Mobility across generations of the gender distribution of housework[*]

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Abstract

This paper analyses the relationship between the gender division of housework time of parents, with children living in the parental home, and that of the same children when they become adults and form their own families. Using the Russia Longitudinal Monitoring Survey (RLMS), we exploit its panel structure jointly with detailed information on children and parent's time use, to analyse the time devoted by parents during their children's adolescence (between 1994 and 1999) and that of the same children about ten years later (from 2006 to 2009). The results suggest that a greater involvement of fathers in the domestic activities traditionally done by mothers is related to a reduction in gender inequality in their children's future families: father's involvement in domestic activities has a significant impact on their sons' time spent in the same activities. These findings shed light on the persistence of parental behaviour across generations.

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1. Introduction

This paper analyses the relationship between the gender distribution of household labour within heterosexual couples with children, and the time devoted to housework activities by those same children ten years later, when they become adults and must decide how to distribute their daily activities within the couple. Housework time in developed countries has been extensively analyzed in the literature (Gershuny, 2000; Gauthier et al., 2004; Sevilla et al., 2010; Gimenez-Nadal and Sevilla, 2012) given that housework represents a large proportion of individual daily schedules, especially for women (Gershuny, 2000; Fisher and Robinson, 2011), and it ranks among the less enjoyable daily activities individuals engage in at home (Kahneman et al., 2004; Kahneman and Krueger, 2006, Krueger, 2007; Gimenez-Nadal and Molina, 2015). Also, many workers have jobs related to the outsourcing of domestic activities, and non-market work represents an important part of economic activity (Jorgenson et al., 2006; Krueger, 2009; Giannelli et al., 2012). Thus, the analysis of the determinants of the time devoted to housework is relevant to policy issues, as policies aimed at equalizing individual differences in the time devoted to housework may help to reduce inequality, increase families' well-being, and improve the broader economy. For instance, being able to identify how children's housework time is affected by parents' beliefs, preferences, or attitudes should help in defining better policies aimed at decreasing differences in wellbeing.

Among the extensive literature analysing the time devoted to housework, two robust empirical facts have been documented: 1) women specialize in household tasks, as women devote comparatively more time to housework than men (Gershuny, 2000; Gauthier et al., 2004; Aguiar and Hurst, 2007; Fisher and Robinson, 2011; Giannelli et al., 2012), and 2) women concentrate on routine and more time-intensive housework, such as cooking and cleaning, whereas men are more active in sporadic, less time-intensive tasks, such as gardening and repairs (Cohen, 1998; Hersch and Stratton, 2002; Sevilla et al., 2010; Fisher and Robinson, 2011; Grossbard et al., 2014). The fact that these common patterns are found in most countries, independently of their economic, geographic, and demographic characteristics, may indicate that attitudes towards the gender distribution of household labour may be transmitted from generation to generation, consistent with prior research analysing the transmission of beliefs and preferences (Bisin and Verdier 2000; Fernández et al., 2004; Fernández and Fogli, 2006;2009; Doepke and Zilibotti, 2012; 2014), social norms and attitudes (Carroll et al., 1994; Bucx et al., 2010; Carlson and Knoester, 2011; Silverstein et al., 2012; Farré and Vella, 2013;

Albanese et al., 2016), and preferences and values about the use of time (Gimenez-Nadal et al., 2014).

