, exogenous. The mother has preferences over market goods,  $C$ , total "child quality" or "child well-being" for a given number of children,  $Q$ , and other home time or leisure,  $L$ , represented by the utility function

$$(1) \quad U = U(C, Q, L)$$

The mother's total available time,  $T$ , can be divided between hours of market work,  $H$ , child care hours,  $K$ , and other home time or leisure:

$$(2) \quad T = H + K + L$$

Child quality is produced by inputs of caring time and market and non-market goods. Time for child care can be supplied by the mother, by other unpaid sources (family members or relatives) or by services bought in the market. For our purposes and for simplicity we shall only distinguish between two non-parental caring modes: subsidised day-care and all other, non-subsidised care. Let  $X$  and  $Z$  denote hours of subsidised and non-subsidised care, respectively, and let  $G$  denote the goods input. Production of  $Q$  is then given by the function

$$(3) \quad Q = f(G, K, X, Z)$$

The consumption possibilities is given by the budget constraint

$$(4) \quad C = Y + wH - (pX + qZ)$$

where  $Y$  is non-labour income,  $w$  is the mother's wage rate after taxes and  $p$  and  $q$  is the price per hour of subsidised and non-subsidised care, respectively.<sup>7</sup>

The mother maximises (1) with respect to  $C$ ,  $L$ , and  $Q$  given her time constraint (2) and the budget constraint (4). Labour supply can theoretically range from zero hours to the maximum of the time

constraint. However, institutional or other regulations normally imply that the choice of working hours is restricted. The mother's choice is therefore limited to a smaller set of alternatives. For our purposes we shall assume that her labour supply decision is limited to choosing between full-time work, part-time work or no market work, and that her demand for hours of non-maternal care is directly related to her working hours. That is, we only distinguish between different modes of child care, not between different hours of attendance. We further disregard possible child care use among non-working mothers, and are left with the following five alternatives:

1. Full-time work / subsidised care (FS)
2. Full-time work / non-subsidised care (FNS)
3. Part-time work / subsidised care (PS)
4. Part-time work / non-subsidised care (PNS)
5. Not working (NW)

The utilities associated with these alternatives are given by

$$(5) \quad U_j = v_j + e_j, \quad j=1,2,\dots,5$$

where  $v_j$  is a non-stochastic function of explanatory variables and unknown parameters and  $e_j$  is an unobservable random variable. The mother chooses the alternative with the highest utility, i.e. alternative  $j$  is chosen if and only if

$$(6) \quad U_j > U_k, \quad \text{for all } k \neq j.$$

Under certain assumptions<sup>7</sup> it can be shown (see e.g. Amemiya, 1981) that the probability of choosing alternative  $j$ ,  $P_j$ , satisfies

$$(7) \quad P_j = \frac{\exp(v_j)}{\sum_k \exp(v_k)}$$

$P_j$  may be a function of both individual-specific and alternative-specific characteristics. In our case, child care costs and labour income typically differ across alternatives, but so does also labour-free income since the cash-for-care benefit is directly linked to the use or non-use of subsidised care. However, due to missing wage and price data I am not able to take alternative

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<sup>7</sup> Since non-subsidised care may be a composite of all other caring modes,  $q$  may be regarded as the average price of other care.

<sup>8</sup> The assumptions are that the  $e_k$ s have a Type 1 extreme value distribution and are independent across alternatives.

specific characteristics into account in the empirical specification. Instead, I estimate a reduced form of (7) with only individual-specific characteristics, i.e. I estimate the ordinary multinomial logit model:

$$(8) \quad P_j = \frac{\exp(X\beta_j)}{\sum_k \exp(X\beta_k)}$$

where  $X$  is the vector of covariates and  $\beta_j$  is the vector of coefficients. In this model the coefficients are allowed to differ across alternatives, i.e. individual characteristics may affect each alternative differently.

To assess the short-term impact of the cash-for-care reform, my first approach is to estimate (8) at two time points, one just before and one just after the reform was initiated. As the intermediate time was a period of great stability in the economy, and there were no other significant family policy reforms, changes in the estimates from one point to the other may be a first sign of policy impact. Later, I shall also study changes on the individual level in more detail, using the panel part of the available data (see below).

#### **4. Data and descriptive statistics**

The data are from two sample surveys among parents with pre-school children, the first conducted in April/May 1998 and the second in April/May 1999. The Ministry of Children and Families Affairs commissioned the surveys to investigate parents' attitudes to the cash-for-care reform, their expected and actual use of the benefit and changes in relation to the use of child care services, labour market behaviour and the division of household tasks between the spouses. The 1998 survey was carried out as a postal inquiry among a representative sample of 3500 mothers with pre-school children aged 0-5 years old. Replies were obtained from 2436 mothers, a response rate of 70 percent. The 1999 survey was conducted as a telephone interview, comprising all mothers in the 1998 sample who still had a pre-school child as well as new mothers who had not been included previously, and who had given birth to a child between the surveys. The final sample totalled 3872 mothers, of whom 3334 were interviewed - a response rate of 87 percent. The panel constituted about 60 percent of the net sample. In 1999 fathers of 1-2 year olds were also asked a few questions. In addition, the mother supplied basic information about the father in each round.

Results from the two surveys have previously been published in Rønning (1998), Reppen and Rønning (1999), Hellevik (1999) and (2000), and Langset, Lian and Thoresen (2000). Reppen and Rønning (1999) report that the cash-for-care benefit is claimed for a large majority of eligible

children (76 percent). Albeit popular in use, when asked what they considered the best initiative to give families with small children more time together, only about ten percent of mothers as well as fathers ranked the present cash-for-care scheme the highest. About twice as many ranked a similar scheme highest, whereby only parents who stay at home and care for their own children would receive the benefit. However, the initiative that was favoured by the largest group of parents was an extension of the parental leave period from one to two years. Mothers state that an important reason for using the benefit is to "spend more time with the children", while most fathers regard an important reason to be that "the mother wants to stay at home". In families who receive the benefit, mothers have lower employment activity than other mothers, while fathers' employment activity is hardly affected at all. About 40 percent of mothers who receive the benefit and who are either employed or studying, report that they have reduced their work or study activity after the reform, but about half of them state that they would have done so anyway.

Hellevik (2000) looks closer at *changes* in behaviour from 1998 to 1999. She reports that the proportion of mothers of 1-2 year olds who actually worked (i.e. who was employed and not temporarily on leave) did not change, but that there was a shift from full-time to part-time work. Surprisingly, the reduction in working hours mainly seems to concern mothers with high education (university level), while mothers with lower education were less affected. Parental care was more common in 1999 than in 1998, as non-parental care had been reduced with almost 2.5 hours per week. There was a slight decrease in the proportion of 1-2 year olds in day-care centres, and a slight increase in the proportion of 1-year olds looked after by private childminders.

Finally, Langset, Lian and Thoresen (2000) estimate that the cash-for-care reform may have reduced labour supply among mothers with children in the eligible ages with approximately 3500-4500 man-years (or rather woman-years). The largest reduction appears to be in the public sector, and especially in the health- and educational sector.

This study is a multivariate analysis of mothers' joint employment and child care choices, focusing on the determinants of their decisions. The analysis is limited to mothers with children in the eligible age, i.e. to those who had at least one child aged 12-35 months at the time of response. Due to a few observations with missing or incomplete data, the total analysis sample consists of 1214 mothers in 1998 and 1690 mothers in 1999. The samples include single as well as cohabiting and married mothers. When partners' characteristics are included in the analysis, the estimates are based on sub-samples of married and cohabiting mothers with non-missing information on their partner. These sub-samples constitute about 85 percent of the total analysis samples, and consist of 1025 and 1441 mothers in 1998 and 1999, respectively.

In addition to models with five response levels, distinguishing between full-time and part-time work, I also report results from models where full-time and part-time have been collapsed. Work is defined as being employed and at work, i.e. women with paid or unpaid leave are regarded as not working. If a mother has more than one child, her child care choice is related to the child that is eligible for the cash-for-care benefit. If she has more than one child in this age group (applies to about 4 percent), the choice is related to the youngest of them.

