



# Children's housework – Are girls more active than boys?

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## Abstract

This paper examines boys' and girls' housework in a Nordic welfare state which is characterized by both high labor market participation rates for mothers and fathers and a narrow income distribution which makes it expensive for ordinary parents to hire paid household help. We use data from the European Community Household Panel Survey 1998 and run tobit-regressions to take the number of children reporting no housework into consideration. The results show that children do only a minor part of the total housework, and that boys participate less than girls. There is a positive impact of mothers' full time work on children's housework, while mothers having a higher education level decrease boys' participation in housework. Finally, the time children spend on paid work is found more positively correlated with girls' than with boys' contributions to housework.

**JEL-Codes:** D13, J13, J16, J22

**Keywords:** Household production, intra-household allocation, children, economics of gender, time allocation, labor supply

## **1 Introduction**

There is extensive literature on children's demand for housework focusing on how much time children require to have spent on them, and the extent to which children thus restrict women's supply of time to the labor market (Bianchi et al., 2006). However, children not only demand housework, they also supply housework within the family.

Furthermore, the study of the gender dimension is usually reserved for adults – mothers and fathers – although children's demand for supply of housework is presumed to be gendered as well. That is to say, parents do not necessarily spend equal amounts of time on their sons and their daughters, and girls and boys do not necessarily participate equally in housework (Hofert, 2009).

In the following the focus is on children's supply of housework. Besides descriptions of the amount of time spent on housework, the paper analyzes different reasons for children to devote different amounts of time to household production. The paper distinguishes between girls' and boys' supply of housework, and explanations for the gendered behavior are given. Finally, it is argued that the different amounts of time girls and boys spend on housework may contribute to the as yet not fully documented unequal distribution of time spent by mothers and fathers.

## **2 Background**

A common feature of both economic and sociological theories on the division of labor within the family is the focus on the division of labor between adults – women/mothers and men/fathers – excluding the work of children. If children enter into the theories at all, then they are usually regarded as individuals requiring expenditures and care, and thus appear as restrictions upon their parents' – especially their mothers' – labor supply. However, some children do contribute to housework, either because their parents need their help in doing everyday chores or because the parents believe that it helps to build character and develop a sense of responsibility in their children, or both (Goldscheider and Waite, 1991).

According to resource theories, women and men have or acquire different work characteristics, the implication being that there are differences between the genders in levels of productivity in both paid and unpaid work (Parson and Bales, 1955; Becker, 1981; Browning, 1992). Applied to children, the implication is that girls perform more housework than boys, and that children's contribution to the housework is smaller than that of their parents because they are not as physically developed as adults and because they have less work experience. Neither biological reasons nor different levels of experience are reasonable explanations of efficiency differentials, however, since ordinary housework no longer requires special skills, thanks to

new and more user-friendly household equipment, which younger generations are found more keen to operate. Long ago, Ferber and Birnbaum (1977) claimed that specialization theory was not able to predict either the differences in girls' and boys' supply of housework or the level of that work relative to their parent's work.

Theories dealing with the relationship between parents' and children's use of time often focus on the impact of maternal employment on outcomes for the children (Würtz, 2008). The assumption is that the mother's employment means that the children will have poorer cognitive skills and educational achievements, because less of the mother's time is devoted to social and human investment in the children, e.g. in helping with school homework, and, similarly, on shared leisure time and shared time doing housework. However, Bianchi and Robinson (1997) find no relationship between the employment of the mother and her children's outcomes, because, they argue, quantity of time is substituted by quality of time, fathers become more involved in child care, the time spent together with children is short anyway, and, finally, children require only a small amount of parents' time to achieve good outcomes. Furthermore, if working mothers give priority to child-related activities, spending a higher proportion of their available time taking care of and doing homework together with their children, as Bryant and Zick (1996) show, it could mean that children do more housework the more the mother works on the labor market. This is in line with the availability theory arguing that offspring of full-time working mothers are more responsible for household tasks than offspring of part-time or non-working mothers (Peters and Haldeman, 1987), a conclusion which is partly supported by the findings of Blair (1992a, 1992b) showing that growing up with a mother in full-time employment increases the time girls spend on housework, whereas the relationship for boys is found to be more ambiguous (Blair, 1992b; Benin and Edwards, 1990). Without distinguishing between boys and girls, Raley (2006) finds that the mother's employment has no impact on the time children devote to housework.