However, the literature on the intergenerational transmission of allocation of time is relatively scarce (Cunningham, 2001a;2001b; Bianchi et al., 2006; Cardoso et al., 2010; Álvarez and Miles, 2012; Gimenez-Nadal et al., 2014,2016; Solaz and Wolff, 2015), despite the importance of the topic. Furthermore, most of the existing literature is based on cross-sectional data, where reverse causality is likely to affect the relationship between parents' and children's housework time, giving rise to endogeneity problems. Regarding reverse causality, the question here is whether the time devoted to housework by children depends on the time devoted to housework by their parents, while the time devoted to housework by the parents is not affected by the time devoted to housework by their children. If this is the case, the results of regressing the time devoted to housework by children on the time devoted to housework by their parents would be unbiased. However, if there also exists an effect of children's housework on the time devoted to housework by their parents, reverse causality would emerge from this two-way relationship, and a cross-sectional model that does not take this into account would yield biased estimations. For instance, if one takes a very simple view of housework as a burdensome, routine activity that members of the household must perform, it may be that parents simply do this activity as they must, and this time is related to their children's housework time. But it may also be the case that families perform housework together, as a means to bond and share intimacy (e.g., cooking together as a way of spending quality time with one another), or because times change, parents may learn modern ways from their children. While in the first case, a one-way relationship would be expected, in the second case we would expect a two-way relationship.

Furthermore, unobserved heterogeneity of individuals and households may lead to biased results. There may be unobserved factors at the individual and household level that correlate with both the children's time devoted to housework and that of their parents. Factors such as parents' heterogeneity in time preferences, and in the outsourcing of household chores, heterogeneity in the productivity of individuals in housework, or differences in gender/social norms across countries, are just some examples of factors that can affect the time devoted to housework by parents and their children.

Cunningham (2001a; 2001b) deals with the issue of reverse causality by analysing how the parental division of household labour when children were living at home predicts the gender division of household labour of those children later in life, when they have left home. In doing

this analysis, the parental division of household labour is measured when children are 1 and 15 years old, and the parental division is considered when children are 23 and 31. However, the author does not apply panel data estimators, and results are not free of problems of unobserved heterogeneity. Following a similar approach, we use the Russia Longitudinal Monitoring Survey (RLMS-HSE) where in the waves 1994 to 1999, we compute the parental division of household labour, and in the waves 2006 to 2009, we introduce the parental division of household labour as predictor of children's housework time when they are between 18 and 32 years old. Given the panel structure of the data, we apply the Random Effects estimator, and the Mundlak (1978) mixed between-within estimator. Results suggest that the greater the father's relative involvement (i.e., a higher value of the father to mother share of housework) in cleaning and cooking, in the years 1994 to 1999, is related to more time spent in these activities by the son, and a greater male contribution to total housework when the children are married or set up life as a couple.

Our contribution to the literature is threefold. First, we contribute to the research on the intergenerational transmission of time allocation by estimating, for the first time, the longitudinal impact of parental division of time-use during late childhood on the gender division of housework in young adult couples. This is also, to the best of our knowledge, the first study to test how parental time allocation affects the individual amount of time devoted to specific domestic tasks. Second, we disentangle the effect of parental imitation from the effect of habit-acquisition based on the amount of housework performed by children themselves during adolescence. Third, our paper is the first to focus on the analysis of the gender division of housework in Russia, where the prior evidence is only based on cross-country analysis of time use (Wunderink and Niehoff, 1997; Batalova and Cohen, 2002; Deloach and Hoffman, 2002).

The rest of the paper is organized as follows. Section 2 sets a background and a theoretical framework based on prior results. Section 3 describes the data and the empirical strategy. Sections 4 and 5 present our empirical results, and Section 6 sets out our main conclusions.

2. Background

Three mechanisms that can explain the associations between parents' and children's uses of time stand out: intergenerational transmission of preferences, the parental role model, and imitation. In the case of the intergenerational transmission of preferences, the literature has

shown that parents influence the child's preference formation (Wolfinger, 2000; Amato and DeBoer, 2001; Booth and Kee, 2009), in many cases through the culture of the country (Carroll et al.. 1994; Fernandez et al., 2004; Fernandez and Fogli, 2006, 2009; Giuliano, 2007). Regarding the parental role model, derived from the model of Akerlof and Kranton (2000) of gender identity, there exist gender norms about what a man or a woman should or should not do, with a social cost of deviating from the behaviours expected under these norms. Under these circumstances, parents may transmit these roles to their children so that they will conform to these social norms. However, it could be that children simply imitate their parents' behaviours, with a "doing by watching" attitude.