Descriptive statistics for the two different aggregation levels of the dependent variable are given in Table 1a. In addition to the results already reported in Hellevik (2000) of stable employment proportions, but less full-time work, we also note that there has been a shift from subsidised care to non-subsidised care. The lower proportion of full-time work in 1999 can fully be accounted for by a lower proportion who combine full-time and subsidised care, while the higher proportion of part-time work can primarily be ascribed to a higher proportion who combines part-time and non-subsidised care.

Descriptive statistics of the model covariates are given in Table 1b. These include human capital variables, demographic variables and a set of regional dummies, and for the subgroup of married and cohabiting mothers also partner's characteristics, including his income and total household debt (mortgage and other loans). Unfortunately, there is no survey information on the mother's wage<sup>9</sup> - the shadow-price of not working. When child care costs are concerned, there is detailed price information in the 1999 data, but in 1998 it is not possible to distinguish the price of different types of child care, as total child care costs were reported as one single sum<sup>10</sup>.

## 5. Covariates and hypotheses

Since the mother's wage is not included in the model, her age and educational level will also reflect behavioural differences related to differences in earnings potential. As wage is normally positively correlated with age and education, the estimated indirect effects of these proxies on employment are expected to be positive. As older and more highly educated women may also be more attached to the labour market, the direct effects of age and education pull in the same direction, leading to a clear hypothesis of positive effects on employment of these variables.

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<sup>9</sup> There is information on the mother's annual income the previous year, but no record of her employment activity that year. Using normal working hours at the time of response to estimate the wage rate would no doubt introduce large measurement errors and render subsequent wage predictions rather futile.

<sup>10</sup> Even if available, there is the additional difficulty of income-dependent day-care prices. As mothers' earnings are included in the income basis, the actual price paid is really endogenous in the model.

In the debate preceding the introduction of the cash-for-care reform, an argument often encountered was that it would mainly be mothers with low education that would use the benefit to stay home and look after their children, and hence reduce their labour supply. If this were the case, we should expect larger educational differences in employment activity in 1999 than in 1998. When child care is concerned, previous evidence indicates that highly educated mothers are more likely than others mothers to use day-care centres (see e.g. Ilmakunnas 1997, Hellevik 1999). This difference seems to increase with increasing coverage level, which is probably a result of higher unmet demand for day-care among the well-educated in a situation with stricter rationing.

The information on *mother's age* and *mother's educational level* is extracted directly from administrative registers and linked to the survey data. The average age in the sample over the two years was about 31 years. Educational level is classified according to the stipulated time needed to obtain a certain level. The largest educational group, comprising about 40 percent of the mothers, has an upper secondary education (11-12 years total schooling), but almost as many (about 35 percent) have some university education (more than 12 years). About 20 percent have a degree that requires 3-4 years of university study (15-16 years in all), while about 5 percent have a post-graduate degree that normally takes 5-6 years at university (at least 17 years in all).

A well-established finding from numerous studies in many countries is that female labour supply decreases with the number of children and increases with the age of the youngest child. From official statistics (e.g. Statistics Norway 1997) we also know that the use of day-care centres increases with the age of the child. Even if this could partly be a result of shorter supply and more rationing among the youngest, several surveys also indicate that the demand for day-care increases with the age of the child (Schytte Blix 1993, Rønning 1998). We therefore expect a positive effect of the child's age on employment in general, that is likely to be stronger for the work/subsidised care option than for the work/non-subsidised care option.

In our sample all mothers have at least one child aged 1-2, but some may also have younger children (and/or of course older). After some experimenting, I decided to model the age-of-child effect by two variables: (i) *age of youngest eligible child* measured in months (i.e. 12-35 months) and (ii) a dummy for *younger siblings* (i.e. 0-11 months). In 1998 the average age of the youngest eligible child was 21,9 months (23,8 months in 1998), and about 10 percent of the mothers also had a younger child. More than half the mothers had only one child, about 40 percent had two children and about five percent had three or more children below school age.

Marital status is primarily an indicator of different economic opportunities as single mothers cannot draw on the income of a partner. However, in Norway single mothers with pre-school children may receive a relatively generous transitional allowance ("overgangsstønad") for a maximum of three years if they are not able to support themselves. The allowance is income dependent, as earnings over a certain (low) amount is deducted by 40 percent. On top of the ordinary marginal tax this results in very high gross marginal rates (up to 70 percent, see e.g. Rønsen and Strøm 1993). As a result, part-time work has not been as common among single mothers as among mothers in general, and single mothers also have a lower total employment rate (Kjeldstad and Rønsen, forthcoming)<sup>11</sup>. On the other hand, single mothers often get priority to rationed day-care places and pay a reduced rate. They may therefore in particular be less likely to combine work and non-subsidised care compared to other mothers. I further distinguish between married and cohabiting mothers, as previous research indicates that cohabiting mothers have a stronger labour market attachment than married mothers (see e.g. Rønsen 1993). Although cohabitation is widespread in Norway, marriage is still the most common way of living together for the mothers in our sample. More than 60 percent are married, about 30 percent are cohabiting and the remaining 5-8 percent are single mothers.

Regional dummies are the final covariates common to all models. Apart from cultural differences, *region* also picks up differences in employment patterns and day-care coverage. The South-West is the largest of the four regions, comprising about one third of the mothers, while the rest constitute three regions of about similar size. The South-West is usually regarded the area with the most traditional family values. It also has the lowest average day-care coverage. The highest coverage level is found in the metropolitan area (Oslo/Akershus) and in the North, which are both areas with less traditional family values. We therefore expect mothers to be more likely to work and to use subsidised care in these regions.

When estimating the model on the sub-group of married and cohabiting women I also include partner's characteristics. Constituting a large component of the mother's budget restriction, *partner's income* is an important variable. Like other labour free income it is assumed to increase consumption of normal goods, including home time and child care, and hence to reduce labour supply. The negative effect may be stronger for work combined with non-subsidised care, as families with higher income can better afford to pay the relatively high price of professional day-

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<sup>11</sup> In 1998 the employment rates among single and non-single mothers with children 0-15 years were 65 and 81 percent, respectively. The corresponding full-time rates (proportion of working mothers who work  $\geq 36$  hours per week) were 47 and 41 percent. Working hours refer to hours actually worked. The difference between the two groups has become smaller during the 1990s, as the full-time rate among single mothers has decreased while it has increased among married and cohabiting mothers.

care. This is especially relevant after the cash-for-care reform that almost doubled the price of subsidised care in real terms. Partner's income refers to his annual pre-tax labour income previous year, and averaged about 280 000 NOK (about 33 600 EUR) for 1998 and 1999 samples. Also important in the budget restriction is the family's *household debt*, which reduces consumption possibilities and therefore has the opposite effect of partner's income. The average total household debt at the time of response was about 640 000 NOK (about 76 800 EUR).

After controlling for partner's income, the effect of his education is probably weaker. However, I also include *partner's education*, as it may reflect differential attitudes among fathers toward mothers' employment and child care that would not be captured otherwise. Partner's education is based on survey information supplied by the mother and is reported in four response categories: primary school, secondary school, 1-3 years of university studies, and 4 years or more of university studies. In the analysis the two upper levels have been collapsed as their estimates were quite similar. About 40 percent of the partners had some university education, almost as many as the group with secondary education<sup>12</sup>, while 12-13 percent had primary school only.

Finally, I include two indicators related to the fathers work situation: (i) *partner's working hour arrangement* (normal daytime work or other work arrangements) and (ii) *partner's job sector* (health or school sector versus other sectors). Since these variables are only relevant if the partner works, they are introduced in interactions with a dummy variable for father's work status (employed/not employed). The large majority of fathers were employed (97-98 percent), about two thirds worked normal daytime hours, and about ten percent worked in the health- or school-sector<sup>13</sup>.

If fathers work non-standard hours, they may be more able to look after their children during the day, making it easier for mothers to work without using a day-care place. If the father works in the health- or school sector it may be easier for the family to get a day-care place, since these sectors often have their own day-care centres. In addition these fathers may be more family- and child-oriented and take more part in the household work, making it easier for the mother to be employed. Hence, mothers with a partner in the health and school sector may be more likely to work and use subsidised care.

