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Homemaking Mothers and Their Children:

Maternal Labour Force Participation and its Relation
to Labour Market Outcomes in Sweden

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Abstract

This study examines whether differences in working hours, earnings, education, and family formation among Swedish children born in the 1950s is related to maternal labour force participation. In contrast to empirical evidence within this field from other countries, the results indicate that maternal labour force participation plays little role for labour market success in Sweden. However, we find that children of homemakers have significantly better elementary school grades than those of working mothers, controlling for socioeconomic background. We also find that daughters of homemakers score better on a standardised test from grade six. The better scholastic performance among homemakers' children can be explained by homemakers being able to spend more time helping their children than working mothers.

JEL Classification: I20, J13, J30, J62

Keywords: Stockholm Birth Cohort, intergenerational effects, labour force participation, education

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1. Introduction

During the 1950s and 1960s, Sweden transformed from a society where men worked and women stayed at home to one dominated by two-earner families, where both parents worked (Amurén, 2001). Through this development, which went on for circa twenty years, two separate groups of children were formed: those raised by working mothers, and those raised by homemaking mothers¹. Similar changes, although less extensive, have also taken place in other OECD countries, such as the Netherlands, Germany, and the United States (Fortin, 2005). Within the growing body of literature on the effects of maternal labour force participation, there exists a consensus on the systematic differences between children of working mothers and those of homemakers with respect to number of hours worked, level of education, and labour market participation rates (e.g. Korupp, 2000; Morrill & Morrill, forthcoming; van Putten, Dykstra, & Schippers, 2008). However, only limited research on the effect of maternal labour force participation on labour market outcomes has been carried out in Sweden, leaving a gap in the current state of knowledge.

Research in the related field of intergenerational mobility has shown that Sweden and its Nordic neighbours are some of the most socioeconomically mobile countries in the world with regards to earnings. However, significant intergenerational earnings correlations exist there as well (Blanden, Gregg, & Machin, 2005). The high mobility is usually attributed to Sweden being an egalitarian society with a large welfare state (Björklund & Jäntti, 2009). Whether these aspects of the Swedish society are also reflected in how maternal labour force participation is related to the labour market success² of an individual is an area of research that remains to be explored.

The purpose of this paper is to investigate whether intra-gender differences in labour market outcomes are systematically correlated with maternal labour force participation for children born in Sweden in the 1950s. By examining intra-gender differences in labour market outcomes, we also hope to gain insights into whether maternal labour force participation is related to inter-gender differences in these outcomes. A strong association between maternal labour force participation and labour market outcomes would indicate that this factor is a partial explanation for the gender gaps in earnings and working hours that exist for this generation. Regardless of one's opinion about the gender gap, it is important to find out whether the gap is rooted in childhood, e.g. through maternal labour force participation, or if it emerges later in the children's lives.

¹ "Homemaker" is for the purpose of this paper defined as someone who does not hold any employment and spends her time taking care of the household and her family. A commonly used synonym is "housewife".

² For the purpose of this paper, labour market success is measured by hours worked per week and earnings.

In addition to number of hours worked per week (which have been investigated in earlier studies) annual labour earnings of the subjects are also examined in this paper, thus providing a broader and more complete picture of the labour market outcomes. We also look at how maternal labour force participation is related to intra-gender differences in years of education, elementary school GPA, standardised test scores, number of own children, and years as married or cohabiting, since these are channels through which maternal labour force participation could influence labour market outcomes.

This paper is organised as follows: following the introduction in section 1, section 2 presents a background on gender equality on the Swedish labour market as well as a review of the literature on intergenerational mobility and maternal labour force participation, section 3 describes the theoretical framework used in this paper, and section 4 summarises the purpose of this paper. In section 5 we present our hypotheses, in section 6 the data used, and in section 7 the methods and econometric framework utilised. In section 8 our results are reported and analysed, while section 9 contains a discussion on limitations to the conclusions drawn in this paper. Finally, sections 10 and 11 present policy implications, concluding remarks, and some suggestions for further research.

2. Background and Literature Review

2.1. Gender equality on the Swedish labour market

In 1960, women represented about 30 per cent of the labour market³ in Sweden, and only around 33 per cent of women of working age were gainfully employed, whereas among men of working age, almost 80 per cent worked (Statistics Sweden, 1961). The 1960s were, however, the last decade of homemaking women. During this period many women started finding employment outside their homes and many political measures were taken in order to increase equality between the genders in the labour market (Amurén, 2001).

Today, both men and women have almost the exact same labour force participation rates in Sweden. At the end of 2011 about 48 per cent of the workforce in Sweden consisted of women. Circa 78 per cent of the men and 73 per cent of the women of working age are employed in the labour market today (Statistics Sweden, 2012a).

Although inter-gender differences in labour force participation rates have decreased, other differences, such as in earnings and working hours, still exist between men and women. Despite reductions in the male-female pay gap since the 1950s, gender differentials persist, in Sweden and in the rest of the industrialised world (Blau & Kahn, 1996). In 1970, the average

³ As defined by the number of workers, part-time or full-time, in the labour force in 1960. If one were to compute the number of working hours that each gender contributed with, the female share would be even smaller as many held only part-time jobs.

hourly wage of a woman in Sweden was about 75 per cent of that of a man in Sweden (Meyerson & Petersen, 1997), whereas in 2011, women earned on average about 86 per cent of the hourly wage of men^{4,5,6} (Statistics Sweden, 2012a). In addition to the gender gap in earnings, women are also more likely to be working part-time than men. In 2011, about 32 per cent of the employed women and only ten per cent of the employed men worked on average less than 35 hours per week (Statistics Sweden, 2012b).

2.2. Literature reviews

The following literature review is divided into three parts. The first part is a presentation of the research on intergenerational mobility, i.e. how previous generations affect the social and economic status of the offspring. The second and third parts describe research on how maternal labour force participation is related to the labour market outcomes and education of their children, respectively.

2.2.1. Intergenerational mobility

The general consensus within research on intergenerational mobility is that a significant share of the labour market income of an individual can be explained by the income of her parents (Solon, 1999). Although originally only concerned with father-son relationships, researchers have in the last decades also shown an interest in the father-daughter, mother-daughter, and mother-son relationships (Chadwick & Solon, 2002). Results from the United States suggest that the intergenerational earnings correlation is significant among women as well as among men. Chadwick and Solon (2002) estimate the correlation coefficient for women with respect to their parents' family income as 0.43, which is close to the 0.40 consensus view of intergenerational earnings correlation for men (Solon, 1999).

In Sweden and the other Nordic countries, the intergenerational income correlation coefficient is substantially lower (Björklund & Jäntti, 2009). Rather than 0.40, the coefficient for men born during the 1950s and 1960s in Sweden is roughly 0.23, whereas the coefficient for women born in the same period is around 0.25 (Hirvonen, 2006). Björklund and Jäntti (2009), in a study on the association between parental family earnings and the children's earnings, attribute the relatively high earnings mobility in the Nordic region during the 1950s and 1960s to the "rise of [...] ambitious welfare states" (p. 30). In short, the theory⁷ suggests that an individual's level of income is an outcome of her level of human capital, as determined

⁴ This estimate is computed by dividing the average wage of a woman by that of a man, not taking other determinants of the wage structure into account. When taking into account age, education, tenure, and line of work, the estimated wage gap decreases to seven per cent (Statistics Sweden, 2012a).

⁵ All of the wage data are annualised to correct for the fact that not everyone is working full time.

⁶ However, the labour market is not homogeneous with respect to wage differences between the genders and the largest part of the gap in 2012 originates from white-collar workers in the private sector, where women on average earn only 79 per cent of the wage of a man.

⁷ The theory is an adaptation of a framework presented by Becker and Tomes (1979; 1986).

by “investments in [her] human capital, [...] made by both parents and the public sector” (p. 4) and endowments, which are transferred from parents to their children at no cost. Within this theoretical framework, it is evident that a society with a large public sector that equalises human capital investments between families, through taxes and transfers, produces greater equality of opportunities than a society in which the parents carry the full responsibility for the human capital investments in their children.

2.2.2. Maternal labour force participation and labour market outcomes

Until recently, only limited research has been carried out within economics on the labour market effects of having a homemaking mother. In a recent exception, Morrill and Morrill (forthcoming) focus on the relationship between the labour force participation choices of mothers and their daughters. They find that women in the United States who grew up with working mothers are about seven per cent more likely to work themselves compared to women who grew up with homemaking mothers.