Regarding the identification of the intergenerational transmission of attitudes or behaviours, Bisin and Verdier (2010) offer a recent survey of the economics of intergenerational cultural transmission, and Black and Deveraux (2011) review intergenerational mobility (i.e., transmission) of economic outcomes, such as earnings, employment, and education. Two methodologies have been used in prior research to identify intergenerational transmission of attitudes or behaviours. The first methodology links the past behaviour of the parents with the current behaviour or attitudes of the children. Farré and Vella (2013) link the gender role attitudes of mothers in 1979 with that of their children in 1994, while Stella (2013) relates the acquisition of human capital by parents in the period 1920-1956 to the acquisition of human capital by their children when the latter reach 50 years of age. The second approach analyses the current values of both parents and children. For instance, Carlson et al. (2014) analyse subjective well-being among preadolescents and their parents, examining a range of measures, in the same period, for both parents and children. Hérault and Kalb (2016) analyse the correlation of labour market outcomes of parents and their children in Australia, using current values of parents and their children. The disadvantage of this second approach is that no causal effect can be found, as there may be both unmeasured factors and reverse causality issues that bias the coefficient estimates. Under this framework, we can only talk about intergenerational correlations.

Very few studies have specifically dealt with the case of intergenerational transmissions of time-use behaviour. Cunningham (2001a) relates the parental division of labour, when the son is growing up, to the adult son's participation in routine housework once he marries, and shows that there is indeed a connection. For France, Germany, and Italy, Cardoso et al. (2012) find evidence of a positive relationship between the time allocations of parents and youngsters. For a sample of Spanish families, Álvarez and Miles (2012) find a significant positive correlation

between a more egalitarian parental allocation of housework and a less asymmetrical distribution of domestic chores between sons and daughters. For a sample of French couples, Solaz and Wolff (2015) find a positive relationship between child's and parents' housework time. For the UK, Gimenez-Nadal et al. (2014) show positive intergenerational correlations in housework for both parents, indicating that the more time parents devote to housework, the more time their children will devote to housework. Additionally, prior evidence has shown a gender differential in the intergenerational transmission of attitudes, as the association between mother (father) and son is different from the association between mother (father) and daughter (Álvarez and Miles, 2012; Solaz and Wolff, 2015; Gimenez-Nadal, et al. 2016).

Among the factors that appear to be transmitted from parents to children is that of gender/social norms (Farré and Vella, 2013), which also influences the time devoted to household tasks. For instance, Sevilla (2010) builds a composite index for measuring egalitarian social norms regarding the gender division of household tasks, and there are differences across countries. Also, Gimenez-Nadal et al. (2012) construct the average of the female-to-male ratio of childcare time as a measure of social norms regarding the household division of labour, and find cross-country differences regarding childcare time.

There are very few studies dealing with intra-household allocation of time or resources in Russia, and all of them are based on the Russian Longitudinal Monitoring Survey (Cherchye et al., 2009; Kalungina et al., 2009a, 2009b; Lacroix and Radtchenko, 2011; Giannelli et. al, 2013). Kalungina et al., (2009a, 2009b) and Lacroix and Radtchenko (2011) analyse the evolution of intra-household inequality during transition periods and after the 1998 financial crisis, and find that the sharing of monetary resources is more unequal during the period of economic decline (1994-1998), while women's relative position improves when there are better economic conditions (from 2000), since they increase their market wages. Giannelli et. al (2013) estimate a simultaneous equations system for the intra-household allocation of market work, housework, and child care in Russian mononuclear families with children, in a period of stable growth (between 2006 and 2009). These authors show that domestic tasks rely heavily on women, with 42% of husbands doing less than 10 weekly hours of housework, and 81% of wives doing more than 10 hours. The distribution of couples' domestic tasks is predicted, primarily, according to individual wages and education level. Recently, Mangiavacchi and Piccoli (2016) have studied the intergenerational transmission of the costs associated with parental alcohol abuse.