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<sup>12</sup> In the 1988 postal survey there were more incomplete data, and information on partner's education was missing for 3 percent of the informants. Rather than leaving out these observations, I decided to treat them as a separate group in the analysis.

<sup>13</sup> Social work and work in the day-care sector are also included in the health- and school sector.

## 6. Results

Table 2 reports estimates from a multinomial logit model with three response levels: (i) work/subsidised care, (ii) work/non-subsidised care and (iii) no work. In Table 3 I also distinguish between full-time and part-time work, and get five response levels: (i) full-time/subsidised care, (ii) full-time/non-subsidised care, (iii) part-time/subsidised care, (iv) part-time/non-subsidised care and (v) no work. We shall discuss these results in conjunction, taking the simplest model as our point of departure, and supplementing with results from the more detailed model if that gives additional insight. The effect of covariates that are common to all mothers will be commented based on the full sample, but the results do not differ much when based on the sub-sample of married and cohabiting mothers. As the primary purpose is to assess whether the behaviour of mothers have changed after the introduction of the cash-for-care program, special attention is given to possible changes in the estimates from 1998 to 1999.

Starting with the estimates for 1998, we notice that most coefficients have the expected sign and are on the whole significant. Age appears to have no effect on work that is combined with non-subsidised care, but this is mainly due to no effect on the part-time/non-subsidised care alternative (table 3). The educational effects are stronger for work combined with subsidised care than for work combined with non-subsidised care, and are stronger for full-time work than for part-time work. In fact, in 1998 there are no differences between the educational groups in the choice of part-time/non-subsidised care.

Having controlling for the presence of a sibling 0-12 months, which strongly inhibits employment, there are no further negative effects of the number of children in 1998<sup>14</sup>. As expected, the work probability increases with the age of the eligible child, but mainly when it is combined with subsidised care. Also as expected, married and cohabiting mothers are more likely to have paid work than single mothers, but significantly so only if it is combined with non-subsidised care. Table 3 further shows that this mainly concerns part-time work. Finally, the regional pattern corresponds well with a priory reasoning: mothers in the East and South-West are less likely to work and use subsidised care than mothers in the capital area of Oslo/Akershus, particularly if they are working full-time. Mothers in the North are also less inclined to work full-time and use subsidised care, but on the other hand they are more likely to choose part-time and non-subsidised care.

Turning to the sub-group of married and cohabiting mothers, the latter seem to be more inclined to work and use subsidised care than the former, but this mainly concerns the part-time/subsidised care alternative. Characteristics of the partner seem to play a fairly modest role, and in 1998 only work in the health or school sector is significant. It has a clear positive effect on mother's employment in general, but is strongest for work, and in particular part-time work, in combination with subsidised care. There is also some indication that the mother is more inclined to work and use subsidised care if the father works regular daytime hours than if he has another work schedule. This renders little support for the hypothesis that it may be easier for mothers to be employed if the partner works non-standard hours. However, since regular evening or night shifts only constitute a small part of "other arrangements", we cannot draw any firm conclusion on this basis<sup>15</sup>. Finally, there is clear evidence that higher household debt prompts mothers to work. The effect is most pronounced for full-time work and particularly full-time combined with subsidised care.

Now let us look for impacts of the cash-for-care reform, expressed as *changes* in the estimates from 1998 to 1999. Before proceeding, we should be reminded that given our sample size, standard errors and confidence intervals will necessarily be relatively large, requiring a substantial change from one year to the other for the difference to be significant in statistical terms. At this exploratory stage of analysis we shall, however, be somewhat less restrictive, and shall also comment on patterns and trends in the material that seem noteworthy, even if they may not be significant in the strict sense.

At first glance (table 2) the effect of mother's age seems quite stable, but turning to table 3, we see that the positive effect on the full-time/non-subsidised care option have vanished. However, more evident, and more intriguing, are the changes in the effects of education, where there is a shift in opposite direction for the various university groups. While the work behaviour of mothers with a medium level university degree (3-4 years of university study) in 1999 has become more similar to mothers with low education, the difference between the reference group and mothers with a lower and especially with a higher university degree has become larger. Hence, the behavioural difference between the two upper university educated groups has also increased.

Relative to the reference group, mothers at the highest university level have an increased propensity in 1999 to work regardless of child care choice, while mothers with a short university

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<sup>14</sup> In models distinguishing between full-time and part-time we could not include a dummy for younger siblings because of empty cells in the dependent variable. I.e. some of these alternatives were not chosen by any of the mothers with a child less than one year old.

<sup>15</sup> Other work arrangements also include various shift work, and work that either starts before 6 a.m. or finishes after 6 p.m. Hence, it may also include jobs with very long working hours.

education only have an increased propensity to work and use subsidised care. This is mainly due to a higher likelihood of working part time (table 3). In 1998 there was no difference between the reference group and the highest educated mothers in the choice of part-time options, but in 1999 part-time work had become relatively much more common among the latter, especially when combined with subsidised care.

Since typical female professions such as nursing and teaching usually require 3-4 years of university study, I expected field of study to throw additional light on the changing behaviour of this particular group. Hence, I re-estimated the model, splitting the middle university group into three fields of study: (i) teacher training programs, (ii) medical programs and (iii) other programs. The results show, somewhat surprisingly, that teachers in particular have changed their behaviour in the direction of the reference group. This is expressed as a smaller difference in work activity in general, and especially in work that is combined with subsidised care (table 4). Almost all of the reduced dissimilarity can be ascribed to the full-time/subsidised care option (table 5). Other fields of study display smaller changes relative to the reference group. Mothers within the medical field (mainly nurses) only have an increased propensity to work part-time and use subsidised care, while mothers within other fields have become more inclined to work part time in general, but less inclined to work full-time and use non-subsidised care.

The changes in the effects of the children variables are more difficult to assess as these covariates are highly correlated. In table 2 the number of children seem to have a slightly stronger inhibiting effect on employment in 1999 than in 1998, while the effect of a younger sibling is less negative, which is somewhat confusing. The effect of the age of youngest eligible child appears quite stable in table 2, but changes more when looking at full-time and part-time separately (table 3). This may also be a result of having to leave out the dummy for youngest sibling in the latter model (see footnote 14). As to marital status, the changes in the estimates are more clear-cut. Relative to single mothers, married and cohabiting mothers seem to have become more inclined to work and use subsidised care and less inclined to work and use non-subsidised care in 1999 than in 1998. In particular they are less inclined to work part time and use non-subsidised care. Rather than indicating a reduced probability among married and cohabiting mothers of choosing the latter option, this may indicate that single mothers may find part-time work combined with non-subsidised care more attractive after the introduction of the cash-for-care reform.

Turning to the partner's characteristics, the income effect is negative for 1999, but is only significant for work that is combined with non-subsidised care. This is in line with our a priori reasoning that non-labour income may especially inhibit work that is combined with non-

subsidised care, as high-income families can better afford to pay the price of professional care, especially after the cash-for-care reform when the price almost doubled in real terms. Other indications of larger income effects in 1999 are the more pronounced negative impact of partner's education and the stronger positive effect of household debt. As evident from table 3, the strongest effect of partner's income and household debt is related to full-time work, while the strongest effect of partner's education is mainly on part-time work. The estimates further show that the positive effect in 1998 of having a partner who works in the health and school sector has almost vanished in 1999, except for the part-time/subsidised care option.

Finally, the regional differences appear to be smaller in 1999. The lower propensity of mothers in the East and the South-West to work and use subsidised care compared to mothers in the capital region (Oslo/Akershus) has vanished or become smaller, as has the higher propensity of mothers in the North to work and use non-subsidised care. However, turning to table 3, mothers in the East and South-West still appear to be less inclined to choose full-time/subsidised care, albeit to a lesser extent than in 1998. Further, mothers in the North are no longer less inclined to choose full-time/subsidised care, and have become more inclined to choose part-time/subsidised care relative to mothers in the capital region.