Within the field of sociology, researchers have for decades been concerned with the effect of maternal employment on children’s wellbeing and educational attainment (Hoffman, 1989; Kalmijn, 1994; Milne, Myers, Rosenthal, & Ginsburg, 1986). As better data has become available, a growing number of studies have also started examining how maternal labour force participation is associated with the children’s labour market outcomes, as measured by e.g. occupational mobility and working hours (van Putten et al., 2008; Sanders, 1997; Stevens & Boyd, 1980).

In the 1970s, studies within sociology established that daughters of working mothers had higher labour force participation rates than daughters of homemaking mothers (Rapoport & Rapoport, 1971). Furthermore, having a working mother has been shown to be positively associated with being career salient rather than non-career oriented (Almquist & Angrist, 1970). A limitation of these early studies is that they use data on college women and their mothers, and they stem from a time when women had just started entering into the labour market on a large scale. It is thus possible that the discovered relationship is a sign of class inheritance effects rather than the transmission of gender egalitarian behaviour.

Later studies have shown that adult daughters of homemaking mothers have paid work to a smaller extent after becoming mothers themselves compared to other women (Sanders, 1997). Furthermore, daughters of homemaking mothers switch more often from part-time work to homemaking (Hendrickx, Bernasco, & de Graaf, 2001). However, a limitation of these studies is that they are limited to women who are either married or have children of their own, making it difficult to separate between intergenerational effects and demographic career effects.

In a more recent paper, van Putten et al. (2008) examine if the daughters of working mothers show different job patterns than the daughters of homemakers, looking specifically at the number of hours worked per week and the binary choice of labour force participation. Using data from a sample of 3,169 Dutch women during the period 2002–2004, van Putten et al. (2008) find that women who were raised by working mothers work on average about two more hours per week compared to those raised by homemaking mothers. However, they find that the probability of being part of the labour force is not affected by the mother's labour force participation. In another recent study of labour market outcomes, Korupp (2000) looks at data from the Netherlands, Germany, and the United States, and finds that daughters of working mothers achieve higher occupational statuses than daughters of homemaking mothers.

2.2.3. Maternal labour force participation and education

The empirical evidence on the educational effect of the mother's occupational status or labour force participation is more ambiguous. Dronkers (1995), for example, shows that the maternal occupational level is positively correlated with both the level of education and academic achievement. On the other hand, Norberg-Schönfeldt (2008) finds that maternal working hours have a negative effect on a child's grades in years nine and twelve, using Swedish GPA data from the 1990s. Milne et al. (1986) show that the mother's working hours can negatively affect the reading and math performances of elementary and high school students. Some researchers also find that the effect of homemaking mothers on education differs between sons and daughters, with a positive contribution to the level of education for sons but not for daughters (Desai, Chase-Lansdale, & Michael, 1989; Gold & Andres, 1978)(Gold & Andres, 1978; Desai, Chase-Lansdale, & Michael, 1989).

3. Theoretical framework

To understand how working mothers could influence the labour market outcomes of their children, two mechanisms from sociology can be applied. Firstly, the influence can be attributed to **work-related resource transfers** from parents to children (van Putten et al., 2008). Several studies indicate that working mothers transfer work-related resources to their children: resources that homemaking mothers are unable to transfer (Kalmijn, 1994; Menaghan & Parcel, 1991)(Menaghan & Parcel, 1991; Kalmijn, 1994). Specifically, van Putten et al. (2008), suggest three types of resources that working mothers transfer to their children, viz.: *human capital*, i.e. skills and social codes that are useful for labour market success; *social capital*, i.e. professional and social networks that can provide access to useful information, services and jobs (de Graaf & Flap, 1988; Marsden & Hurlbert, 1988); and *financial capital*, i.e. money to be invested in the child's education, in terms of books, private lessons, and, in some

countries, better schools. By and large, these resources should help further a child's social skills, professional and social networks, and education, thereby increasing working hours and lifetime earnings.

The second mechanism that could explain how homemaking mothers affect their children is **behavioural role modelling**, whereby men and women not only develop differently due to genetic factors, but are also taught to behave differently by their social environment. Extensive research exists on how gender role attitudes are formed by parents, and both cross-sectional and longitudinal studies from the United States and Great Britain find positive correlation between the gender-role attitudes of mothers and their children (Acock & Bengtson, 1978; Glass, Bengtson, & Dunham, 1986; Starrels, 1992).

Behavioural role modelling can also be used to explain how the maternal working status influences education and family formation – outcomes that will be studied in this paper as well. Previous studies have confirmed that maternal gender role attitudes significantly affects daughters' educational attainment (Vella, 1994), labour supply (Fortin, 2005) and fertility decisions (Fernández & Fogli, 2005).

Korupp (2002) presents two conflicting arguments for how the educational performance of children is related to the labour force participation of their mothers. The **resource argument**, which is similar to the **work-related resource transfer** mechanism described above, asserts that maternal labour participation should have a positive effect on her child's education through her work-related resources. On the other hand, according to the **time budget argument**, the labour participation of the mother should have a negative effect on a child's education because the mother's working hours restrict the amount of time she can spend at home with her children.

4. Purpose

This paper focuses mainly on the labour market outcomes of the generation of Swedes born in 1950s whose mothers belonged to the last generation of homemakers. We will examine the intra-gender differences in the labour market outcomes between children who were raised by working vis-à-vis homemaking mothers, thereby hoping to shed some light on inter-gender differences in the labour market outcomes for this generation.

Previous research within sociology in other developed countries has shown that maternal employment has an effect on both the labour market outcomes and educational attainment of her offspring (Dronkers, 1995; Milne et al., 1986; van Putten et al., 2008). However, the studies examining labour market outcomes focus mainly on the effects on labour force participation rates, occupational mobility, and working hours, despite the fact that intergenerational mobility studies suggest a link between maternal earnings and children's

earnings (e.g. Chadwick & Solon, 2002; Hirvonen, 2006). In this paper, we will consider both earnings and working hours when assessing labour market outcomes, as they capture different aspects of labour market success. Moreover, research on intergenerational mobility has shown that family background is less important for determining labour market outcomes in Sweden than in other developed countries, making intergenerational relationships in Sweden particularly interesting to study (e.g. Björklund & Jäntti, 2009). In this paper, we aim to find out whether the high intergenerational mobility in Sweden is also reflected in a weak association between maternal labour force participation and labour market outcomes among the children.

In addition to the two labour market outcomes (earnings and working hours), we will also look at a number of channels, related to education and family formation, through which maternal labour force participation could influence the child's labour market outcomes. The channel outcomes that will be examined are: educational attainment, GPA, standardised test score, number of children, and years as married or cohabiting. Through the inclusion and analysis of these channel outcomes, we hope to find out when and how a possible relationship between maternal labour force participation and the labour market success of her children arises.

Finally, this paper could be a first step towards understanding intergenerational effects of differences in working hours between parents. Even though homemaking mothers are no longer common in Sweden, there still exist inter-gender differences in labour market participation as mothers tend to work part-time and take out parental leave to a larger extent than fathers (Statistics Sweden, 2012b). In conjunction with future research, this paper could have implications for what kind of policies would be optimal if one wants to efficiently decrease the gender gap on the labour market.

It is important to note that this paper examines the systematic relationship between maternal labour force participation and different outcomes, thus when writing about the effect of maternal working status, we refer to the correlation after controlling for socioeconomic background and not the causal effect of this factor.

5. Hypotheses

Drawing on the previous research presented in section 2 and the theoretical framework presented in section 3, a number of hypotheses on the relationship between having a homemaking mother and the different outcomes for the children will now be presented. Since Sweden has been shown to have a comparatively low intergenerational earnings correlation (e.g. Björklund & Jäntti, 2009), it is possible that this weak intergenerational linkage is also

reflected in the effect of maternal labour force participation, attenuating the hypotheses that are presented.

We begin by introducing hypotheses related to what we define as labour market outcomes, i.e. earnings and working hours, after which we present hypotheses related to variables defined as channel outcomes, through which working mothers could influence the labour market outcomes mentioned above. Firstly, we will present hypotheses for the channel outcomes that relate to education, and secondly, hypotheses for the adult family formation channels are explored. We are interested in finding the relationship between these outcomes and maternal labour force participations, thus all the hypotheses presented need to hold also when controlling for the subjects' socioeconomic background and other factors.

5.1. Labour market outcomes

Based on the two aforementioned mechanisms **work-related resource transfers** and **behavioural role modelling**, we hypothesise that having a homemaking mother is negatively associated with working hours and earnings for daughters. A working mother will be able to **transfer work-related resources** that will have a positive effect on these labour market outcomes. Simultaneously, according to **behavioural role modelling**, a working mother influences her daughter's labour market outcomes by socialising her daughter into behaviour similar to her own, i.e. being more career salient.