3. Data and Empirical Strategy

One of the key issues in the existing literature analysing whether parental behaviour influences children's behaviour during adulthood is the lack of data observing the family of origin and the same children, once they beome adults (Álvarez and Miles, 2012). The data used in this study (the Russia Longitudinal Monitoring Survey- RLMS-HSE) precisely fills this gap since it is a sufficiently long panel to allow the observation of families with children in the first waves, and the same children once they reach adulthood. More importantly, the first four waves (V-VIII) collect information on the use of time of all family members and the same information is collected again about ten years later, in waves XV to XVIII.

Our analysis is based on eight rounds (V to VIII and XV to XVIII, spanning from 1994 to 1999 and from 2006 to 2009) of the RLMS-HSE, conducted by the Higher School of Economics and ZAO Demoscop, together with the Carolina Population Center, University of North Carolina at Chapel Hill and the Institute of Sociology RAS.[1] Households participating in the survey were selected using a multi-stage probability sampling procedure in order to guarantee national representation. Within each selected primary sample unit, the population was stratified into urban and rural substrata in order to guarantee the applicability of the sample in both areas. The data covers approximately 5,000 households, 12,000 adults, and 2,000 children per wave. The selected waves (V-VIII and XV-XVIII) are unique within the survey because they contain detailed information on the use of time of adults and children.

The data structure is thus individual-based and composed of two panel periods, separated by a six-year gap. The outcomes of interest, however, pertain to the second panel period (2006 to 2009) and the explanatory variables of interest that pertain to the first period are treated as time-invariant in the second period by computing their average value for each individual. In this way, it is possible to reduce measurement error and minimize the impact of the labour market behavioural responses of spouses to institutional and economic changes that occurred between 1994 and 1999[2]. In the second period, the temporal structure is maintained in order to take advantage of panel data estimation techniques.

Since the objective of ur study is to verify whether parental behaviour during childhood or adolescence persists once children reach adulthood, the sample selection is as follows. The

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[1] More information can be found in the RLMS-HSE site: http://www.cpc.unc.edu/projects/rlms-hse.
[2] In the years 1994 to 1999, Russia experienced important institutional and economic change during transition, and labour market behaviour of the spouses may reflect these changes. Lacroix and Radtchenko (2011) showed that wage rates declined between 1994 and 1996 and recovered up to 1999, after Russia's financial crisis. However, the labour market participation rates and workweek of both spouses are quite stable during 1994 and 1999 and between 2006 and 2009.

basic panel of individuals (four waves, from XV to XVIII) is composed of 16,399 individuals and 48,233 observations, of which only those recorded in the child questionnaire at least once in the first panel period (waves V-VIII) are retained. The sample is thus reduced to 1,654 individuals and 5,016 observations. Then, in the second panel period, only adults are retained (at least 18 years old), which leaves us with a final sample of 1,215 individuals and 3,445 observations. 227 individuals are married or cohabiting, corresponding to 693 observations.

As shown in Table A1.1, the sample is composed almost equally of males and females (49.6% of males) aged between 18 and 32, with an average age of 22. They often live in extended families, with an average of 2.8 working-age members, elderly individuals (29.4%), and only a few of them have children (at most 3, with an average of 0.23). Most individuals have Russian nationality (93.7%). The average male share of domestic work is about 0.31, with an average weekly amount of 10 hours, mostly spent in cooking and cleaning. This share is substantially larger than that of their fathers, which is about 0.11.

Adult children were, on average, 10.4 years old in 1994, at which time they would do 2 weekly hours of domestic work. The father was absent for 24.6% of them, and the mother for 5.9%. When present, their fathers were employed in almost 80 percent of the interviews during the period 1994 to 1999, 20% of them had tertiary education, and 17.8% only primary education; their mothers were employed in 74% of the interviews, 21.9% of them had tertiary education, and only 3.3% just primary education. The average amount of domestic work per adult in the family of origin was more than 27 hours per week.