Parents' educational level also supposed to have an impact on their time allocation, especially in the case of mothers, who do less housework the more highly educated they are even when labor supply is controlled for (Leibowitz, 1975; Hill and Stafford, 1974; Lausten and Deding, 2006). This does not hold for all household tasks, however, as more time is devoted to caring by educated mothers – and fathers – than by less-educated parents (Bonke and Esping-Andersen, 2009; Bianchi et al., 2004; Sayer et al., 2004; Sandberg and Hofferth, 2001), which Leibowitz (1974) explains by educated women's prioritization of coaching and other forms of socialization – a high income effect – and the understanding of themselves as more qualified to give care – a low substitution effect – than is the case for less highly educated women. Furthermore, a higher educational level not only enhances productivity on the labor market – the wage-rate – but it is also assumed that it increases the return to care, which "... enhances productivity in acquiring schooling more than it does productivity in the labor market" (Leibowitz, 1974) i.e. the quality of children's upbringing is due to a high degree to substitution in production (Peters, 1995). Thus parents show altruistic behavior, as the profit goes to the children, i.e. time spent on child-caring "... measures the parents' altruistic investment in the

human capital embodied in their children” (Hill and Stafford, 1974). See also Becker and Murphy (2008) for a theoretical argumentation suggesting that return to education in households, including the impact of educating one's children, has increased in comparison with returns in the market sector during recent decades.

It follows from this argument that not only more highly educated parents but also their children spend more time on education, and consequently less time is available for housework and leisure activities than for children of less highly educated parents. Whether it is the one or the other activity which is given a lower priority depends on the importance the parents ascribe to the two activities, which is also the case concerning the question of whether boys and girls are treated equally in this respect. Add to the presence of differing priorities among older children concerning paid work, and we see the complexity of children's time-allocation and its relationship to their parents' educational level. For this reason the amount of time children from different social backgrounds spend on a specific activity, such as housework, becomes an empirical question; Stafford and Yeung (2005) find that children of highly educated working mothers spend more time on weekdays and less time on weekend days on housework relative to children of less highly educated mothers, while no such variation occurs with children of non-working mothers.

The number of children and their birth order are also assumed to have impacts on the supply of work, as additional children mean less intellectual stimulation being given and, conversely, only children and first-born children gain more by intense interaction with their parents (Blake, 1989). Devoting time to reading to children and monitoring homework thus becomes more difficult the more children there are in the family, and this might also hold for the supervision of children's time spent on housework. The implications are that the housework per child decreases with the number of children, and that the first child contributes more than the last child. Sollberg (1994), however, only confirms the first hypothesis, while birth order gave no housework differentials among siblings. Bianchi and Robinson (1997) report, on the contrary, a positive relationship between the number of siblings in a family and the time a child spends on housework.

There are likely to be differing parental values and practices with regard to boys and girls, and this might also be the case for the bargaining processes and the power-balances influencing allocation of time. Arguments put forward by boys on the amount of time to be spent on different activities might be found more convincing than the very same arguments made by girls. Parents' demands for children to do housework might also be sex typed, in that they may expect girls to do more housework than boys. A plausible explanation for this is that parents find it more obvious that boys will make a career on the labor market, for which reason it would be natural that boys should spend more time investing in their human capital through school homework, school time, socializing activities, sports etc., while activities preferred for girls might be oriented towards those which are more traditionally female. This means that the “doing” gender thesis also applies to children (Berk, 1985). The basic assumption here would be that a traditional role-model still prevails even in modern, double-career families, and,

thus, the upbringing of children becomes sex typed even though many parents nowadays are in favor of equal opportunities (Bonke, 1999). This is confirmed by Lundberg (2005), Lundberg et al. (2007), Mammen (2005), Yeung et al. (2001), and by Bonke and Esping-Andersen (2009), who show that in Denmark only less educated fathers spend more care time with their sons than with their daughters, while more highly educated fathers and mothers in general do not distinguish in this.