The changes discussed so far are relative changes, that is changes in the difference *between* groups. To assess absolute changes, i.e. changes *within* a single group, I have also computed the choice probabilities as formulated in equation (8) for different educational groups, using the estimated coefficients in table 5, and taking a mother with about average characteristics as reference person<sup>16</sup>. The probabilities are reported in table 6. We note, first, that all groups except those at the highest educational level have a higher probability of not working in 1999 than in 1998. The reduced propensity to work is particularly prominent among university educated mothers with teacher training background among whom the probability of not working has doubled (from 14 to 29 percent). Another group with a relatively large increase in the probability of not working is mothers with an upper secondary education (EDUS2).

Next, we observe a substantial decline in the choice probabilities involving subsidised care. All educational groups are less likely to choose the full-time/subsidised care option in 1999, and mothers with less than 3-4 years of university studies or teacher training at that level are also less likely to choose part-time/subsidised care. Conversely, there is an increase in the choice probabilities involving non-subsidised care. All educational groups have a higher probability of

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<sup>16</sup> The mother is assumed to be 30 years old, married, have one child of 24 months and live in the Oslo/Akerhus region.

choosing part-time/non-subsidised care in 1999, and all but those at the lowest university level are more likely to chose full-time/non-subsidised care.

There has thus been a marked shift from subsidised to non-subsidised care. For full-time, however, the higher probability of working and using non-subsidised care far from compensates for the lower probability of using subsidised care, while for part-time increased activity related to non-subsidised care more than replaces the lower activity linked to subsidised care, except in the lowest educational group. Hence, there has also been a shift from full-time to part-time work, but except for the highest educational group, increased part-time does not fully compensate for reduced full-time work, resulting in a higher probability of not working in 1999. In particular, part-time has only replaced full-time to a small extent in the upper secondary and in the mid-university teacher training group.

## **7. Summary and conclusion**

This study is part of a larger project commissioned by the Norwegian government to evaluate the recent cash-for-care reform ("kontantstøtte"). The reform grants a tax-free, flat rate benefit to all parents of children aged one and two who do not use subsidised day-care. The full benefit equals the subsidy of a full-time place, and parents who use part-time day-care may receive a reduced benefit proportional to the hours of attendance.

The purpose of this paper is to assess the short-term effects of the reform on mother's work and child care choices. As decisions in these areas are likely to be taken jointly, I estimate a simultaneous multinomial logit model that incorporates the choice of full-time, part-time or non-employment in conjunction with subsidised or non-subsidised day-care. My focus is on the determinants of mothers' work and child care choices, and especially on possible changes from 1998 to 1999 that may be ascribed to the cash-for-care reform.

The data are from two sample surveys among parents of pre-school children carried out in the spring of 1998 and 1999 especially designed to investigate the impacts of the cash-for-care reform. Descriptive analyses already published show that the reform is very popular in the sense that it is claimed for three out of four children in the eligible age (Reppen and Rønning 1999). However, other policies like extended parental leave were more favoured when parents were asked what they considered the best initiative to give families more time together. Hellevik (2000) further reports that mothers' labour force participation is little affected, but that there has been a shift from full-time to part-time work, especially among highly educated mothers. Analysed by sector, the largest

reductions in (wo)man hours have been in the public sector, and especially in the health and educational sector (Langset, Lian and Thoresen 2000).

The multivariate analyses presented here indicate that all things being equal, there has been a small decline in the work probability of most mothers after the cash-for-care reform, except among those with education at the highest university level. Further there has been a shift from work combined with subsidised care to work combined with non-subsidised care, as well as a shift from full-time to part-time work. An interesting finding is the different impact displayed within the group of university educated mothers. The only mothers in this group who have changed behaviour in the direction of mothers with low education are those at the medium level (3-4 years of university studies). The behaviour of mothers with a lower and especially with a higher university degree has, on the other hand, become more dissimilar from mothers with low education. But while mothers with a lower university degree only have an increased propensity to work and use subsidised care relative to the reference group, mothers at the highest university level also have an increased propensity to work and use non-subsidised care.

When further dividing the group with medium level university education by *field* of study, it becomes clear that particularly mothers with a teacher training background have changed their behaviour in the direction of mothers in the reference group. Although not completely unexpected, a common a priori assumption was rather that especially the nursing profession would be affected. This assumption only partly holds, as nurses to a larger extent have shifted from full-time to part-time work after the reform, while teachers have been more likely to take leave or exit the labour force altogether.

Concluding for the short run, the cash-for-care reform has no doubt reduced female labour supply and discouraged the use of subsidised care. As expected, some mothers have been affected more than others, and both level and field of education seem to constitute important dividing lines in this connection. It is also worth remembering that our findings are based on data that were collected only a few months after the full implementation of the program. Since all adaptation takes time, the results reported here may underestimate the total short-run effects. An important task will therefore be to monitor future developments, and if the short-term pattern should prevail, there may be good reason for concern about setbacks in gender equality and increasing social inequality among women.

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**Table 1a. Descriptive statistics - dependent variable**

| Variable                             | Label | All mothers |       |      |       | Married and cohabiting mothers <sup>1</sup> |       |      |       |
|--------------------------------------|-------|-------------|-------|------|-------|---|-------|------|-------|
|                                      |       | 1998        |       | 1999 |       | 1998  |       | 1999 |       |
|                                      |       | N           | %     | N    | %     | N   | %     | N    | %     |
| <b>I. Work/child care:</b>           |       | 1214        | 100,0 | 1690 | 100,0 | 1025  | 100,0 | 1441 | 100,0 |
| Work / Subsidised care               | WS    | 347         | 28,6  | 445  | 26,3  | 311   | 30,3  | 398  | 27,6  |
| Work / Non-subsidised care           | WNS   | 410         | 33,8  | 611  | 36,2  | 350   | 34,1  | 539  | 37,4  |
| Not working ( <i>Ref.group</i> )     | NW    | 457         | 37,6  | 634  | 37,5  | 364   | 35,5  | 504  | 35,0  |
|                                      |       |             |       |      |       |   |       |      |       |
| <b>II. Working hours/child care:</b> |       | 1214        | 100,0 | 1690 | 100,0 | 1025  | 100,0 | 1441 | 100,0 |
| Full-time / Subsidised care          | FS    | 213         | 17,5  | 243  | 14,4  | 191   | 18,6  | 220  | 15,3  |
| Full-time / Non-subsidised care      | FNS   | 161         | 13,3  | 225  | 13,3  | 138   | 13,5  | 198  | 13,7  |
| Part-time / Subsidised care          | PS    | 134         | 11,0  | 202  | 12,0  | 120   | 11,7  | 178  | 12,4  |
| Part-time / Non-subsidised care      | PNS   | 249         | 20,5  | 386  | 22,8  | 212   | 20,7  | 341  | 23,7  |
| Not working ( <i>Ref.group</i> )     | NW    | 457         | 37,6  | 634  | 37,5  | 364   | 35,5  | 504  | 35,0  |

<sup>1</sup>Sub-sample with non-missing information on partner's characteristics.