We focus on the behaviour of children when they become adults, and thus the main dataset is a panel of young adults with matched information on parents and their own behaviour when children (in earlier waves), with the latter information being, by construction, time-invariant. Because our main explanatory variable is time-invariant, the Fixed Effects estimator is ruled out and the only possibility is to use Random Effects estimators.

Gender attitude in young adults is measured by two types of variables: i) the male share of time spent on housework activities within the couple and ii) the amount of time devoted to domestic activities traditionally performed by women. The first is computed by dividing the male amount of time devoted to domestic activities by the sum of both partners. The second is constructed from the daily amount of time devoted to purchasing food, cooking, cleaning house, and doing laundry, separately for week days and weekends, as well as the hours devoted to any other specific domestic activity. Domestic activities typically performed by men, such as

gardening and house repairs, are excluded from the analysis because they were collected using a different categorization in the two panel periods, making them not comparable over time. Thus, we focus on activities traditionally done by women (Cohen, 1998; Hersch and Stratton, 2002; Sevilla et al., 2010; Fisher and Robinson, 2011; Grossbard et al., 2014), which instead are collected consistently in the two periods.

The key explanatory variable for the study is the average share of domestic work (traditionally performed by women) done by the father when the children were adolescent (waves V-VIII). The share is computed from the time spent in purchasing food, cooking, cleaning the house, and doing laundry for each parent. The domestic work variables are used to compute the male share of domestic work for adult children in waves XV-XVIII.

The main empirical issue addressed in this analysis is the possible correlation of the random effects with any of the regressors, for both types of dependent variables. This issue is related to the strong assumption of Random Effects (RE) models that the individual effects and the regressors are uncorrelated. The objective of the estimation is to relate father's share of domestic activities with children's division of household labour and our variable of interest, father's proportion of domestic tasks, is reasonably exogenous with respect to the distribution of domestic activities in the son's or daughter's independent household. However, some of the independent variables measured in waves XV-XVIII, used as controls in the main model, may suffer from correlation with the random effect. A Fixed Effects model would be more appropriate, but is not applicable to our study because the explanatory variable of interest is time-invariant. Still, there exist extensions of the RE model that allow for correlation between the individual effects and the regressors, such as the model proposed by Mundlak (1978).

We then specify three different models and apply a Mundlak (1978) correction to all of them. In the first, we denote by s_{it} the share of the male's contribution to the total spousal amount of domestic activities, for the individual i in time t and the corresponding RE model is specified as:

(1) $s_{it} = \alpha_i + x'_{it}\beta + w'_i \gamma + \varepsilon_{it}$,

where x_{it} is a matrix of time-variant variables recorded during waves XV-XVIII, and w_i is a matrix of variables that are registered during waves V-VIII and are capturing individuals' childhood variables and parental characteristics. The father's housework share when the reference individual was a child is included in matrix w_i and is our main variable of interest. In order to reduce the incidence of measurement errors, these variables are averaged during the

period V-VIII and used in the regression as time-invariant characteristics for the sample of young adult children.

In the second model, the dependent variable is the weekly amount of hours devoted to domestic tasks, which is a censored variable. Therefore, the proposed specification is a random effect Tobit estimator (Cameron and Trivedi, 2005):

$$(2) \quad t^*_{it} = \alpha_i + x'_{it}\beta + w'_i \gamma + \varepsilon_{it},$$

Where the observed data is $t_{it} = t^*_{it}$ if $t^*_{it} > 0$, and $t_{it} = 0$ if $t^*_{it} \leq 0$, x_{it} is the matrix of time-varying variables recorded during waves XV-XVIII, and w_i is the matrix of variables that are registered during waves V-VIII as in Equation (1). Parental attitudes towards the gender division of domestic work are again measured by father's contribution to total housework. The Random Effects Tobit model can be estimated by Maximum Likelihood (ML) under the assumption that $\alpha_i \sim \mathcal{N}(0, \sigma^2_\alpha)$.