Norwegian and Swedish investigations prove that there are significant differentials in the time that girls and boys devote to housework (Sollberg, 1994) as girls spend approximately twice as many hours as boys do on this activity. For the US, Bianchi and Robinson (1997) and Raley (2006) come to the same conclusion, though another American study Hofferth and Sandberg (2001) finds only minor differentials in girls' and boys' housework. Only the last study, however, is based on a representative national study which includes all child age-groups, and as the sampling techniques for the different investigations are also different, the results are not completely comparable.

The expectation here is that *Danish children are sex typed in the performance of housework, but this typing is believed to be less pronounced than in the other Nordic countries and in the US*. The reasoning is that Danish women and men spend nearly equal amounts of time on the labor market, i.e. fewer Danish women work part-time relative to Swedish women, and that the preference for equal family models is most pronounced in Denmark (Ellingsæter, 1998).

The absolute *amount of housework performed by Danish children is also assumed to be lower than is the case for children in other countries*, because adult Danes spend considerably less time on housework than do parents in other Nordic countries and in the US (Bonke, 1999). Furthermore, the amount of time children spend on housework is assumed to vary with the demand for that work – i.e. the labor supply of the mother for household tasks and the standard of housing and living required by the family – and the number of substitutes in the performing of housework – i.e. the father's contribution to housework, paid help and the stock of household appliances. The mother's education is also presumed to have an impact on the amount of children's housework, as more educated women spend more time together with their children doing school homework and other activities that increase human capital investments, thus allowing the children to participate less in housework. Another possibility is that the parents are even more ambitious for their children, prioritizing not only skills valuable on the labor market but also those dedicated to home production, so that their child(ren) can do better on the marriage market. Finally, the mother's education and preferences for gender equity are assumed to have a gender-neutral effect on the upbringing of her children, including their contribution to housework.

These hypotheses are tested in the following; however, the results cannot necessarily be generalized internationally, as there are only a limited number of investigations and even fewer carried out on national representative samples, exceptions being the studies by Hofferth and Sandberg (2001) and Hofferth (2009).

### **3 Data and methodology**

The data used are from the European Community Household Panel (ECHP), which is a panel survey study conducted between 1994 and 2001 in nearly all EU member states. The ECHP includes a joint household interview with all members of the household aged 16 or over and individual interviews with the same persons. In 1998 the Danish part of the joint interview included some additional questions on adults and children's time use. Thus, the households were asked about the participation by the different household members – both adults and children – in nine explicitly named tasks: shopping, visiting public offices etc., food preparation, washing up and table clearing, cleaning, washing, gardening, repair and maintenance, and bringing and collecting children. Questions were asked about the aggregate time spent on these tasks – not the time spent on every individual activity – and for every child time spent in regular leisure-time activities – the definition to be decided by the household – was given. The definition of housework is in line with practice in other time-use surveys and follows the recommendations for future European time-use surveys (Eurostat, 1997). The number of co-habiting/married couples with children living at home – lone parents are left out because of the focus on intra-household allocation – used here is 761, and within these families there are 1,328 children.

The questions were asked in the household interview when all the household interviewees (those members of the household aged 16 or over) were present, and, in some cases, also children below that age. It was the parents who filled out the questionnaire, so that the information about children's housework relies on their parents' information. However, a comparison between two Swedish studies (Qvortrup, 1994) shows that no significant differences are found between information from children and information from parents with respect to children's workloads in the distribution of the workloads between girls and boys.

Another point to be considered is that the information comes from a questionnaire and not from a diary, which means that the housework is measured as a given number of hours per week. Bonke (2005) and Robinson and Gershuny (1994), who did a methodological investigation, found that for paid work short-term involvement is recorded as taking a shorter time when measured by survey questions than when measured by diary entries, and the opposite holds true for long-term involvement. Thus, the time children spend on housework might be underestimated in this paper.