**Table 1b. Descriptive statistics - independent variables**

| Variable                            | Label    | All mothers |      | Married and cohabiting mothers <sup>1</sup> |       |
|-------------------------------------|----------|-------------|------|---|-------|
|                                     |          | 1998        | 1999 | 1998  | 1999  |
| Mother's age (years)                | AGE      | 30,4        | 31,6 | 30,7  | 31,9  |
| Mother's education:                 |          |             |      |   |       |
| 7-10 years <sup>2</sup> (Ref.group) | —        | 23,2        | 23,6 | 19,1  | 20,8  |
| 11-12 years                         | EDUS2    | 40,0        | 40,7 | 40,6  | 40,1  |
| 13-14 years                         | EDUU1    | 10,7        | 10,4 | 11,0  | 11,3  |
| 15-16 years                         | EDUU2    | 21,2        | 20,9 | 23,9  | 22,8  |
| 17 years or more                    | EDUU3    | 5,4         | 4,5  | 5,8   | 5,1   |
| No. of pre-school children:         |          |             |      |   |       |
| One (Ref.group)                     | —        | 52,8        | 54,6 | 51,8  | 52,7  |
| Two                                 | NOCH2    | 42,3        | 40,1 | 43,2  | 41,8  |
| Three or more                       | NOCH3    | 4,8         | 5,3  | 5,0   | 5,5   |
| Age y. eligible child (months)      | AGEYEC   | 21,9        | 23,8 | 21,9  | 23,8  |
| Siblings 0-11 months:               |          |             |      |   |       |
| Yes                                 | SIBL0    | 9,8         | 8,6  | 10,4  | 9,1   |
| No (Ref.group)                      | —        | 90,2        | 91,4 | 89,6  | 90,9  |
| Marital status:                     |          |             |      |   |       |
| Single (Ref.group)                  | —        | 5,4         | 7,9  | —   | —     |
| Cohabiting                          | COHAB    | 30,0        | 30,7 | 31,0  | 32,3  |
| Married                             | MARR     | 64,7        | 61,4 | 69,0  | 67,7  |
| Partner's education:                |          |             |      |   |       |
| Primary school (Ref.group)          | —        |             |      | 12,3  | 12,7  |
| Secondary school                    | PEDUS    |             |      | 42,5  | 47,3  |
| University                          | PEDUU    |             |      | 42,1  | 40,0  |
| Missing                             | PEDUMISS |             |      | 3,0   |       |
| Partner's work status:              |          |             |      |   |       |
| Not employed (Ref.group)            | —        |             |      | 1,8   | 3,1   |
| Employed                            | PEMPL    |             |      | 98,2  | 96,9  |
| Partner's work arrangement:         |          |             |      |   |       |
| Normal daytime                      | PDAY     |             |      | 66,0  | 68,7  |
| Other hours (Ref.group)             | —        |             |      | 34,0  | 31,3  |
| Partner's job sector:               |          |             |      |   |       |
| Health / school                     | PHSSEC   |             |      | 10,1  | 10,4  |
| Other sector (Ref.group)            | —        |             |      | 89,9  | 89,6  |
| Partner's income (10 000 kr.)       | PINC     |             |      | 27,03                                       | 28,70 |
| Household debt (10 000 kr.)         | DEBT     |             |      | 64,44                                       | 64,37 |
| Region:                             |          |             |      |   |       |
| Oslo/Akershus (Ref.group)           | —        | 20,1        | 21,1 | 19,8  | 21,3  |
| Rest of the East                    | EAST     | 23,7        | 23,8 | 22,6  | 24,9  |
| South-West                          | SWEST    | 35,4        | 33,0 | 36,7  | 32,8  |
| North                               | NORTH    | 20,8        | 22,1 | 20,9  | 21,0  |

Sub-sample with non-missing information on partner's characteristics. <sup>2</sup> Incl. missing.

**Table 2. The choice of work and child care. Simultaneous multinomial logit model.**

| Variable         | All mothers           |                       |                       |                       | Married and cohabiting mothers <sup>1</sup> |                       |                       |                       |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|---|-----------------------|-----------------------|-----------------------|
|                  | 1998                  |                       | 1999                  |                       | 1998  |                       | 1999                  |                       |
|                  | WS                    | WNS                   | WS                    | WNS                   | WS  | WNS                   | WS                    | WNS                   |
| INTERCEPT        | <b>-4,615</b> (0,696) | <b>-2,738</b> (0,661) | <b>-5,623</b> (0,624) | <b>-1,317</b> (0,508) | <b>-3,803</b> (1,001)                       | -0,907 (0,882)        | <b>-6,318</b> (0,959) | 0,072 (0,697)         |
| AGE              | <b>0,047</b> (0,018)  | 0,022 (0,016)         | <b>0,045</b> (0,015)  | -0,004 (0,013)        | 0,032 (0,021)                               | 0,013 (0,019)         | <b>0,043</b> (0,018)  | 0,004 (0,015)         |
| EDUS2            | <b>0,962</b> (0,222)  | <b>0,442</b> (0,184)  | <b>0,788</b> (0,193)  | <b>0,308</b> (0,152)  | <b>0,845</b> (0,258)                        | <i>0,411</i> (0,216)  | <b>0,851</b> (0,225)  | <b>0,348</b> (0,175)  |
| EDUU1            | <b>1,084</b> (0,298)  | 0,304 (0,277)         | <b>1,320</b> (0,261)  | 0,376 (0,237)         | <b>1,020</b> (0,341)                        | 0,317 (0,312)         | <b>1,152</b> (0,294)  | 0,417 (0,261)         |
| EDUU2            | <b>2,097</b> (0,272)  | <b>1,083</b> (0,245)  | <b>1,709</b> (0,224)  | <b>0,724</b> (0,192)  | <b>1,862</b> (0,307)                        | <b>1,019</b> (0,275)  | <b>1,507</b> (0,258)  | <b>0,684</b> (0,221)  |
| EDUU3            | <b>2,450</b> (0,472)  | <b>1,414</b> (0,455)  | <b>3,566</b> (0,534)  | <b>2,445</b> (0,516)  | <b>2,091</b> (0,518)                        | <b>1,277</b> (0,495)  | <b>3,551</b> (0,587)  | <b>2,766</b> (0,564)  |
| NOCH2            | -0,043 (0,173)        | -0,173 (0,160)        | -0,218 (0,152)        | <i>-0,254</i> (0,134) | -0,111 (0,191)                              | -0,193 (0,177)        | -0,225 (0,165)        | -0,221 (0,147)        |
| NOCH3            | -0,837 (0,541)        | -0,343 (0,399)        | <b>-1,039</b> (0,431) | <b>-0,902</b> (0,311) | <b>-1,491</b> (0,638)                       | -0,666 (0,444)        | <b>-0,929</b> (0,445) | <b>-0,775</b> (0,328) |
| SIBL0            | <b>-5,945</b> (1,036) | <b>-3,713</b> (0,502) | <b>-4,537</b> (0,640) | <b>-3,441</b> (0,451) | <b>-5,968</b> (1,047)                       | <b>-3,513</b> (0,516) | <b>-4,673</b> (0,655) | <b>-3,527</b> (0,463) |
| AGEYEC           | <b>0,110</b> (0,014)  | 0,017 (0,013)         | <b>0,111</b> (0,011)  | 0,011 (0,010)         | <b>0,115</b> (0,016)                        | 0,010 (0,015)         | <b>0,110</b> (0,013)  | 0,006 (0,011)         |
| COHAB            | 0,578 (0,355)         | <b>1,577</b> (0,403)  | <b>1,063</b> (0,277)  | <b>1,339</b> (0,249)  | <i>0,347</i> (0,207)                        | 0,072 (0,189)         | <b>0,483</b> (0,177)  | 0,248 (0,154)         |
| MARR             | 0,265 (0,342)         | <b>1,397</b> (0,396)  | <b>0,583</b> (0,266)  | <b>0,968</b> (0,242)  |   |                       |                       |                       |
| PEDUS            |                       |                       |                       |                       | 0,274 (0,292)                               | 0,427 (0,263)         | 0,266 (0,266)         | -0,019 (0,207)        |
| PEDUH            |                       |                       |                       |                       | -0,409 (0,312)                              | -0,162 (0,284)        | 0,117 (0,288)         | <b>-0,489</b> (0,236) |
| PEDUMISS         |                       |                       |                       |                       | -0,772 (0,577)                              | -0,083 (0,479)        |                       |                       |
| PEMPL            |                       |                       |                       |                       | -0,731 (0,709)                              | -0,234 (0,632)        | 0,871 (0,644)         | 0,198 (0,394)         |
| PEMPL*PDAY       |                       |                       |                       |                       | <i>0,389</i> (0,203)                        | 0,011 (0,179)         | <i>0,320</i> (0,181)  | -0,033 (0,153)        |
| PEMPL*PHSSEC     |                       |                       |                       |                       | <b>1,115</b> (0,353)                        | <b>0,763</b> (0,336)  | <i>0,469</i> (0,263)  | 0,173 (0,258)         |
| PINC             |                       |                       |                       |                       | 0,003 (0,007)                               | 0,004 (0,007)         | -0,010 (0,006)        | <b>-0,025</b> (0,006) |
| DEBT             |                       |                       |                       |                       | <b>0,006</b> (0,002)                        | 0,002 (0,002)         | <b>0,007</b> (0,002)  | <b>0,006</b> (0,002)  |
| EAST             | <b>-0,665</b> (0,249) | 0,268 (0,238)         | -0,158 (0,212)        | 0,311 (0,190)         | <b>-0,667</b> (0,283)                       | 0,096 (0,270)         | -0,103 (0,235)        | 0,159 (0,210)         |
| SWEST            | <b>-0,893</b> (0,228) | -0,072 (0,221)        | <b>-0,400</b> (0,198) | 0,086 (0,178)         | <b>-0,775</b> (0,255)                       | -0,142 (0,248)        | <i>-0,428</i> (0,222) | -0,110 (0,198)        |
| NORTH            | -0,426 (0,268)        | <b>0,597</b> (0,248)  | 0,155 (0,214)         | 0,298 (0,197)         | -0,464 (0,302)                              | 0,417 (0,279)         | 0,121 (0,243)         | 0,002 (0,224)         |
| Likelihood ratio | 2144,05               |                       | 3023,06               |                       | 1868,99                                     |                       | 2608,76               |                       |
| DF               | 2314                  |                       | 3244                  |                       | 2006  |                       | 2840                  |                       |
| N                | 1214                  |                       | 1690                  |                       | 1025  |                       | 1441                  |                       |