The hypothesis that daughters of working mothers are more successful in the labour market than daughters of homemakers is in line with the empirical evidence presented above which indicate that having a homemaking mother is negatively associated with the daughter's working hours and labour force participation rates in countries such as the United States and the Netherlands (van Putten et al., 2008; Sanders, 1997). Though there is no empirical evidence on the effect on earnings, it seems reasonable that maternal labour force participation would be positively correlated with earnings as well.

Thus, the hypotheses for women are:

- 1) Daughters of homemaking mothers will work fewer hours than women with working mothers.
- 2) Daughters of homemaking mothers will have lower average annual labour market earnings than women with working mothers.

Due to the small variance in working hours among men in the data, only one labour market outcome will be hypothesised for men, namely earnings. Regarding this outcome, the evidence from previous research is ambiguous, and there could be both negative and positive effects of having a homemaking mother. On one hand, a homemaking mother is unable to transfer **work-related resources** to her son, which would negatively affect earnings. Furthermore, previous research has indicated that a working mother could have a negative

effect on the academic achievement of her son, which could, by extension, hurt his labour market earnings (Desai et al., 1989; Gold & Andres, 1978).

On the other hand, a homemaker is part of a family formation with the father as the breadwinner. Through **behavioural role modelling**, the son of a homemaker might be socialised into a gender role prescribing that the earnings of the man should be the primary source of income in the household, which would have a positive effect on the son's labour market earnings. At the outset, the hypothesis, although uncertain, is that the effects of role modelling outweigh those of resource transfers, leaving sons of homemakers better off in the labour market than sons of working mothers. Given this, the hypothesis for men is:

- 3) Sons of homemaking mothers will have higher average annual earnings than those of working mothers.

5.2. Channel outcomes

Looking beyond labour market outcomes, we will also examine the relationship between maternal labour force participation and educational attainment, elementary school GPA, standardised test scores, number of children, and years as cohabiting or married, as these variables are likely to influence one's success in the labour market.⁸ If any of these variables show a significant correlation with maternal labour force participation, it would indicate that this variable could work as a channel, through which a homemaking mother influences the earnings or working hours of her children.

5.2.1. Education

The **time budget argument** asserts that a homemaking mother will have a positive effect on the education of both her daughter and son, while the **resource argument** maintains that she will have the opposite effect. A negative effect on the daughter's education is also implied by **behavioural role modelling** theories, according to which the daughter of a homemaker will be less ambitious and less career salient. The empirical evidence is ambiguous, with some studies indicating that homemaking mothers positively affect the academic achievement of their sons but not their daughters, whereas other studies show that homemaking mothers have positive effects on the education of children of both genders (Desai et al., 1989; Gold & Andres, 1978; Milne et al., 1986).

To start off with, we follow the **time budget argument** for sons, and hypothesise that maternal labour force participation will be negatively related to sons' education, since homemakers are able to spend more time with their children. For daughters, the **time budget** also plays a role, although the negative effect of **behavioural role modelling** might outweigh these positive effects, leading us to hypothesise that having a homemaking mother is

⁸ Van Putten et al. (2008), for example, show that a woman's educational attainment and the presence of children younger than 12 in her household are the strongest determinants of female labour force participation.

negatively correlated with a daughter's education. However, because of the ambiguity in the empirical evidence and the theories on **time budget**, **behavioural role modelling** and **resource transfers**, we acknowledge that the direction of the predicted relationships could be the opposite.

In conclusion, this gives us the following hypotheses on education:

- 4) Daughters of homemaking mothers will have lower educational attainments than those raised by working mothers.
- 5) Daughters of homemaking mothers will have lower GPAs than those raised by working mothers.
- 6) Daughters of homemaking mothers will have lower standardised test scores than those raised by working mothers.
- 7) Sons of homemaking mothers will have higher educational attainments than those raised by working mothers.
- 8) Sons of homemaking mothers will have higher GPAs than those raised by working mothers.
- 9) Sons of homemaking mothers will have higher standardised test scores than those raised by working mothers.

5.2.2. Adult family formation

Theories on **behavioural role modelling** indicate that a family formation where the mother is a homemaker will socialise the children into having a stronger focus on the family. Accordingly, sons and daughters of homemaking mothers should have more children and be more likely to be cohabiting or married than children of working mothers.

- 10) Daughters of homemaking mothers will have more children than those raised by working mothers.
- 11) Daughters of homemaking mothers are more likely to be cohabiting or married than those raised by working mothers.
- 12) Sons of homemaking mothers will have more children than those raised by working mothers.
- 13) Sons of homemaking mothers are more likely to be cohabiting or married than those raised by working mothers.

6. Data

6.1. Stockholm Birth Cohort

All data used in this paper is taken from the *Stockholm Birth Cohort (SBC)*. The *SBC* is a data set consisting of detailed information on all individuals who were born in 1953 that were residing in the Stockholm metropolitan area on November 1, 1963 – a total of 15,117

individuals. The data set was created when the data from the anonymous *Stockholm Metropolitan Study* was combined with data from *The Swedish Work and Mortality Database (WMD)* through probability matching⁹ (Centre for Health Equity Studies, 2005). Collection and maintenance of the data is carried out by the *Swedish Institute for Social Research (SOFI)* and the *Centre for Health Equity Studies (CHESS)*.

The *Stockholm Metropolitan Study* was initiated in 1963 to study social mobility and stratification, and initial information on the subjects was gathered through two surveys: *The School Study*, in May 1966; and *The Family Study*, in 1968. Further data, both from public registers (such as censuses and birth records) and from surveys, have subsequently been added to the original set, although only variables from the *Stockholm Metropolitan Study*, the *1960 Census of the Population*, and the *WMD* are used for the purposes of this paper (Stenberg et al. 2007).

The School Study consisted of two voluntary questionnaires which were answered in class in May 1966, when the bulk of the participants were in the sixth grade. The questionnaires totalled some 150 questions and contained both a mental test, consisting of three parts, and sociometric questions. In total, 13,476 of the 15,117 subjects completed the two questionnaires (Janson, 1980a).

The Family Study was conducted in 1968 through field interviews of mothers or substitute mothers of a sub-sample of the children born in 1953, with the purpose of further investigating the family situations of the cohort members. The sample selection was based on the scores of *The School Study* mental tests conducted in 1966. Based on their test scores, the subjects were divided into three strata: High, Medium, and Low. The High and Low groups consisted of children with the top and bottom 5 per cent of the test scores, respectively. In these two groups, all children were included in *The Family Study* sample. In the Medium group, as well as among those who did not participate in *The School Study*, every fifth member was randomly drawn to be part of the sample. In all, the mothers or substitute mothers of 4,021 children were contacted. Due to refusal, illness, or relocation, the final sample consisted of 3 651 children, somewhat more boys than girls (Janson, 1980b).

The *WMD* was incorporated into the *SBC* in 2003 to study “how work, income, and labour market position combine to influence health, disease, and mortality” (Stenberg et al., 2007, p. 106). Through data from the *WMD* it is possible to follow the original 1953 cohort in later stages of life, mainly from the period 1990-2001, with detailed data on income, employment, occupation, social class, housing, and wealth.

⁹ Details on the data combination may be found in Stenberg et al. (2007).

6.2. Sample

As is expected when using combined data sets, missing values exist for some of the subjects, and in order for the statistical analysis to be stringent and the sample to be comparable between the different model specifications, only those subjects that have data for all variables of interest are included in the sample used for the statistical analysis in this paper. The final sample consists of 9,034 observations out of the 15,117 individuals included in the original sample. Sensitivity tests, including mean comparisons and linear regressions¹⁰, suggest that those omitted are not systematically different from those included.

In this sample, no selection has been made with regards to the gender or marital status of the subjects, even though previous research tend to focus on women who are married (e.g. Morrill & Morrill, forthcoming). The reason for not excluding subjects based on marital status is that maternal labour force participation could be systematically related to the marital status of her children, thus data sets that only contain married subjects will not permit inference that is applicable to the population as a whole.

6.3. Summary Statistics

The following table (Table 1) presents summary statistics for the sample. The sample is split into men and women, with the gender groups further split into those whose mothers were homemakers, and those whose mothers worked. The numbers presented in the table below are simple averages of the variables within each group. The first eight variables measure outcomes that are related to the labour market, education, and family formation of the subject, whereas the following seven¹¹ variables are used as controls for socioeconomic background.

¹⁰ The results of these tests are not included here, but are available on request from the authors.

¹¹ The table actually contains eight variables, but “Father's earnings in 1963, in 1996 SEK” are never used in the analysis.