Because not all children contribute to household production – the number of zero-information is relatively high – we run a tobit-regression model, which allow us to take care of that problem. Besides the ordinary coefficients we also present the marginal effects on the expected value of HW for the subpopulation with non-zero observations for HW. For continuous variables the marginal effects are calculated at the median values and for dummy variables at the 0 values. The specification of the model applied is:

$$(1) \quad HW = \alpha + \beta \text{ DEMAND} + \gamma \text{ SUPPLY} + \delta \text{ SUBSTITUTION} + \varepsilon,$$

where HW is children's housework, DEMAND is a vector of variables influencing the demand for children's housework (total hours of housework, mother's education, household income, mother's age at birth of 1<sup>st</sup> child), SUPPLY is a vector of variables of importance for the supply of children's housework (number of siblings, sex and age of child), and *SUBSTITUTION* is a vector of variables functioning as substitutes for children's housework (father's share of parents' housework, paid housework, household appliances, child's paid work and regular leisure activities).  $\varepsilon$  is the error term.

Because we have transformed a household sample into a child sample where every child constitutes a separate case, the family characteristics of siblings are similar. This implies that the variance of all the variables is underestimated, for which reason we control for partitioning of the children into clusters of families with multiple children.

Obviously, the total amount of housework is an important demand variable, as this is the issue for the bargaining in the family and/or the background for what the parents request their children to do in the home. The total income of the family indicates the presence of possible housework alternatives, including paid help and appliances. The mothers' educational background is included as a proxy for her priority for helping with children's school homework relative to other activities as well as her equal opportunity aspirations requiring the same amount of housework to be performed by sons as by daughters. Another proxy for the latter phenomenon is the age of the wife when she gave birth for the first time, as younger mothers are found to be more home-oriented and less equity-minded than are older mothers (Bonke and Esping-Andersen, 2009).

Whether the father's contribution to the housework is substituting that of children is tested by including a variable for his use of time in household production. The same holds for the functioning of household appliances. In other words, fathers' share of parents' housework, help in the home by others, including paid work, and the presence of a dishwasher and/or a microwave oven are all conceived as substitution variables in the empirical models.

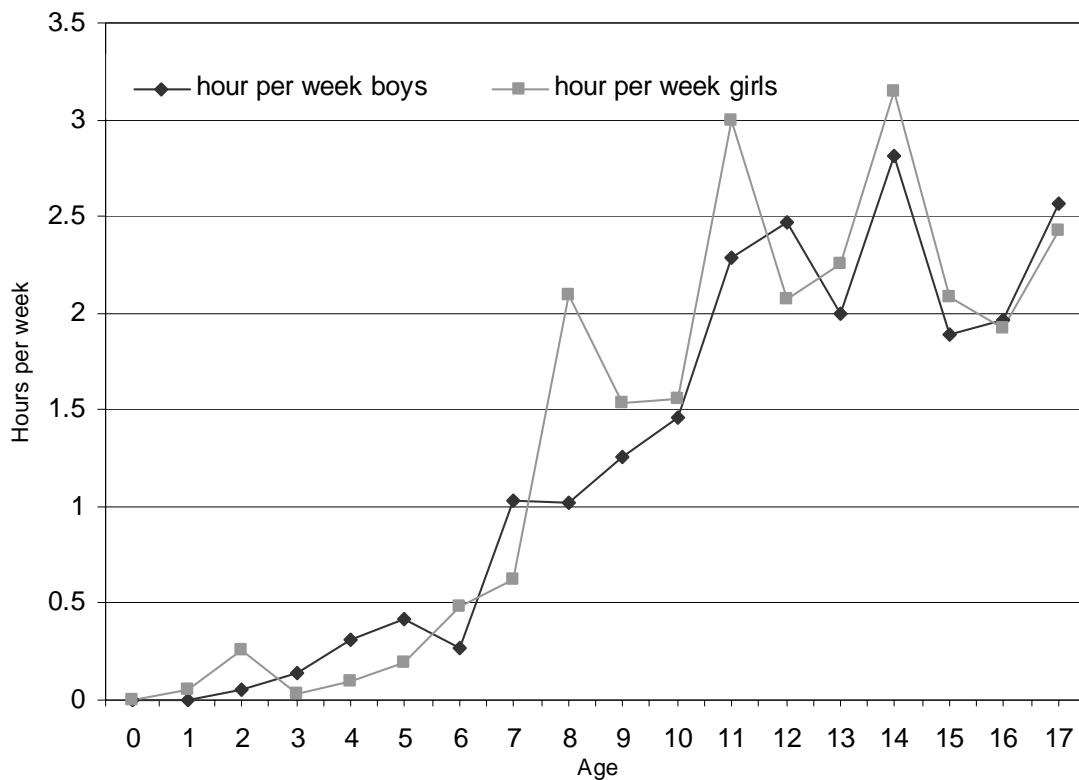
Finally, the number of siblings and the sex and age of the child(ren) are included as supply variables in the general model, where the number of children in the general model refers to the findings by Blake (1989) showing that children in small families perform better academically than those in larger families, probably because more time and resources are devoted to only children than to siblings – who again are assumed to get the same amount of attention at any point of time, cf. the "equity heuristic" (Price, 2008) – and, thereby, the latter are supposed to have more time available – even per person – to do housework than the former (Bianchi and Robinson, 1997). That children's age is another determinant of the amount of time children spend on housework is explained by the fact that older children are more capable of sharing work at home, and, presumably, feel more responsibility for family affairs than do younger children (Gager, Cooney and Call, 1999).