In the third model, housework is separated into distinct domestic tasks and different equations are specified as Random Effects Tobit and estimated again by ML, using weekly hours devoted to the specific household activity.

$$(3) \quad o^{s*}_{it} = \alpha_i + x'_{it}\beta + w'_i \gamma + \varepsilon_{it},$$

where o^{s*}_{it} is the specific activity observed during waves XV-XVIII. The observed data again is $o^s_{it} = o^{s*}_{it}$ if $o^{s*}_{it} > 0$, and $o^s_{it} = 0$ if $o^{s*}_{it} \leq 0$ and matrices x_{it} and w_i are specified as in model (1) and (2), with the exception that the father's contribution during waves V-VIII is measured in the specific s activity (purchasing food, cooking, cleaning, and doing laundry). The male and female samples are estimated separately for models (2) and (3).

Model (1) is estimated using the Random Effect model with Mundlak's (1978) correction while models (2) and (3) are estimated with both Tobit specification, Mundlak, and Mundlak Tobit. In the Mundlak estimator, the individual effect is specified as

$$(4) \quad \alpha_i = \bar{x}'_{it}\pi + \xi_i,$$

where $\bar{x}'_{it}$ is the vector of the average value of time-variant variables for each individual. If the Mundlak model is well specified, the β coefficients for time-variant variables equal those of the fixed effects estimator. In the Mundlak Tobit, the RE Tobit model is extended in the same way Mundlak (1978) extended the linear RE model. Similar to Brown et al (2013), we also estimate the RE Tobit model in (2) and (3) with the individual effects specified as (4). All specifications assume $\varepsilon_{it} \sim \mathcal{N}(0, \sigma^2_\varepsilon)$.

4. Intergenerational transmission of gender division of housework time

This section presents the descriptive and econometric analysis of how parental division of housework may affect children's division of housework in their future families, which is the main objective of the paper. In pursuing this objective, a possible concern is that differences in the gender division of housework between children and their parents may arise because they are observed at different stages of the life cycle. In our sample, young adults are aged between 18 and 32 years old, and 23% are married, or get married, during the period. Mothers and fathers, on the other hand, were on average 44 and 46 years old respectively in waves V-VIII.

Focussing on males, Figure 1 plots the probability density functions of the time spent in traditional domestic work by married adult sons, their fathers, and young married males in waves V-VIII. The amount of domestic work of fathers in waves V-VIII has a similar distribution of young married males in the same period, while adult sons' distribution is less concentrated on zero and shows a higher concentration in the range 5-20 weekly hours. This suggests that the life-cycle effect may not be too important for our comparisons. On the other hand, there seems to be a generational shift towards a more egalitarian distribution of domestic work time for the later generations. This is confirmed by Figure 2, which plots the share of housework time performed by the husband for adult children and their fathers. Fathers' share is much more concentrated around zero, while a substantial shift towards a more egalitarian distribution of housework is observed for their sons.

The raw relationship between parents' division of traditional domestic activities and those of their children, the main objective of the study, can be summarized by Figures 3 and 4. Both figures plot a scatter of the share of traditional domestic activities of parents and their adult children in their own families, and a linear fit for the relationship, differentiated for sons and daughters. In particular, Figure 3 plots the relationship between fathers' share of domestic activities and their married sons' share, while Figure 4 depicts the relationship between fathers' share of domestic activities and their daughters husbands' share. Both graphs show positive relationships, which are more significant for fathers and sons.

To formally investigate these relationships, we estimate a Mundlak Random Effects model, regressing the male partner's share of housework within young couples in waves XV-XVIII (2006-2009) on the father's share observed in waves V-VIII (1994-1999). The model is specified as in (1) and control variables include both time-variant variables concerning young adults characteristics and time-invariant variables concerning their childhood and their parents'

behaviours when adolescents. Table 1 shows estimates for the whole sample and for the males and females sub-samples. The dependent variable is the number of hours devoted to domestic activities by male partners, divided by the couple's sum of domestic work hours, while the main explanatory variable is the same share for their fathers in waves V-VIII. It is worth noting that the father was absent for 345 individuals (935 observations) and the mother was absent for 88 individuals (225 observations). In order to avoid an excessive drop of observations due to the absence of one parent during childhood, we assign the value 0 to parents' variables when either one is absent. Thus, the share of traditional domestic work performed by the father is 0 when he is absent, while the value 1 is assigned when the mother is absent. The same treatment is applied to each father's activity share (purchasing food, cooking, cleaning, and doing laundry).