<sup>1</sup> Sub-sample with non-missing information on partner's characteristics. Numbers in bold: Significant at the 5 % level. Numbers in italics: Significant at 10% level. (Standard errors in parentheses).

**Table 3. The choice of working hours and child care. Simultaneous multinomial logit model. All mothers.**

| Variabel         | 1998                  |                       |                       |                       | 1999                  |                       |                       |                       |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                  | FS                    | FNS                   | PS                    | PNS                   | FS                    | FNS                   | PS                    | PNS                   |
| INTERCEPT        | <b>-3,277</b> (0,754) | <b>-2,829</b> (0,856) | <b>-6,148</b> (0,916) | <b>-2,749</b> (0,796) | <b>-4,704</b> (0,708) | <b>-1,591</b> (0,675) | <b>-7,797</b> (0,813) | <b>-1,926</b> (0,569) |
| AGE              | <b>0,051</b> (0,020)  | <b>0,053</b> (0,021)  | <b>0,091</b> (0,022)  | <i>0,032</i> (0,018)  | <b>0,053</b> (0,017)  | <i>0,017</i> (0,017)  | <b>0,099</b> (0,018)  | <i>0,021</i> (0,014)  |
| EDUS2            | <b>0,949</b> (0,266)  | <b>0,631</b> (0,267)  | <b>0,673</b> (0,284)  | <i>0,192</i> (0,199)  | <b>0,621</b> (0,231)  | <i>0,207</i> (0,210)  | <b>0,814</b> (0,252)  | <i>0,262</i> (0,165)  |
| EDUU1            | <b>0,988</b> (0,345)  | <b>0,841</b> (0,352)  | <b>0,930</b> (0,359)  | <i>-0,263</i> (0,331) | <b>1,107</b> (0,298)  | <i>0,353</i> (0,315)  | <b>1,304</b> (0,319)  | <i>0,214</i> (0,257)  |
| EDUU2            | <b>1,902</b> (0,290)  | <b>1,002</b> (0,310)  | <b>1,063</b> (0,324)  | <i>0,458</i> (0,246)  | <b>1,521</b> (0,253)  | <b>0,733</b> (0,249)  | <b>1,480</b> (0,276)  | <b>0,469</b> (0,206)  |
| EDUU3            | <b>1,970</b> (0,414)  | <b>1,759</b> (0,429)  | <i>0,797</i> (0,542)  | <i>-0,661</i> (0,587) | <b>2,988</b> (0,469)  | <b>2,564</b> (0,465)  | <b>2,590</b> (0,515)  | <b>1,041</b> (0,500)  |
| NOCH2            | <b>-0,723</b> (0,185) | <b>-1,184</b> (0,212) | <b>-0,569</b> (0,211) | <b>-0,338</b> (0,169) | <b>-0,807</b> (0,171) | <b>-0,999</b> (0,177) | <b>-0,682</b> (0,180) | <b>-0,537</b> (0,141) |
| NOCH3            | <b>-2,648</b> (0,635) | <b>-1,947</b> (0,549) | <b>-2,002</b> (0,632) | <b>-1,150</b> (0,395) | <b>-2,277</b> (0,504) | <b>-2,446</b> (0,543) | <b>-2,411</b> (0,623) | <b>-1,352</b> (0,310) |
| AGEYEC           | <b>0,041</b> (0,014)  | <b>-0,037</b> (0,016) | <b>0,070</b> (0,016)  | <b>-0,031</b> (0,013) | <b>0,062</b> (0,012)  | <b>-0,029</b> (0,012) | <b>0,086</b> (0,014)  | <b>-0,020</b> (0,010) |
| COHAB            | <i>0,284</i> (0,394)  | <b>1,035</b> (0,518)  | <i>0,612</i> (0,495)  | <b>1,756</b> (0,550)  | <b>0,681</b> (0,322)  | <b>1,095</b> (0,339)  | <b>0,935</b> (0,363)  | <b>1,177</b> (0,294)  |
| MARR             | <i>0,083</i> (0,382)  | <i>0,926</i> (0,510)  | <i>0,304</i> (0,479)  | <b>1,618</b> (0,544)  | <i>0,397</i> (0,312)  | <b>0,686</b> (0,337)  | <i>0,453</i> (0,353)  | <b>0,971</b> (0,289)  |
| EAST             | <b>-1,044</b> (0,268) | <i>-0,190</i> (0,304) | <i>0,011</i> (0,311)  | <b>0,585</b> (0,269)  | <b>-0,492</b> (0,240) | <i>0,186</i> (0,243)  | <i>0,447</i> (0,262)  | <b>0,538</b> (0,209)  |
| SWEST            | <b>-1,014</b> (0,237) | <i>-0,229</i> (0,275) | <i>-0,311</i> (0,295) | <i>0,200</i> (0,257)  | <b>-0,662</b> (0,219) | <i>-0,152</i> (0,231) | <i>0,081</i> (0,251)  | <i>0,292</i> (0,196)  |
| NORTH            | <b>-0,747</b> (0,273) | <i>0,394</i> (0,294)  | <i>-0,248</i> (0,346) | <b>0,549</b> (0,280)  | <i>0,061</i> (0,230)  | <i>0,270</i> (0,250)  | <b>0,554</b> (0,271)  | <b>0,475</b> (0,218)  |
| Likelihood ratio | 3264,23               |                       |                       |                       | 4569,31               |                       |                       |                       |
| DF               | 4616                  |                       |                       |                       | 6480                  |                       |                       |                       |
| N                | 1214                  |                       |                       |                       | 1690                  |                       |                       |                       |

Numbers in bold: Significant at 5%-level. Numbers in italics: significant at 10%-level. (Standard errors in parantheses).