## 4 Results

### 4.1 Children's housework

Children not only demand parents' and other people's time, they also supply time in the family by participating in the household production. However, as Figure 1 shows the contribution of children is very small even when they become teenagers. Thus, older pre-school children spend around zero to one hour a week doing housework, which increases until they reach the age of 10-11. From that age on school children spend around 2 to 2½ hours a week doing housework.

**Figure 1**  
**Children's housework distributed by age of the child, child sample (n=1335), 1998**



Note: Including children with zero-time contributions.  
Source: European Community Household Panel Survey.

Even though children contribute only marginally to the household production, there is evidence that girls supply more housework than boys. This is confirmed in Figure 1 for school age children, while for preschool children there is no difference in the time boys and girls spend on housework. If we distinguish between the participation in housework and the supply of housework by participating children, see table 1, only the participation rate for school chil-



dren is different for girls and boys. That is, while three out of four girls contribute to the household production, this is the case for only two out of three boys. For participating boys and girls the supply of housework amounts to 2¾ hours per week for each group, which is somewhat more than for participating preschool girls and boys, who spend around 1¾ and 1½ hours respectively. It is only the minority of preschoolers, however, that participate in the household production, around 9-10% of both girls and the boys.

**Table 1**  
**Children's housework distributed by age and sex,**  
**hours: minutes per week, child sample, 1998**

	<7 years	7-17 years
<b>Girl</b>	(n=274)	(n=365)
Participation rate	9.1	75.1**
Hours:minutes by participants	1:48	2:44
<b>Boy</b>	(n=299)	(n=397)
Participation rate	9.7	66.5**
Hours:minutes by participants	1:36	2:40

Note: Sex differential +  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Source: European Community Household Panel Survey.

The work differentials between girls and boys found here are smaller than those found in other Nordic studies, even when taking into consideration the different years of investigation (Qvortrup, 1994; Solberg, 1994), and the same holds for a comparison with US studies (Bianchi and Robinson, 1997; Hofferth and Sandberg, 2001; Hofferth, 2009)<sup>1</sup>. Furthermore, the participation rate and the household labor supply by participating children are found to be higher for American children than for Danish children<sup>2</sup>, the difference being partly due to the fact that young American children tend to accompany their parents when shopping (Hofferth and Sandberg, 2001). If these differentials between the countries are statistically significant, however, is not proven here simply because the information stem from different and not fully comparable data – sources.

That the time children spend on housework increases with the number of children in the family is confirmed in Table 2, which also shows that the time spent per child increases if there are more than two children in the family, i.e. from around 1 hour to 1½ hours per child. Also the number in the birth sequence matters, as the first-born child spends more time on housework than the second-born child, who again works more hours than the third-born child, followed by the fourth-born child, who works the fewest number of hours in the home; the ex-

1 The work differential between US girls and boys aged 6-12 years was 54 minutes per week in 1997 (41 minutes in 2003) and 17 minutes between Danish girls and boys aged 7-17 years in 1998.