The main result is that the gender division of housework is explained by parental gender division when the children were living with their parents, both for the general sample and when the model is estimated by gender groups. In particular, a 1% increase in the father's share of domestic tasks implies a 0.21% increase in his child's share. The effect is larger for sons than for daughters, with the former increasing their share by 0.32% and the latter increasing their partners' share by 0.17%.

The set of explanatory variables x_{it} (those recorded during 2006 to 2009) is composed of individual characteristics, family characteristics, and distribution factors. The set of current individual characteristics includes gender, age and its square, chronic illness, the logarithm of her/his potential wage rate[3], and having a nationality different from Russian. Current family variables include the number of children, the number of elderly co-residents, and the number of working age members living in the household. As to family composition, unsurprisingly, child-rearing is the most important factor. Male adults increase by 0.11% their contribution to household production for each additional child, suggesting that having children increases women's intra-household bargaining power, while cohabiting with other adult family members increases gender inequality. A major concern with the estimation of the determinants of male's participation in housework is that an important omitted factor is heterogeneous household preferences in terms of household production. For this reason, the average amount of domestic work performed by other family members is included among the regressors, resulting in a positive and significant estimated coefficient.

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[3] Potential wage is predicted using a panel Mincer equation with correction for potential sample selection bias, as described in Appendix A2.

Since the dependent variable of Model (1) is a proxy of gender inequality, we include several distribution factors traditionally used in the collective household models literature, such as age, education, and wage ratios at the family level, and the divorce ratio at the regional level. Relative female age is an important predictor of male's housework participation. Interestingly, female relative education and the regional divorce rate appear to have a negative impact on gender equality in the female and male samples, respectively.

The control variables in w_i are those recorded during years 1994-1999 and they appear in the main model (1) as the average value of the spanning period, and thus as time-invariant factors. Time-invariant child variables include the age in wave V and the average weekly hours of domestic work. The inclusion of these two variables aims at investigating whether the birth cohort is important and whether there is an effect on adult behaviour of the amount of domestic work done during childhood. Prior studies have focused on the correlation between parent's housework time and children's housework time (Álvarez and Miles, 2012; Gimenez-Nadal et al., 2014; 2016; Solaz and Wolff, 2015), arguing that habits acquired during adolescence are relevant predictors of time use allocation later on. Results in Table 1 suggest that there is no statistically significant effect of the amount of hours performed during childhood on the gender division of domestic tasks later in life. As explained in the next section, the variable has, rather, a positive and significant coefficient in domestic work time regressions. The unique features of the data used in this study allow us to conclude that gender attitudes developed during adolescence are the result of an imitation process of parental behaviours, more than a habit-acquisition process as assumed in the literature based on cross-sectional evidence.

To reduce the unobserved heterogeneity problem related to other parental behaviours or circumstances in 1994 to 1999, a set of time-invariant parents' variables are also included: being absent, the average work status in waves V-VIII, whether the highest completed grade is primary or tertiary education, and the average amount of domestic work done by all household members in the family of origin in waves V-VIII. Each of these variables, except the latter, are included separately for the mother and the father. One of the main reasons for the inclusion of these controls is to measure possible economic shocks occurring in the family of origin during 1994 to 1999. This was a crucial period for the Russian economy, which was undergoing major economic and social challenges during the transition to a market economy, with a huge financial crisis in 1997 associated with a significant decrease in both men's and women's wage rates (Kalungina et. al, 2009). For this reason, we construct an indicator variable to control for parents being interviewed only before, or also after the crisis. Interestingly, father's absence

(and mother's absence) is positively (negatively) contributing to the development of a more egalitarian view in gender roles, while fathers' work status during the transition period only matters for sons.