**Table 3 (contin.) The choice of working hours and child care. Simultaneous multinomial logit model. Married and cohabiting mothers<sup>1</sup>**

| Variabel         | 1998                  |                       |                       |                       | 1999                  |                       |                       |                       |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                  | FS                    | FNS                   | PS                    | PNS                   | FS                    | FNS                   | PS                    | PNS                   |
| INTERCEPT        | <b>-2,149</b> (1,055) | -1,535 (1,204)        | <b>-6,007</b> (1,433) | -0,627 (0,964)        | <b>-5,700</b> (1,139) | -0,498 (0,877)        | <b>-8,103</b> (1,186) | -0,500 (0,754)        |
| AGE              | 0,035 (0,023)         | <i>0,045</i> (0,025)  | <b>0,087</b> (0,025)  | 0,029 (0,021)         | <b>0,044</b> (0,020)  | <i>0,034</i> (0,020)  | <b>0,105</b> (0,021)  | 0,023 (0,016)         |
| EDUS2            | <b>0,740</b> (0,302)  | <b>0,660</b> (0,318)  | <b>0,665</b> (0,325)  | 0,145 (0,233)         | <b>0,583</b> (0,265)  | 0,228 (0,239)         | <b>1,095</b> (0,295)  | <i>0,346</i> (0,187)  |
| EDUU1            | <b>0,963</b> (0,387)  | <b>1,000</b> (0,406)  | <b>0,839</b> (0,416)  | -0,299 (0,369)        | <b>0,945</b> (0,332)  | 0,416 (0,341)         | <b>1,238</b> (0,367)  | 0,263 (0,281)         |
| EDUU2            | <b>1,705</b> (0,330)  | <b>1,107</b> (0,362)  | <b>0,916</b> (0,371)  | 0,433 (0,281)         | <b>1,267</b> (0,291)  | <b>0,644</b> (0,287)  | <b>1,470</b> (0,326)  | <b>0,510</b> (0,235)  |
| EDUU3            | <b>1,617</b> (0,474)  | <b>1,682</b> (0,511)  | 0,679 (0,595)         | -0,538 (0,619)        | <b>2,827</b> (0,515)  | <b>2,664</b> (0,514)  | <b>2,614</b> (0,577)  | <b>1,392</b> (0,536)  |
| NOCH2            | <b>-0,829</b> (0,202) | <b>-1,259</b> (0,233) | <b>-0,746</b> (0,230) | <b>-0,374</b> (0,187) | <b>-0,827</b> (0,182) | <b>-0,911</b> (0,188) | <b>-0,796</b> (0,194) | <b>-0,615</b> (0,152) |
| NOCH3            | <b>-3,238</b> (0,767) | <b>-2,662</b> (0,750) | <b>-2,637</b> (0,762) | <b>-1,234</b> (0,423) | <b>-2,149</b> (0,519) | <b>-2,308</b> (0,550) | <b>-2,291</b> (0,628) | <b>-1,289</b> (0,320) |
| AGEYEC           | <b>0,038</b> (0,016)  | <b>-0,049</b> (0,018) | <b>0,070</b> (0,018)  | <b>-0,041</b> (0,015) | <b>0,058</b> (0,013)  | <b>-0,038</b> (0,013) | <b>0,072</b> (0,015)  | <b>-0,032</b> (0,011) |
| COHAB            | 0,183 (0,220)         | 0,033 (0,241)         | <i>0,398</i> (0,246)  | -0,018 (0,202)        | 0,309 (0,198)         | <i>0,329</i> (0,196)  | <b>0,486</b> (0,208)  | 0,078 (0,163)         |
| PEDUS            | 0,510 (0,329)         | <i>0,690</i> (0,363)  | 0,207 (0,356)         | 0,385 (0,281)         | <i>0,656</i> (0,351)  | 0,195 (0,283)         | -0,244 (0,304)        | -0,214 (0,213)        |
| PEDUH            | -0,444 (0,352)        | -0,288 (0,394)        | -0,408 (0,377)        | -0,106 (0,305)        | 0,426 (0,371)         | -0,355 (0,323)        | -0,295 (0,325)        | <b>-0,648</b> (0,246) |
| PEDUMISS         | -0,416 (0,735)        | <i>0,579</i> (0,653)  | -0,199 (0,685)        | 0,115 (0,548)         |                       |                       |                       |                       |
| PEMPL            | <i>-1,408</i> (0,728) | -0,663 (0,886)        | -0,107 (1,136)        | -0,199 (0,688)        | 0,793 (0,802)         | -0,201 (0,458)        | 0,681 (0,798)         | 0,538 (0,447)         |
| PEMPL*PDAY       | 0,340 (0,225)         | -0,031 (0,233)        | 0,172 (0,245)         | -0,081 (0,191)        | <i>0,355</i> (0,212)  | -0,023 (0,202)        | 0,276 (0,216)         | -0,023 (0,161)        |
| PEMPL*PHSSEC     | <i>0,617</i> (0,339)  | <i>0,712</i> (0,367)  | <b>0,915</b> (0,369)  | 0,287 (0,336)         | <i>0,513</i> (0,284)  | 0,340 (0,319)         | <b>0,596</b> (0,296)  | 0,206 (0,276)         |
| PINC             | 0,008 (0,007)         | 0,010 (0,008)         | 0,010 (0,008)         | 0,005 (0,008)         | -0,011 (0,007)        | <b>-0,036</b> (0,009) | 0,002 (0,007)         | <i>-0,012</i> (0,007) |
| DEBT             | <b>0,010</b> (0,002)  | <b>0,007</b> (0,003)  | 0,004 (0,003)         | -0,000 (0,002)        | <b>0,009</b> (0,002)  | <b>0,011</b> (0,002)  | 0,001 (0,002)         | 0,002 (0,002)         |
| EAST             | <b>-0,995</b> (0,302) | -0,324 (0,339)        | -0,077 (0,352)        | 0,328 (0,301)         | <i>-0,435</i> (0,259) | 0,060 (0,264)         | <i>0,542</i> (0,288)  | <i>0,384</i> (0,225)  |
| SWEST            | <b>-0,946</b> (0,266) | -0,447 (0,309)        | -0,264 (0,327)        | 0,118 (0,283)         | <b>-0,736</b> (0,242) | -0,320 (0,253)        | 0,171 (0,279)         | 0,113 (0,212)         |
| NORTH            | <b>-0,817</b> (0,307) | 0,086 (0,332)         | -0,365 (0,385)        | 0,388 (0,310)         | 0,026 (0,259)         | -0,108 (0,283)        | 0,642 (0,306)         | 0,280 (0,240)         |
| Likelihood ratio | 2845,58               |                       |                       |                       | 3963,70               |                       |                       |                       |
| DF               | 4016                  |                       |                       |                       | 5684                  |                       |                       |                       |
| N                | 1025                  |                       |                       |                       | 1441                  |                       |                       |                       |

<sup>1</sup>Sub-sample with non-missing information on partner's characteristics. Numbers in bold: Significant at 5% level. Numbers in italics: significant at 10% level

**Table 4. The choice of work and child care. Effects of level and field of education<sup>1</sup>. All mothers.**

| Education                           | 1998                 |                      | 1999                 |                      |
|-------------------------------------|----------------------|----------------------|----------------------|----------------------|
|                                     | WS                   | WNS                  | WS                   | WNS                  |
| <b>Level only<sup>2</sup>:</b>      |                      |                      |                      |                      |
| EDUS2                               | <b>0,962</b> (0,222) | <b>0,442</b> (0,184) | <b>0,788</b> (0,193) | <b>0,308</b> (0,152) |
| EDUU1                               | <b>1,084</b> (0,298) | 0,304 (0,277)        | <b>1,320</b> (0,261) | 0,376 (0,237)        |
| EDUU2                               | <b>2,097</b> (0,272) | <b>1,083</b> (0,245) | <b>1,709</b> (0,224) | <b>0,724</b> (0,192) |
| EDUU3                               | <b>2,450</b> (0,472) | <b>1,414</b> (0,455) | <b>3,566</b> (0,534) | <b>2,445</b> (0,516) |
| <b>Level and field<sup>3</sup>:</b> |                      |                      |                      |                      |
| EDUS2                               | <b>0,962</b> (0,222) | <b>0,441</b> (0,184) | <b>0,786</b> (0,193) | <b>0,307</b> (0,152) |
| EDUU1                               | <b>1,079</b> (0,298) | 0,304 (0,277)        | <b>1,323</b> (0,261) | 0,378 (0,237)        |
| EDUU2T                              | <b>2,476</b> (0,390) | <b>1,015</b> (0,384) | <b>1,396</b> (0,289) | <i>0,432</i> (0,256) |
| EDUU2M                              | <b>1,602</b> (0,402) | <b>1,014</b> (0,359) | <b>1,747</b> (0,331) | <b>0,815</b> (0,305) |
| EDUU2O                              | <b>2,109</b> (0,387) | <b>1,204</b> (0,363) | <b>2,110</b> (0,332) | <b>1,061</b> (0,307) |
| EDUU3                               | <b>2,447</b> (0,473) | <b>1,416</b> (0,456) | <b>3,575</b> (0,535) | <b>2,454</b> (0,517) |
| N                                   | 1214                 |                      | 1690                 |                      |

<sup>1</sup>The model also include all the remaining covariates in table 2. <sup>2</sup> Estimates as reported in table 2.