Table 1. **Summary Statistics, split by gender and maternal labour force participation**

	Women			Men		
	<i>Homemaking mother</i>			<i>Homemaking mother</i>		
	No	Yes	All	No	Yes	All
Number of observations	3,393	1,434	4,827	2,919	1,288	4,207
Share of observations	70.3%	29.7%	100%	69.4%	30.6%	100%
Average annual earnings (1990-2001), SEK	173,800	179,200	175,400	255,500	272,500	260,700
(Standard deviation)	75,360	92,730	80,940	141,900	148,300	144,100
Working hours per week in 1990	32.16	32.14	32.16	38.31	38.44	38.35
(Standard deviation)	11.24	10.79	11.11	6.81	6.69	6.77
Share of group working full-time	58%	56%	57%	93%	94%	93%
(Standard deviation)	49%	50%	50%	26%	25%	26%
Years of education*	12.35	12.61	12.43	12.24	12.55	12.33
(Standard deviation)	2.06	2.05	2.06	2.30	2.19	2.27
Grade point average in year 6, scale 1-5	3.32	3.44	3.36	3.16	3.26	3.19
(Standard deviation)	0.68	0.66	0.68	0.69	0.68	0.68
Standardised test scores, in 1966	3.74	3.82	3.76	3.96	4.01	3.98
(Standard deviation)	0.97	0.99	0.98	0.93	0.92	0.92
Years as married/cohabiting 1990-2001	7.62	7.93	7.71	8.06	8.35	8.15
(Standard deviation)	5.12	5.05	5.10	4.89	4.78	4.86
Average number of children at home	1.54	1.58	1.55	1.40	1.47	1.42
(Standard deviation)	0.99	1.01	0.99	1.07	1.09	1.08
Father's earnings in 1963, SEK	21,590	23,710	22,220	22,210	25,430	23,200
(Standard deviation)	19,830	26,990	22,220	21,680	23,810	22,400
Father's earnings in 1963, in 1996 SEK**	177,902	195,370	183,093	183,010	209,543	191,168
(Standard deviation)	163,399	222,398	183,093	178,643	196,194	184,576
Number of siblings	1.70	1.98	1.78	1.58	1.94	1.69
(Standard deviation)	1.33	1.33	1.34	1.17	1.36	1.24
Mother's age in 1953, years	28.43	28.50	28.45	28.79	28.79	28.79
(Standard deviation)	5.75	5.81	5.77	5.67	5.52	5.62
Father's age in 1953, years	31.09	31.45	31.19	31.50	31.51	31.50
(Standard deviation)	6.39	6.38	6.39	6.45	6.40	6.43
Share with mother as only adult in household	11.4%	1.0%	8.3%	9.8%	0.9%	7.1%
(Standard deviation)	31.8%	9.8%	27.6%	29.7%	9.6%	25.7%
Father's education, years*	7.96	9.48	8.41	8.16	8.92	8.41
(Standard deviation)	3.15	3.49	3.32	3.32	3.49	3.39
Mother's education, years*	7.38	7.67	7.47	7.41	7.53	7.45
(Standard deviation)	2.62	2.56	2.61	2.70	2.56	2.65

The reported numbers are means or proportions of the variable within their respective categories. The first three variables are considered as labour market outcomes, the following five as channel outcomes – the three first relating to education and the following two to adult family formation.

* Education in years: if primary school=9; upper secondary school=12; university/college=15.

** For simplifying intergenerational comparisons of labour market earnings, paternal earnings are reported in 1996 SEK as well. The 1996 number is computed as the 1963 income multiplied by the accumulated inflation between 1963 and 1996. 1996 was chosen as the year of comparison as it is in the middle of the period 1990-2001.

By observing the averages for the different groups, we notice that men and women differ in all the labour market outcomes. Men tend to work longer hours, earn more money, and work full-time to a larger extent. Women, on the other hand, tend to have somewhat more education and higher elementary school GPAs than men, although men score better on the standardised test that was carried out in 1966.

Looking at the homemaking mother dimension, it appears that men and women with homemaking mothers earn more than those with working mothers. The number of working hours differs only slightly between the children of homemaking and working mothers, suggesting that the higher earnings for children of homemakers are not generated by more working hours, but rather by higher hourly compensation. With regards to education, the same pattern can be observed, i.e. that both men and women with homemaking mothers have more education, higher GPA, and better standardised test scores than those whose mothers were part of the labour force. As for family formation, children of homemakers seem to be married or cohabiting to a somewhat larger extent and have more children.

As for the control variables, paternal earnings seem to be related to maternal labour force status, implying that the fathers who earn more are more likely to be married to homemakers. Furthermore, one can note that fathers of the men in the sample tend to earn more than the fathers of women in the sample, although this difference is not statistically significant.

Thus, it appears, simply from surveying the means of the outcome variables, that children of homemaking mothers and those of working mothers are different, both with regards to labour market outcomes and channel outcomes. However, the differences in outcome variables may be due to homemaking mothers being more common in higher social classes (see Table 6 in the Appendix). For example, based on literature on intergenerational mobility (e.g. Solon, 1999), it could be the case that the higher earnings among homemakers' sons may simply be a result of their fathers' higher earnings. In the following section, we will present a multivariate analysis strategy for determining how maternal labour force participation is associated with the outcome variables of interest, holding socioeconomic family factors constant.

7. Methods and Econometric Framework

Since the focus of this paper is on intra-gender differences in the labour market and channel outcomes, the following regressions are carried out separately for men and for women. As a baseline regression¹², the following model specification is used to find out whether the outcome variables differ significantly between the children of homemaking mothers and those of working mothers:

$$Y_i = \beta_0 + \beta_1 Homemaking_i + \varepsilon_i$$

where Y_i is one of the outcome variables (average annual earnings, number of hours worked per week, educational attainment, elementary school GPA, standardised test score, a measure of the number of children a subject has, or a measure of how many years the person has been married or cohabiting); $Homemaking_i$ is a dummy variable that takes on the value 1 if the subject's mother was a homemaker both when the subject was seven and thirteen years old, and 0 otherwise; and ε_i is the error term¹³.

Table 1 above and Table 6 (found in the Appendix) show that maternal labour force participation is correlated with certain socioeconomic background characteristics, such as social class, parental education and paternal earnings, which could also have a direct effect on the outcome variables. Two further sets of model specifications are used to disentangle the role of the socioeconomic background variables from that of maternal labour force participation.

The first set of model specifications includes categorical variables that allow for fixed effects of the control variables (social class, neighbourhood, and parental age groups). This set of *category* models looks like:

$$Y_i = \beta_0 + \beta_1 Homemaking_i + \delta Category_{i,j} + \varepsilon_i$$

where Y_i is one of the outcome variables; $Homemaking_i$ is the dummy variable defined above; $Category_{i,j}$ is a vector of categorical control dummy variables included¹⁴, and ε_i is the error term. Using controls for family background (paternal earnings, parental level of education, the number of siblings a subject has, and whether the subject grew up in a household with a single mother), the second set of *category* models are specified as follows:

$$Y_i = \beta_0 + \beta_1 Homemaking_i + \gamma X_i + \delta Category_{i,j} + \varepsilon_i$$

where Y_i is one of the outcome variables; $Homemaking_i$ is the dummy variable defined above; X_i is a vector of control variables; $Category_{i,j}$ is a vector of categorical control dummy

¹² For all of the data analysis in this paper, Ordinary Least Squares regressions are utilised.

¹³ In order to correct for heteroscedasticity in the baseline regression, robust standard errors are used.

¹⁴ What categories are included differs between specifications. The categories used are the following: $Category_{i,1}$ = Neighbourhood dummies_i, $Category_{i,2}$ = Social class dummies_i, $Category_{i,3}$ = Paternal age group dummies_i, $Category_{i,4}$ = Maternal age group dummies_i

variables, as described above; and ε_i is the error term. In both sets of *category* regressions, the standard errors have been clustered on a categorical variable level.

7.1. Outcome variables

The two variables that are used to measure labour market outcomes are: average annual earnings between 1990 and 2001, and the number of hours worked in 1990. Ideally, the life-time earnings and working hours would be used in the analysis, but due to data limitations, this is not possible. However, research on the association between current and lifetime earnings shows that measuring annual earnings from age thirty-seven and onwards yields reasonable estimates for lifetime earnings (Böhlmark & Lindquist, 2006). The earnings variable has been computed by averaging nominal annual labour market earnings in the years 1990-2001. For the regressions, the natural logarithms of the average annual earnings are used, as the normal distribution is much better approximated by the logarithmic values than by the corresponding level values.

For the number of hours worked, the variable has been re-coded from a categorical variable, where subjects stated which range they belonged to, into a scale variable where the average value in each range was used, making the subjects belong to one of the following groups: 0, 8, 17.5, 27 or 40 hours worked per week.