2 The participation rate of American children aged 6-12 years was 73 and 71 for Danish children aged 7-17 years and the supply of household work for participating children in the two countries were 3:11 and 2:42 hours and minutes, respectively, see Hofferth (2009) for the American figures. These differentials are supposed to be bigger if comparing.

planation for this is partially found in age differentials and in variations in the parents' demand for housework according to the child's placement in the child sequence. Thus, parents do not necessarily expect the same contribution to the household production from the second and third child as they did from the first child, whether they are conscious of this or not.

**Table 2**  
**Children's housework distributed by the number in the child sequence and the number of children, in the family hours: minutes per week, household sample, 1998**

	1st child	2nd child	3rd child	4th child	All children	Per child
1 child (h: min)	1:04	.	.	.	1:04	1:04
n	335	.	.	.	335	335
2 child (h: min)	1:14	0:53	.	.	2:07	1:04
n	305	305	.	.	610	610
3 child (h: min)	2:07	1:32	0:37	.	4:16	1:25
n	101	101	101	.	303	303
4 child (h: min)	1:42	1:45	1:15	0:33	5:15	1:19
n	20	20	20	20	80	80

Note: Including children with zero-time contributions.  
Source: European Community Household Panel Survey.

**Table 3**  
**Children's housework in two – Children families distributed by sex, hours: minutes per week, household sample, standard deviations in parentheses, 1998**

	Boy	Girl
<i>Younger child</i>		
<b>Boy</b>	0:53/0:38*** (1:17/1:01) (n=92)	1:28/1:02** (2:14/1:56) (n=75)
<b>Girl</b>	1:07/0:58 (2:06/1:52) (n=74)	1:35/1:00* (2:03/1:32) (n=64)

Notes: Sibling differential: +  $p < .1$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .  
Including children with zero-time contributions.

Source: European Community Household Panel Survey.

## 4.2 Analyses of children's housework

To analyze the amount of children's housework and the existence of gender differentials in this work, a tobit-regression model is applied to test the validity of the hypotheses listed in the

background section of this paper<sup>3</sup>. Because the individual child is the analytical unit even in families with more than one child, we control for any clustering effect due to siblings' common background and characteristics.

The conditions are divided into those influencing the demand for housework and those which are assumed to substitute the housework of children and parents. In addition, conditions of importance for the supply of housework are introduced to make it possible to measure the isolated effect of the other conditions, e.g. the number of children and their sex and age. In the paper only reduced models are presented, as many of the variables were found to be highly correlated, and furthermore the analyses were only performed for 7- to 17-year-old children, because of the many zero observations among younger children. We also carry out analyses for girls and boys separately in order to determine whether different conditions influence their housework in different ways, i.e. if there is any sex typing.

Firstly, we find that if the mother works full-time, this significantly increases the likelihood of children participating in housework, and when the sample is split into boys and girls the effect is the same for both sexes.

This is what we would expect cf. Bryan and Zick (1996), Peters and Haldeman (1987), Blair (1992a, 1992b), Benin and Edwards (1990) and Raley (2006), one reason being that the demand for help in doing housework is increased the more hours the mother spends on the labor market. However, we find no significant impact of the mother's and father's aggregated housework on children's housework per se – neither for boys or for girls – for which reason the positive impact of the mother's full-time work is either due to her being away at times during the day where housework has to be done (by her kids) or to other norms and preferences about children's participation in housework among full-time working mothers than among part – time working mothers.

The parents' education, and especially that of the mother, is a factor of importance for the time children spend on housework, because educated parents are assumed to give children's school attendance a higher priority. This means that these children have less time available for other activities, including housework; in other words, the education of women obstructs their children from doing housework, so that they can give more time to schooling and/or leisure activities. Table 4 confirms that children's housework decreases with the mother's education – around 5% per year of extra education of the mother. This impact, however, is only found for boys not for girls, which indicates that different strategies can be assumed to be practiced by educated mothers – and their husbands – in the way that they free their sons from doing housework, giving them a favorable opportunity to spend more time on homework and other

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<sup>3</sup> We also ran a two-step regression model distinguishing between the conditions influencing children's participation in housework and those measuring the effect of these conditions on the supply of participating children's housework, controlling for selection biases. However, as we do not know if parents' decision on their children's participation in housework can be seen as a two-step procedure and it was hard to find a good instrument, we decided only to run tobit-regressions, although the overall results were not very different from each other.

activities appropriate for increasing their human capital and, thereby, improving their labor market opportunities.