<sup>3</sup>New estimates after including field of education. Numbers in bold: Significant at 5% level. Numbers in italics: significant at 10% level.

**Table 5. The choice of working hours and child care. Effects of level and field of education. All mothers.**

| Education                           | 1998                 |                      |                      |                      | 1999                 |                      |                      |                      |
|-------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                     | FS                   | FNS                  | PS                   | PNS                  | FS                   | FNS                  | PS                   | PNS                  |
| <b>Level only<sup>2</sup>:</b>      |                      |                      |                      |                      |                      |                      |                      |                      |
| EDUS2                               | <b>0,949</b> (0,266) | <b>0,631</b> (0,267) | <b>0,673</b> (0,284) | 0,192 (0,199)        | <b>0,621</b> (0,231) | 0,207 (0,210)        | <b>0,814</b> (0,252) | 0,262 (0,165)        |
| EDUU1                               | <b>0,988</b> (0,345) | <b>0,841</b> (0,352) | <b>0,930</b> (0,359) | -0,263 (0,331)       | <b>1,107</b> (0,298) | 0,353 (0,315)        | <b>1,304</b> (0,319) | 0,214 (0,257)        |
| EDUU2                               | <b>1,902</b> (0,290) | <b>1,002</b> (0,310) | <b>1,063</b> (0,324) | <i>0,458</i> (0,246) | <b>1,521</b> (0,253) | <b>0,733</b> (0,249) | <b>1,480</b> (0,276) | <b>0,469</b> (0,206) |
| EDUU3                               | <b>1,970</b> (0,414) | <b>1,759</b> (0,429) | 0,797 (0,542)        | -0,661 (0,587)       | <b>2,988</b> (0,469) | <b>2,564</b> (0,465) | <b>2,590</b> (0,515) | <b>1,041</b> (0,500) |
| <b>Level and field<sup>3</sup>:</b> |                      |                      |                      |                      |                      |                      |                      |                      |
| EDUS2                               | <b>0,948</b> (0,266) | <b>0,629</b> (0,267) | <b>0,675</b> (0,284) | 0,193 (0,199)        | <b>0,621</b> (0,231) | 0,206 (0,210)        | <b>0,812</b> (0,252) | 0,262 (0,165)        |
| EDUU1                               | <b>0,984</b> (0,345) | <b>0,842</b> (0,352) | <b>0,930</b> (0,359) | -0,260 (0,331)       | <b>1,109</b> (0,298) | 0,356 (0,315)        | <b>1,307</b> (0,319) | 0,216 (0,257)        |
| EDUU2T                              | <b>2,109</b> (0,365) | 0,584 (0,472)        | <b>1,181</b> (0,424) | 0,312 (0,358)        | <b>1,309</b> (0,322) | <i>0,585</i> (0,329) | <b>1,148</b> (0,358) | 0,167 (0,281)        |
| EDUU2M                              | <b>1,367</b> (0,444) | <b>0,612</b> (0,504) | <b>1,203</b> (0,456) | <b>0,788</b> (0,352) | <b>1,303</b> (0,390) | <b>0,602</b> (0,408) | <b>1,940</b> (0,370) | <b>0,772</b> (0,314) |
| EDUU2O                              | <b>1,998</b> (0,373) | <b>1,490</b> (0,392) | 0,721 (0,500)        | 0,196 (0,388)        | <b>1,918</b> (0,336) | <b>1,029</b> (0,356) | <b>1,366</b> (0,408) | <b>0,573</b> (0,316) |
| EDUU3                               | <b>1,966</b> (0,414) | <b>1,758</b> (0,429) | 0,794 (0,542)        | -0,656 (0,587)       | <b>2,989</b> (0,469) | <b>2,566</b> (0,465) | <b>2,593</b> (0,515) | <b>1,043</b> (0,500) |
| N                                   | 1214                 |                      |                      |                      | 1690                 |                      |                      |                      |

<sup>1</sup> The model also include all the remaining covariates in table 3. <sup>2</sup> Estimates as reported in table 2. <sup>3</sup> New estimates after including field of education. Numbers in bold: Significant at 5% level. Numbers in italics: Significant at 10% level.

**Table 6. Estimated probabilities of different combinations of working hours and child care for different educational groups<sup>1</sup>. All mothers.**

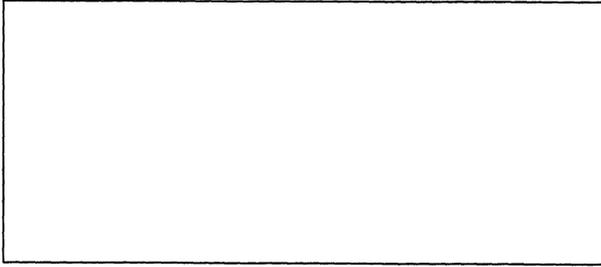
| Variable                | 1998 |      |      |      |      | 1999 |      |      |      |      |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
|                         | FS   | FNS  | PS   | PNS  | NW   | FS   | FNS  | PS   | PNS  | NW   |
| <b>Level only:</b>      |      |      |      |      |      |      |      |      |      |      |
| EDUS1                   | 20,7 | 12,2 | 9,9  | 16,4 | 40,8 | 13,2 | 15,6 | 4,5  | 20,9 | 45,8 |
| EDUS2                   | 34,2 | 14,6 | 12,4 | 12,7 | 26,1 | 19,4 | 15,1 | 8,0  | 21,4 | 36,1 |
| EDUU1                   | 34,3 | 17,4 | 15,4 | 7,8  | 25,2 | 26,5 | 14,8 | 11,0 | 17,2 | 30,5 |
| EDUU2                   | 52,0 | 12,4 | 10,7 | 9,7  | 15,3 | 31,5 | 17,0 | 10,3 | 17,4 | 23,9 |
| EDUU3                   | 51,2 | 24,3 | 7,5  | 2,9  | 14,1 | 41,6 | 32,2 | 9,5  | 9,4  | 7,3  |
| <b>Level and field:</b> |      |      |      |      |      |      |      |      |      |      |
| EDUS1                   | 20,7 | 11,8 | 10,1 | 16,7 | 40,8 | 13,1 | 15,5 | 4,5  | 20,9 | 46,1 |
| EDUS2                   | 34,2 | 14,1 | 12,6 | 12,9 | 26,1 | 19,2 | 15,0 | 8,0  | 21,4 | 36,4 |
| EDUU1                   | 34,2 | 16,9 | 15,7 | 7,9  | 25,2 | 26,4 | 14,7 | 11,0 | 17,2 | 30,6 |
| EDUU2T                  | 59,2 | 7,3  | 11,4 | 7,9  | 14,2 | 30,0 | 17,3 | 8,8  | 15,3 | 28,6 |
| EDUU2M                  | 38,0 | 10,1 | 15,7 | 17,1 | 19,1 | 24,2 | 14,2 | 15,7 | 22,7 | 23,2 |
| EDUU2O                  | 53,3 | 18,2 | 7,2  | 7,1  | 14,2 | 38,2 | 18,6 | 7,6  | 15,9 | 19,8 |
| EDUU3                   | 51,4 | 23,7 | 7,7  | 3,0  | 14,2 | 41,4 | 32,2 | 9,6  | 9,5  | 7,4  |
| N                       | 1214 |      |      |      |      | 1690 |      |      |      |      |

<sup>1</sup> The probabilities are computed based on the estimates in table 5, and refer to a mother who is 30 years old, married, lives in the Oslo/Akershus region and has one child of 24 months.

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