The second group of dependent variables, the channel outcomes, are measured during the childhood and early adulthood of the subjects. They have been chosen as they may provide an understanding as to when in life and through which channels the possible effect of having a homemaking mother comes into play.

The educational attainment is a categorical variable¹⁵ in the original data set, and it has subsequently been re-coded into a scale variable measuring the number of years of education. In addition to educational attainment, the elementary school GPA is also included as a channel outcome variable. Grades from elementary school are used as dropout rates in higher levels of education are substantial, and analysis of the data shows that those who drop out tend to be at the lower end of the elementary school GPA distribution. As a further measure of scholastic aptitude, results from the standardised test that was carried out as a part of the *Stockholm Metropolitan study*, when the bulk of the subjects were in grade six, are included as a channel outcome variable.

The two variables related to family formation are: total number of years the subject was married or cohabiting, and average number of children under 18 living in the household of the subject. Due to data limitations, these variables only contain information from the years 1990-2001. However, a binary variable stating whether the subject had children 1980 suggest that

¹⁵ The categories denote the highest level of completed education.

few subjects have children that would have moved out from the household in 1990, indicating only minor problems with bias due to this measurement issue.

7.2. Controls

The control variables that are used in this paper to account for the subjects' socioeconomic backgrounds are described in detail below.

As the literature on intergenerational mobility in earnings show, the parental earnings can explain parts of their children's earnings, and since the data shows that the prevalence of homemakers is larger within some social classes (see Table 6 in the Appendix), socioeconomic measures are included in order to limit this bias. The socioeconomic class of a subject's father is thus the first categorical variable used to capture the family's social standing. In the data, the fathers of the subjects are sorted into one of five socioeconomic classes based on their occupational standings.

Traditionally, the literature on intergenerational income mobility and maternal labour force participation uses either parental or family income as explanatory variables (e.g. Morrill & Morrill, forthcoming; Solon, 1999). In the paper at hand, a somewhat different strategy is used to correct for the family income or wealth since the available data only contains paternal earnings for one year. As data analysis shows that the correlation between paternal earnings and living in a certain parish is positive, strong and significant, a categorical variable describing in which parish, out of forty-nine within the Stockholm region, the subject lived at age seven is utilised to control for parental wealth¹⁶. In addition, the parish variable also takes into account neighbourhood effects, which can influence children in several ways, e.g. via peer influences, social norms enforced by the residents in the neighbourhood, and influences of neighbourhood institutions, such as school quality (Jencks & Mayer, 1990).

The third and fourth categorical control variables relate to paternal and maternal age groups. They are used to control for life-cycle effects on parental variables and since the parents' age may be correlated with maternal labour force participation and the outcome variable of interest. The parents are divided into quartiles based on their age in 1953 (see Table 7 in the Appendix).

The parametric control variables were created as follows. The parental education variables are categorical in the original data and have been coded into continuous variables¹⁷. Since the parental education variables were collected through *the Family Study*, the observations have been weighted according to the sampling function for inference.

¹⁶ Due to the limited number of observations from three of the parishes, these have been merged with neighbouring regions, resulting in a total of forty-six neighbourhoods. See Table 8 in the Appendix for the distribution of homemakers between the neighbourhoods.

¹⁷ Following guidelines from Statistics Sweden on how to translate the different categories into years (Statistics Sweden, 2000)

With regards to the number of siblings in a family, Becker and Tomes (1986) theorise that families with more children sometimes have to split their resources between the children, suggesting that children with more siblings should be worse off, *ceteris paribus*. The variable for the number of siblings is generated from the sum of younger and older brothers and sisters that are reported in the data.

Finally, a dummy variable that measures whether or not the mother of a subject was the sole adult in the family has been included. This variable has been created based on a categorical variable from the original data that stated what “type” a certain family belonged to: married parents, single parents, or cohabiting but not married parents.

8. Results and Analysis

In the following section, we present and analyse the results of the regressions that have been carried out, starting off with labour market outcomes and continuing with the channel outcomes. For simplicity, the dummy variable describing maternal labour force participation is defined as “*homemaking*”. Results from the regressions on labour market outcomes are reported in Tables 2 and 3 below, followed by descriptions and interpretations of the most important results. In Tables 4 and 5, results from regressions with the channel outcomes as dependent variables are presented, followed by analysis of the results.

Table 2. Regression results for women, labour market outcomes

<i>Model specification</i>	(1)	(2)	(3)	(4) ^b	(5) ^b	(6) ^b	(7) ^b
Controls ^a				x	x	x	x
Social group fixed effects					x		x
Neighbourhood fixed effects		x	x	x		x	
Parental age fixed effects			x	x	x		
Outcome	Average annual earnings, all women						
<i>Homemaking</i>	0.92%	0.91%	0.96%	-3.06%	-4.00%	-2.66%	-3.75%
Robust standard errors	1.85%	1.85%	1.85%	4.10%	3.07%	4.06%	3.18%
R-squared	0.00	0.01	0.01	0.09	0.04	0.09	0.03
Observations	4,827	4,827	4,827	4,382 ^c	4,382 ^c	4,382 ^c	4,382 ^c
Outcome	Average annual earnings, women working full-time						
<i>Homemaking</i>	3.10%	2.90%	3.00%	-1.87%	-3.70%	-3.66%	-1.80%
Robust standard errors	2.13%	2.11%	2.13%	4.70%	2.14%	2.51%	4.52%
R-squared	0.00	0.02	0.03	0.13	0.07	0.06	0.13
Observations	2,749	2,749	2,749	2,534 ^c	2,534 ^c	2,534 ^c	2,534 ^c
Outcome	Hours worked per week, 1990						
<i>Homemaking</i>	-0.027	-0.009	0.008	-0.373	-0.374	-0.370	-0.352
Robust standard errors	0.344	0.385	0.383	0.756	1.461	0.774	1.482
R-squared	0.00	0.01	0.01	0.07	0.01	0.06	0.01
Observations	4,827	4,827	4,827	4,382 ^c	4,382 ^c	4,382 ^c	4,382 ^c

The coefficients for the *Homemaking* dummy and its standard errors for the three different outcomes and seven different model specifications are reported in the table, along with the R-squared of the regression and the sample size. Statistically significant coefficients are denoted in the following way: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

^a The parametric controls are: parental education, paternal earnings, number of siblings, and a dummy that takes on the value one if the mother is the only adult in the household and zero otherwise.

^b In specifications 4 through 7, the observations have been weighted according to their sampling function. More information on this can be found in section 6.1. Robustness test have been performed for specifications 1 through 3 using the same sampling function. The results of these tests showed marginally larger beta coefficients but similar significance levels, suggesting a small upward sampling bias. Due to the small difference in coefficients, the general conclusions drawn of the econometric analysis remain the same.

^c For specifications 4 through 7, a sub-sample of 1,324 observations has been used. Through the sampling function, the observations have been weighted, a process similar to bootstrapping, resulting in 4,382 data points.

Table 3. **Regression results for men, labour market outcomes**

<i>Model specification</i>	(1)	(2)	(3)	(4) ^b	(5) ^b	(6) ^b	(7) ^b
Controls ^a				x	x	x	x
Social group fixed effects					x		x
Neighbourhood fixed effects		x	x	x		x	
Parental age fixed effects			x	x	x		
Outcome	Average annual earnings, all men						
<i>Homemaking</i>	6.97%***	6.02%***	5.74%***	0.97%	-0.02%	1.63%	0.64%
Robust standard errors	2.09%	2.17%	2.16%	4.61%	2.69%	4.52%	2.28%
R-squared	0.00	0.02	0.03	0.15	0.11	0.14	0.10
Observations	4,207	4,207	4,207	3,783 ^c	3,783 ^c	3,783 ^c	3,783 ^c
Outcome	Average annual earnings, men working full time						
<i>Homemaking</i>	5.87%***	5.23%**	5.03%**	1.27%	0.55%	1.20%	1.94%
Robust standard errors	2.01%	2.28%	2.27%	4.74%	2.45%	2.43%	4.68%
R-squared	0.00	0.03	0.04	0.16	0.12	0.11	0.15
Observations	3,906	3,906	3,906	3,525 ^c	3,525 ^c	3,525 ^c	3,525 ^c

The coefficients for the *Homemaking* dummy and its standard errors for the two different outcomes and seven different specifications are reported in the table, along with the R-squared of the regression and the sample size. Statistically significant coefficients are denoted in the following way: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

^a The parametric controls are: parental education, paternal earnings, number of siblings, and a dummy that takes on the value one if the mother is the only adult in the household and zero otherwise.