**Table 4**  
**Tobit Regressions of time spent for housework,**  
**7 to 17 year old children, boys and girls,housework in families with couples, 1998**

	All children (n=571)			Boys (n=298)			Girls (n=273)		
	Coeff.	Robust SE	Mfx	Coeff.	Robust SE	Mfx	Coeff.	Robust SE	Mfx
<i>Demand variables</i>									
Mother's work >30 hours a week	.028**	.009	.020**	.027 *	.010	.018*	.028*	.012	.021*
Total hours of housework <sup>1</sup>	-.491	.409	-.354	-.636	.449	-.463	-.474	.573	-.364
Mother's education in years	-.090+	.052	-.062+	-.183 **	.064	-.125**	.022	.063	.016
Log(Household income)	.749+	.448	.515+	.927 +	.531	.633+	.628	.580	.464
Mother's age at 1 <sup>st</sup> child	-.107**	.033	-.073**	-.172 ***	.045	-.117***	-.037	.042	-.027
<i>Supply variables</i>									
Siblings (in number)	-.204	.303	-.143	-.658	.439	-.479	.337	.384	.242
Sex (female=1)	.329	.206	.234	..	..	..	..	..	..
Age of child	.151***	.043	.104**	.166 **	.054	.113**	.134*	.060	.099*
Having siblings >17 years	.198	.341	.139	.488	.499	.350	.221	.401	.166
<i>Substitution variables</i>									
Father's share of parents' housework	-.382	.753	-.262	-.489	.907	-.334	-.155	.910	-.155
Having others' help in the home, including paid work	.163	.345	.114	.371	.384	.263	-.122	.490	-.089
Dishwasher + microwave< oven	.404	.290	.266	.234	.336	.156	.700+	.363	.483+
Child having paid work	.877**	.300	.655**	.575	.421	.416	1.102*	.457	.887*
Regular leisure activities	.389	.339	.256	.275	.399	.182	.652	.504	.452
<i>Constant</i>	-.331	1908		2462	2202		-3500	2639	
<i>Sigma</i>	2479	.172		2451	.212		2436	.182	

Note: Standard errors (SE) corrected for cluster effect, i.e. 359 clusters. Mfx: marginal effects on the expected value of "hours of work" for the subpopulation with non-zero observations, see Chapter 3.

+ p < .1. \* p < .05. \*\* p < .01. \*\*\* p < .001.

<sup>1</sup> Hours housework done by the mother and the father.

Source: European Community Household Panel Survey.

The fact that the age of the mother when she gives birth for the first time has a negative impact on children's supply of housework might be explained by a positive correlation between late parenthood and a strong labor market orientation: a view that the mother wishes to transfer to her child by sparing him/her from doing housework and focusing more on school work and leisure time activities. In that respect, this corresponds to the impact of female education on children's housework.

Other conditions thought to influence the demand for housework include household income, which allows higher income groups to own more things and household appliances increasing

the need for housework on the one hand, and making it easier to perform even for children, on the other hand. Hence, we find that household income is positively correlated with children's housework although the impact is only significant for boys and not for girls.

Furthermore, the father's share of the parents' housework is found to have a negative impact on children's housework. That is to say, we find that the more equal the sharing between the parents, the less housework children do, as we control for the amount of parental housework. The impact is not significant, however, for boys and girls taken together, and this holds even when we look at boys and girls separately (Table 4).

Another substitute for children's housework is paid work supplied by persons from outside the household, but this does not affect children's housework in general. However, for boys the first effect is found to be positive while negative for girls – none of them are significant – implying that paid work might be complementary to sons' housework. Therefore, if the household hires paid help to relieve the father from his contribution, the consequences are that boys do more housework, but for girls their contribution decreases. Moreover, if the household owns both a dishwasher and a microwave oven, this also increases the girl's participation in housework, while there is no impact on boys' participation.

The time children themselves devote to paid work and regular leisure time activities are complementary to their contribution to housework. Paid work thus increases children's participation in housework, and the same holds for their being engaged in leisure activities, although only the first correlation is significant. One interpretation of this is that paid work and the participation in leisure activities per se are found in the time-allocation negotiations to be no argument for not also doing housework; another is that there simply are "lazy" children and "busy" children. This time-allocation pattern varies somewhat, however, between girls and boys, as no significant correlation is found between boys' participation in neither regular leisure time activities or paid work while girls paid work is significantly correlated with their contribution to the housework, and that the correlations for girls are more than double the size of those for boys. This might support the thesis that in the bargaining process on the allocation of children's time, girls are in a weaker position than boys, the effect being that girls pay a higher price for being allowed to participate in leisure time activities outside the family.

The age of the mother is expected to have an impact on children's supply of housework, either because older mothers attach less importance to children's contributions, or because they have more difficulty in getting children involved, and, thus, become less likely to ask for a contribution from their children to housework. Unfortunately, the age of the mother and the age of the child are highly correlated, for which reason the hypothesis cannot be tested.

Finally, the number of brothers and sisters – siblings – has no impact on children's supply of housework, whether the siblings are below or above 18 years old. The supply of boys' housework, however, is influenced negatively by having a sister or brother, while the opposite is found for girls, who increase their supply of housework when having a sisters or brothers – none of the correlations being significant, however. The implication is that girls and boys

might not benefit equally from economies of scale as far as housework is concerned, i.e. being a brother is more favorable than being a sister if considering only the “risk” of being engaged in housework. As the initial levels of girls’ and boys’ housework are different, too, and more housework is done in families with girls than in families with boys both in relative and absolute terms, girls contribute more than boys the more housework there is to be done in the family.

## **5 Concluding remarks**

A feature commonly found in time-allocation studies is that they refer to the division of labor between adults – women/mothers and men/fathers – leaving not only children’s work out of consideration but also the distinction between girls’ and boys’ work. This means that in order to create a full picture of housework, plausible explanations for children’s work have to be invented and tested empirically by introducing conditions of importance for the demand for housework, conditions assumed to substitute that work, and, finally, conditions important for the supply of housework, making it possible to calculate partial effects in different models.

The analyses show that children’s contributions to housework are modest. The contribution of pre-school children is negligible, but after this stage the contribution increases until they reach the age of 10-11, where they spend around 2 to 2½ hours a week doing housework. Furthermore, boys’ contribution to housework is less than that of girls. Thus, boys and girls participation rates are different, while the supply of participating girls’ housework is similar to that of boys.

We also find that the mother working full-time increases the children’s housework, and that this appears for boys as well as for girls. The interpretation given is that full-time working mothers are more time-pressed demanding more support from their children in doing housework. There is no impact, however, of the mother’s and the father’s aggregated housework on participating children’s contribution.

The fact that parents’ education and especially that of the mother is negatively correlated with children’s housework supports the hypothesis that children’s school attendance, and, thereby, their chances on the labor market, is given a higher priority the more educated the parents are themselves; for which reason less time is available for other purposes, including housework. Thus we see that for boys their housework decreases with the mother’s education, while there is no impact for girls. A possible explanation is that educated mothers and their husbands practice different strategies for boys than for girls, giving boys more favorable opportunities to spend time on school homework and other activities appropriate for increasing their human capital and, thereby, improving their labor market opportunities.

The time children themselves devote to paid work is found to be complementary to their contribution to housework. For girls as well as for boys, having a paid job thus increases their supply of housework, but the effect is greater for girls than for boys. The interpretation might

be that in the bargaining process on the allocation of children's time, girls are in a weaker position than boys, the effect being that girls pay a higher price for being allowed to participate in activities outside the family.

In conclusion, the results confirm the thesis of a gendered bias in school-children's housework; however, it does seem to be smaller in Denmark than in other countries. The level of Danish children's housework found is not exceptionally low, but it appears surprising that children are sex-typed concerning housework; the implications of this should be taken into consideration in the debate on equal opportunities and rights.

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