^b In specifications 4 through 7, the observations have been weighted according to their sampling function. More information on this can be found in section 6.1. Robustness test have been performed for specifications 1 through 3 using the same sampling function. The results of these tests showed marginally larger beta coefficients but similar significance levels, suggesting a small upward sampling bias. Due to the small difference in coefficients, the general conclusions drawn of the econometric analysis remain the same.

^c For specifications 4 through 7, a sub-sample of 1,096 observations has been used. Through the sampling function, the observations have been weighted, a process similar to bootstrapping, resulting in 3,783 data points.

8.1. Labour market outcomes

Beginning with working hours, the regression results show that *homemaking* is not statistically significant in explaining differences among women, regardless of which set of control variables is included (see Table 2). With coefficients of *homemaking* ranging from -0.37 to 0.01, and as the standard deviation of working hours is around eleven for women, it is likely that the absence of statistical significance is the result of lack of economic significance rather than of measurement issues. We thus reject the hypothesis (1) that daughters of homemaking mothers work fewer hours than those raised by working mothers.

For earnings, no regression¹⁸ shows a significant relationship between *homemaking* and earnings among women, with beta coefficients ranging from about one per cent in the baseline case to about negative four per cent in the model specification with the full set of controls (see Table 2). Although the *homemaking* coefficient is insignificant in all specifications, the change in signs and in magnitude between the specifications suggests that two opposing effects could be captured in these regressions. Considering that *homemaking* is correlated with both paternal earnings and social class, it could be the case in the baseline regression that the upside of larger **resource transfers** that stem from belonging to a higher social class evens out the negative effects of the **behavioural role modelling** associated with having a homemaking mother. When controls for socioeconomic background are added, the coefficients of *homemaking* become negative, implying that there might be a negative, albeit small, association of having a homemaker as a mother. This association would be in line with previous research on intergenerational transmission of gender role attitudes (Acock & Bengtson, 1978; Glass et al., 1986; Starrels, 1992). All in all, due to the low level of significance of the *homemaking* coefficients in all of the earnings regressions, the hypothesis (2) that daughters of homemaking mothers will have lower average annual labour market earnings than women raised by working mothers is rejected.

Among men, in the baseline earnings regressions, the coefficients of *homemaking* are both statistically and economically significant and positive, at seven and six per cent for all men and full-time workers, respectively (see Table 3). This indicates that sons of homemaking mothers earn roughly six per cent more than sons of working mothers, before taking the subjects' socioeconomic background into account. However, when socioeconomic background controls are included, the coefficients for *homemaking* are no longer significant. This indicates that maternal labour force participation does not *per se* have a significant effect on earnings among men. That the coefficient for *homemaking* is significant in the baseline regressions but not in the *categorical* specifications can probably be explained by the fact that homemakers were more common in higher socioeconomic classes, as shown in Table 6 in the Appendix. Thus, the hypothesis (3) that sons of homemaking mothers will have higher average annual earnings than those with working mothers is rejected as it does not hold when controlling for the subject's socioeconomic background.

Based on these results, it seems that the mechanisms for maternal labour force participation effects suggested in previous research – **work-related resource transfers** and **behavioural role modelling** – have no impact on the labour market outcomes for this

¹⁸ For all earnings analyses, separate regressions have been carried out for the subsample of the population that is working full time, allowing for different coefficients and intercepts for this group.

cohort. An explanation for the weak impact of **work-related resource transfers** can be found in the large welfare state in Sweden, as the welfare state redistributes resources between different socioeconomic groups, limiting the effect of **resource transfers** from working mothers to their children (as suggested by Björklund & Jäntti, 2009). That the association between maternal labour force participation and labour market outcomes is weak in Sweden is in line with research showing weak intergenerational links in earnings in Nordic countries (Hirvonen, 2006). Furthermore, it could be that a stronger socialisation of Swedish children takes place outside the family, for example in pre-school or school, mitigating the effect of *homemaking* through maternal **behavioural role modelling**.

The inter-gender differences in significance levels and coefficients in the baseline earnings regressions could be due to larger earnings differences among men compared to women, yielding a larger scope for variation in the dependent variable.

Table 4. **Regression results for women, channel outcomes**

<i>Model specification</i>	(1)	(2)	(3)	(4) ^b	(5) ^b	(6) ^b	(7) ^b
Observations	4,827	4,827	4,827	4,382 ^c	4,382 ^c	4,382 ^c	4,382 ^c
Controls ^a				x	x	x	x
Social group fixed effects					x		x
Neighbourhood fixed effects		x	x	x		x	
Parental age fixed effects			x	x	x		
Outcome	Number of years of education						
<i>Homemaking</i>	0.262***	0.245***	0.234***	0.132	0.069	0.153	0.082
Robust standard errors	0.065	0.064	0.062	0.116	0.084	0.113	0.065
R-squared	0.00	0.03	0.05	0.23	0.22	0.22	0.21
Outcome	Elementary school GPA						
<i>Homemaking</i>	0.122***	0.117***	0.115***	0.113**	0.110***	0.119***	0.114***
Robust standard errors	0.021	0.022	0.021	0.043	0.024	0.043	0.022
R-squared	0.01	0.03	0.04	0.22	0.18	0.21	0.17
Outcome	Standardised test score						
<i>Homemaking</i>	0.082***	0.065*	0.062*	0.061	0.039**	0.056	0.036**
Robust standard errors	0.031	0.033	0.032	0.049	0.013	0.048	0.013
R-squared	0.00	0.03	0.04	0.16	0.14	0.15	0.13
Outcome	Number of children in the household, 1990-2001						
<i>Homemaking</i>	0.048	0.040	0.040	-0.020	0.003	-0.017	0.009
Robust standard errors	0.032	0.035	0.035	0.067	0.069	0.065	0.071
R-squared	0.00	0.02	0.02	0.10	0.04	0.09	0.03
Outcome	Number of years as married or cohabiting, 1990-2001						
<i>Homemaking</i>	0.315**	0.332**	0.332**	-0.103	0.084	-0.087	0.115
Robust standard errors	0.160	0.156	0.156	0.307	0.365	0.300	0.378
R-squared	0.00	0.01	0.02	0.08	0.04	0.07	0.03

The coefficients for the *Homemaking* dummy and its standard errors for the five different outcomes and seven different specifications are reported in the table, along with the R-squared of the regression. Statistically significant coefficients are denoted in the following way: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

^a The controls are: parental education, paternal earnings, number of siblings, and a dummy that takes on the value one if the mother is the only adult in the household and zero otherwise.

^b In specifications 4 through 7, the observations have been weighted according to their sampling function. More information on this can be found in section 6.1. Robustness test have been performed for specifications 1 through 3 using the same sampling function. The results of these tests showed marginally larger different beta coefficients with similar significance levels, suggesting a small sampling bias. Due to the small difference in coefficients, the general conclusions drawn of the econometric analysis remain the same.

^c For specifications 4 through 7, a sub-sample of 1,324 observations has been used. Through the sampling function, the observations have been weighted, resulting in 4,382 data points.

Table 5. Regression results for men, channel outcomes

<i>Model specification</i>	(1)	(2)	(3)	(4) ^b	(5) ^b	(6) ^b	(7) ^b
Observations	4,207	4,207	4,207	3,783 ^c	3,783 ^c	3,783 ^c	3,783 ^c
Controls ^a				x	x	x	x
Social group fixed effects					x		x
Neighbourhood fixed effects		x	x	x		x	
Parental age fixed effects			x	x	x		
Outcome	Number of years of education						
<i>Homemaking</i>	0.314***	0.265***	0.245***	0.161	0.068	0.181	0.079
Robust standard errors	0.074	0.063	0.062	0.181	0.112	0.185	0.118
R-squared	0.00	0.05	0.07	0.30	0.24	0.28	0.22
Outcome	Elementary school GPA						
<i>Homemaking</i>	0.099***	0.094***	0.088***	0.125*	0.096	0.131**	0.097
Robust standard errors	0.023	0.021	0.021	0.063	0.056	0.062	0.059
R-squared	0.00	0.03	0.04	0.26	0.22	0.25	0.22
Outcome	Standardised test score						
<i>Homemaking</i>	0.043	0.028	0.021	0.077	0.041	0.086	0.050
Robust standard errors	0.031	0.031	0.031	0.076	0.122	0.080	0.119
R-squared	0.00	0.04	0.05	0.19	0.15	0.17	0.13
Outcome	Number of children in the household, 1990-2001						
<i>Homemaking</i>	0.076**	0.059	0.055	-0.008	-0.021	-0.004	-0.017
Robust standard errors	0.036	0.042	0.041	0.065	0.091	0.067	0.090
R-squared	0.00	0.02	0.02	0.10	0.05	0.10	0.04
Outcome	Number of years as married or cohabiting, 1990-2001						
<i>Homemaking</i>	0.293*	0.232	0.220	0.067	-0.028	0.080	-0.007
Robust standard errors	0.161	0.166	0.166	0.357	0.295	0.354	0.305
R-squared	0.00	0.02	0.02	0.08	0.04	0.07	0.03

The coefficients for the *Homemaking* dummy and its standard errors for the five different outcomes and seven different specifications are reported in the table, along with the R-squared of the regression. Statistically significant coefficients are denoted in the following way: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

^a The controls are: parental education, paternal earnings, number of siblings, and a dummy that takes on the value one if the mother is the only adult in the household and zero otherwise.

^b In specifications 4 through 7, the observations have been weighted according to their sampling function. More information on this can be found in section 6.1. Robustness test have been performed for specifications 1 through 3 using the same sampling function. The results of these tests showed marginally larger different beta coefficients with similar significance levels, suggesting a small sampling bias. Due to the small difference in coefficients, the general conclusions drawn of the econometric analysis remain the same.

^c For specifications 4 through 7, a sub-sample of 1,096 observations has been used. Through the sampling function, the observations have been weighted, resulting in 3,783 data points.

8.2. Channel outcomes

8.2.1. Education

In the baseline regressions, for both men and women, *homemaking* is significantly and positively related to educational attainment. Having a homemaking mother is associated with circa three months of additional education for both men and women, on a one per cent level of significance, as can be seen in Tables 4 and 5 above. However, when controls for socioeconomic background are included, the coefficients of *homemaking* are no longer significant, and the magnitude of the coefficients decreases by fifty to seventy-five per cent.

The decreased coefficient magnitudes and changes in significance levels when including controls for the subject's socioeconomic background indicate that the coefficients of *homemaking* in the simpler model specifications capture effects related to family background rather than the effect of *homemaking* itself. Since the coefficients for *homemaking* are not significant for educational attainment when controlling for socioeconomic factors, we reject the hypotheses (4) that daughters of homemaking mothers will have a lower educational attainment than those raised by working mothers and (7) that sons of homemaking mothers will have a higher educational attainment than those raised by working mothers.

With regards to GPA, the coefficients for *homemaking* are significant and positive for both genders in almost all regressions. For women, all regression specifications yield *homemaking* coefficients that are significantly different from zero (p-value below five per cent). The estimated coefficients of *homemaking* suggest that daughters of homemakers achieve between 0.11 and 0.12 (sixteen to eighteen per cent of a standard deviation) higher GPAs than daughters of working mothers. As the differences in coefficients are relatively small between the different regressions, we conclude that the results hold regardless of socioeconomic background, and thus reject the hypothesis (5) that daughters of homemaking mothers will have lower GPA than those raised by working mothers.

Among men, the positive relationship between GPA and *homemaking* is somewhat more volatile than among women, with significant coefficients ranging from 0.09 to 0.13, corresponding to fourteen and nineteen per cent of a standard deviation, respectively. When including fixed effect controls for social class, the coefficients are no longer significant on conventional levels. However, as the coefficients remain roughly the same throughout all regressions, it is likely that the increase in p-value is not mainly a result of less significant effects of *homemaking* but rather a result of greater uncertainty in the variables. In conclusion, we cannot reject the hypothesis (8) that sons of homemaking mothers will have higher GPA than those raised by working mothers.

In summary, the results of the regressions with GPA as the dependent variable suggest that children, both male and female, who grow up with homemaking mothers receive higher grades on average than children of working mothers, even after controlling for socioeconomic background. These results are in line with previous research showing that working mothers have a negative effect on the GPA of their children. A surprising finding in the results is that the effect on GPA is roughly the same for women and men, despite previous studies showing a positive effect of having a homemaking mother mainly for sons (Desai et al., 1989; Gold & Andres, 1978; Milne et al., 1986).

Relating to the theoretical framework presented in section 3, a possible mechanism that explains why children of homemakers perform better in elementary school than children of working mothers is the **time budget constraint** argument. According to that, homemaking mothers are able to devote more time to their children's education than working mothers. On the other hand, the results presented here do not lend support to the **resource transfer** argument, which postulates that children of working mothers should receive resources that benefit their education. As in the case of annual average earnings, the egalitarian society of Sweden presented similar opportunities to students from all backgrounds through a relatively homogenous elementary school education (Tomasson, 1965).

It is worth noting that although a positive relationship exists between having a homemaking mother and elementary school GPA, no such relationship is found for earnings or working hours. This lack of a relationship between maternal labour force participation and the labour market outcomes suggests that the GPA advantages associated with having a homemaking mother are not fully transferable to the labour market.

Looking at the standardised test scores for women, the coefficients for *homemaking* are significant and positive in all regressions except for when controls for neighbourhood are included. Furthermore, these coefficients are small in magnitude, and roughly range from 0.06 to 0.08 in absolute terms (six to nine per cent of a standard deviation). Thus, the effect for daughters of having a homemaking mother appears weaker on standardised test scores than on GPA, for which the effect ranged between sixteen and eighteen per cent of a standard deviation. Based on these results, we reject the hypothesis (6) that daughters of homemaking mothers will have lower standardised test scores than those raised by working mothers, but with less certainty than with the comparable hypothesis for GPA.

For men, the differences in significance and magnitude of the *homemaking* coefficients between the GPA and standardised test score regressions are even larger than among women. In fact, there is no significant relationship between maternal labour force participation and the standardised test score in any of the regression specifications for men. Based on this, we reject

the hypothesis (9) that sons of homemaking mothers will have higher standardised test scores than those raised by working mothers.

One possible explanation for the difference in importance of *homemaking* between the GPA and standardised test scores regressions could be that GPA reflects ambition as well as ability and knowledge. Achieving a high GPA, which is measured over a longer period of time, requires more continuous effort than performing well during one measurement occasion. Following theories on **behavioural role modelling**, it could be that children of homemakers learn from their parents to be ambitious and work hard, which is reflected in GPA but not necessarily in the standardised test score.

That *homemaking* is significant on standardised test score in some regressions for women but in no regression for men suggest that there is stronger evidence for an effect of having a homemaking mother on educational achievement for women than for men.

8.2.2. Adult family formation

For men, in the baseline regression, the *homemaking* coefficient is significant and positive for number of children, suggesting that men with homemaking mothers have about 0.08 more children on average than sons of working mothers (see Table 4). When socioeconomic background controls are added to the regression, the coefficient magnitudes move close to zero and are no longer significant. Among women, the coefficients of *homemaking* are close to zero and statistically insignificant in all regression specifications (see Table 5). In conclusion, these results suggest that the number of children of a subject is not related to the labour force participation of the subject's mother. We thus reject the hypothesis (12) that sons of homemaking mothers will have more children than those raised by working mothers, and the hypothesis (10) that daughters of homemaking mothers will have more children than those raised by working mothers.

For number of years as married or cohabiting, the *homemaking* coefficient is positive and significant for men only in the baseline regression, and sons of homemakers were married or cohabiting on average 0.31 years more than sons of working mothers during the time period 1990-2001. For women, in the baseline regression, the *homemaking* coefficient is significant and positive, implying that daughters of homemaking mothers were married or cohabiting on average 0.29 years more than daughters of working mothers during the time period 1990-2001. However, when we add the controls for socioeconomic background, the coefficient magnitude tends towards zero both for daughters and for sons and is no longer significant, bringing us to reject the hypotheses (11 & 13) that daughters and sons of homemaking mothers are more likely to be cohabiting or married than those raised by working mothers.

Since the *homemaking* coefficient becomes insignificant when adding socioeconomic controls, our results can be interpreted as maternal labour force participation not being important for determining adult life family formation. There seems to be weak effect of maternal labour force participation on family formation through the mechanism of **behavioural role modelling**.

In conclusion, the results presented above are further evidence that the adult lives of children of working mothers do not differ significantly from those of children of homemaking mothers, neither with regards to family formation nor labour market outcomes. These results indicating an insignificant relationship between maternal labour force participation and labour market outcomes go against empirical evidence from e.g. the United States, where married daughters of homemakers tend to work fewer hours than married daughters of working mothers (Morrill & Morrill, forthcoming). These disparities in results may be a consequence of differences in sample origin or due to the exclusion of unmarried women in previous studies. However, given the results above on the association between marital status and maternal labour force participation, it seems likely that the better explanation is inherent differences between the countries studied.

9. Limitations

To begin with, some limitations exist to due to the nature of the data. Firstly, the data is limited to the Stockholm region. However, despite regional differences, it seems reasonable to assume that the overall conclusions of this paper hold for other parts of Sweden as well, although further research is needed to confirm this. Inference for other countries, on the other hand, should be drawn more carefully as research on intergenerational mobility has shown that Sweden and its Nordic neighbours differ from other developed countries. Secondly, only individuals born in 1953 are surveyed, and it is likely that matters may have changed since then. Thus, any inference drawn may only be valid for children born in 1953 and adjacent cohorts. Thirdly, earnings data for the parents of the cohort, which is used as a socioeconomic background control, is limited, and only includes paternal earnings from 1963, yielding an imprecise measure of paternal lifetime earnings. However, since we also include parental education, social class, and neighbourhood as controls, we believe that we are able to sufficiently control for socioeconomic differences.

Furthermore, the conclusions of this paper may be limited due to omitted variables. Throughout the analysis in this paper, we have examined the correlation between maternal labour force participation and labour market and channel outcomes for the offspring, using parametric controls and fixed effects for socioeconomic background factors. We acknowledge, however, the potential existence of endogenous variables, such as genetics or family culture,

which could be related both to maternal labour force participation and the outcomes studied in this paper. We can therefore not draw conclusions about the causal effect of maternal labour force participation, only about its systematic association with these outcomes.

10. Policy Implications

Our results indicate a statistically significant and positive relationship between having a homemaking mother and achievement in elementary school among both men and women. Thus, if the policymakers' objective is to maximise school performance, it could be advisable with policies that encourage mothers to work less, although this would have the adverse effect of decreasing female labour supply and household earnings. However, as we have not established whether the relationship between maternal labour force participation and school performance is causal, more research is needed before implementing any such policies. Although this paper only considers maternal labour force participation, the **time budget argument** also implies a positive relationship between school performance and having a homemaking father. Furthermore, it is possible that the time the child spends with its parents can be substituted with time spent with a private tutor. In sum, the **time budget argument** suggests that policies encouraging fathers to work less or the hiring of private tutors may be efficient for improving school performance. A recent example of such a policy is a tax deduction for homework tutoring that has been discussed in Sweden in recent years (Qarlsson, 2012).

Moreover, our results imply that maternal labour force participation is only weakly related to intra-gender differences in labour market outcomes for children born in the 1950s, suggesting that the mechanisms of maternal **behavioural role modelling** and **work-related resource transfers** have small repercussions in the labour market. Other factors that determine labour market dynamics, such as wage discrimination, or behavioural role modelling outside the home etc., seem to be more important in determining labour market success. Our results suggest that policies that influence maternal working hours, e.g. child-care allowance or shared parental leave, would have weak effects on earnings and working hours of the next generation, as well as on the gender gap on the labour market. However, further research is needed to examine if the association between maternal working hours and labour market outcomes remains weak for later generations as well, and if mothers working part-time have a similar effect on their children as homemaking mothers.

11. Discussion and concluding remarks

The main conclusion of this paper is that among men and women born in the 1950s, intra-gender differences in working hours and labour market earnings are not related to

maternal labour force participation. In fact, the only systematic difference that has been found among children of both genders is that those with homemaking mothers on average have higher GPA from elementary school than children of working mothers, even when controls for socioeconomic background are included. Among women, there is also a systematic difference in standardised test scores, with daughters of homemaking mothers performing better.

In all, the results of this paper suggest that children of homemaking mothers perform better in elementary school than children of working mothers. Other empirical evidence from Sweden (Norberg-Schönfeldt, 2008) suggests that GPA differences between children of homemaking and working mothers are persistent in higher levels of education as well. However, since no systematic differences in labour market outcomes between children of working and homemaking mothers are found, it seems that the superiority of school performance is not transferred to the labour market. A possible reason for the lack of differences in the labour market outcomes could be a stronger focus on family among the children of homemakers, as suggested by **behavioural role modelling**, mitigating the positive effect of superior school performance on labour market outcomes. However, since our results show no significant relationship between maternal labour force participation and the family formation of the subjects, this explanation is not supported by our analysis. Further explanations include a low degree of earnings differentiation in Sweden, and low returns to skill, assuming that GPA is a proxy for skill. Insight into the weak transferability from school performance to the labour market could be provided by further research.

Although the association between maternal labour force participation and labour market earnings is not significant among women, there is a change in the sign of the coefficient, from positive to negative, when controls for socioeconomic background are included. This change in signs suggests that there might be two opposing mechanisms at work: **resource transfers**, as daughters from higher social classes on average earn more money and are more likely to have homemaking mothers; and **behavioural role modelling**, suggesting that having a homemaking mothers *per se* could be associated with lower earnings on the labour market. Future research should try and separate the effects of these two mechanisms, as this paper has only considered their aggregate effects.

It seems reasonable to assume that children that belong to other cohorts or grew up in other parts of Sweden differ from the 1953 Stockholm cohort examined in this paper. However, as the lack of significant association between maternal labour force participation and labour market outcomes could be explained by the large welfare state in Sweden, it is likely that similar results would be found elsewhere in Sweden for children born in the 1950s.

Nevertheless, more research is needed in the future in order to establish the validity of the results in other regions and later cohorts.

Since the 1950s, progress has been made with respect to female labour force participation, greatly reducing the number of homemakers in Sweden. However, a gender gap in hours worked remains, as women continue to work part-time and take out parental leave to a greater extent than men (Statistics Sweden, 2012b). We leave it up to future researchers to look at mothers working part-time or taking a longer maternity leave to find out if the conclusions drawn in this paper on the intergenerational links of maternal labour market behaviour are still applicable today.

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Appendix

Table 6. **Shares of working and homemaking mothers, split by socioeconomic class**

Socioeconomic class	1	2	3	4	5	All
Share working	56.2%	66.8%	65.8%	74.7%	77.8%	69.9%
Share homemaking	43.8%	33.2%	34.2%	25.3%	22.2%	30.1%
Number of subjects	1144	2926	532	2692	1740	9034

Note: 1 is the highest socioeconomic class, 5 is the lowest.

Table 7. **Parental age groups**

Panel A. Paternal age groups

Age span	Count	Percentage
16-27 years	2,671	29.6%
28-31 years	2,322	25.7%
32-35 years	1,914	21.2%
36-73 years	2,127	23.5%

Note: The fathers of the subjects have been split into quartiles based on their ages in 1953, as presented in this table.

Panel B. Maternal age groups

Age span	Count	Percentage
15-24 years	2,358	26.1%
25-28 years	2,298	25.4%
29-32 years	2,167	24.0%
33-49 years	2,211	24.5%

Note: The mothers of the subjects have been split into quartiles based on their ages in 1953, as presented in this table.

Table 8. Shares of working and homemaking mothers, split by neighbourhood

Panel A. Neighbourhoods 1 through 23

Parish	Share working	Share homemaking	No. of subjects
1	83.3%	16.7%	108
2	80.0%	20.0%	115
3	79.1%	20.9%	43
4	77.6%	22.4%	85
5	77.5%	22.5%	387
6	76.6%	23.4%	64
7	74.6%	25.4%	59
8	74.0%	26.0%	389
9	74.0%	26.0%	50
10	73.8%	26.2%	611
11	73.3%	26.7%	225
12	73.2%	26.8%	440
13	72.7%	27.3%	44
14	72.0%	28.0%	164
15	71.9%	28.1%	57
16	71.4%	28.6%	217
17	71.4%	28.6%	56
18	70.9%	29.1%	701
19	70.8%	29.2%	65
20	70.7%	29.3%	123
21	70.5%	29.5%	499
22	70.2%	29.8%	840
23	69.7%	30.3%	412

Panel B. Neighbourhoods 24 through 46

Parish	Share working	Share homemaking	No. of subjects
24	69.4%	30.6%	621
25	68.6%	31.4%	51
26	68.3%	31.7%	278
27	68.0%	32.0%	256
28	67.9%	32.1%	187
29	67.4%	32.6%	138
30	66.7%	33.3%	33
31	66.0%	34.0%	265
32	64.7%	35.3%	153
33	64.5%	35.5%	31
34	63.7%	36.3%	168
35	63.6%	36.4%	22
36	63.6%	36.4%	33
37	61.8%	38.2%	228
38	60.8%	39.2%	286
39	60.7%	39.3%	61
40	60.5%	39.5%	38
41	60.4%	39.6%	48
42	60.3%	39.7%	58
43	59.8%	40.2%	102
44	59.1%	40.9%	44
45	53.4%	46.6%	73
46	52.8%	47.2%	106

Note: the panels show the shares of working and homemaking mothers in neighbourhoods 1 through 23 and 24 through 46, respectively. The numbers have been assigned to the neighbourhoods after sorting them according to maternal labour force participation. For a reference to actual parishes in the Stockholm area, please contact the authors.