Table 1 also presents, in column (1), a fixed effect estimation of the time-invariant variables where estimated coefficients are in line with the Mundlak estimation, suggesting that the Mundlak specification is working well in capturing time-variant observed heterogeneity and consequently the current time-invariant unobserved heterogeneity.

5. Father's participation in housework and children's time devoted to domestic activities.

In order to investigate intergenerational transmission of specific domestic activities, in Table 2, estimations of models (2) and (3) are presented where the dependent variables are the weekly amount of time devoted to domestic work and the weekly amount of time devoted to specific domestic tasks. For models (2) and (3), the sample cannot be restricted to married or cohabiting couples for sample size reasons, therefore the dependent variables are the hours spent in domestic tasks, rather than shares. For this reason, the results presented in this section are less robust to drawing general conclusions on intergenerational transmission of household labour division.

Consistently with prior empirical findings, our empirical analysis suggests the relevance of the parent's role model on an individuals' contribution to household production. Table 2 presents Panel Tobit (Column 1), Mundlak (Column 2), and Mundlak Tobit (Colum 3) estimates for the coefficients of the parental gender division of housework on the amount of domestic work as a whole, and hours spent purchasing food, cooking, cleaning, and doing laundry. A full estimation of the determinants of weekly hours spent in domestic tasks by subsamples of male and female individuals is presented in Tables A1.2, A1.3, A1.4 and A1.5. Results, consistent across estimation methods, show that an increase of the share of father's housework time implies a greater contribution of male children to household production when they are adults. A one-percent increase in the share of housework performed by fathers implies an increase of between 4.7 and 8.0 weekly hours devoted to domestic work in the male sample (Table 2). In line with Alvarez and Miles (2012), daughters' housework time is not significantly altered by changes in their fathers' contribution during childhood, suggesting that, in Russia, the paternal example in the process of preferences-development during adolescence is more relevant for sons. Time spent cooking and cleaning appears to drive our main results in

Table 1. However, at variance with Solaz and Wolff (2015), we find no statistically significant effects for more sporadic activities like purchasing food and doing laundry.

Control variables in x_{it} and w_{it} are almost the same as in the previous specification, with the exception that here the distribution factors are excluded from the analysis because they are supposed to be irrelevant predictors of the hours spent in domestic activities. Since we cannot restrict the sample to couples, the marital status is maintained here as control variable. The data allow us to control for several individual and household characteristics and behaviours that are time-variant; however, the main significant factors in both samples (Table A1.2 and Table A1.3) are domestic family work performed by other family members, and young adult's marital status, which increases the amount of domestic labour up to 5 hours per week. For cleaning hours, age also matters in the male sample (Table A1.4).

In order to avoid omission of relevant information related to own and parents' attitudes during late childhood and adolescence, on current young adult behaviours, a number of time-invariant controls are also included for the 1994-1999 period. Nevertheless, the majority of them are non-significant for a long-term causal relationship to time-use behaviours, except for the amount of housework performed by the child during adolescence. Differing from the estimates in Table 1, where the impact on gender division of housework was presented, here our findings reconcile our work with the prior literature that found a cross-sectional relationship between parent's and children's amount of domestic work, and assume that habits acquired during adolescence are persistent in adulthood stage (Alvarez and Miles, 2012; Gimenez-Nadal el al., 2014; 2016; Solaz and Wolff, 2015). Mother's education matters only for males' hours of cooking and cleaning, and for hours spent purchasing food by their daughters. As expected, regional dummies are consistently significant throughout the estimates since they capture local labour market effects that are quite heterogeneous in Russia.

Thanks to the unique features of longitudinal data on time-use, we can test the two effects: the impact of parental behaviours on adult children and the persistence of children's behaviours over time, suggesting that the main mechanism behind our findings is the emulation of parental behaviour during late childhood. Adolescents may be responsible for a certain number of household tasks, so the experience of performing housework contributes to the formation of attitudes about the amount of that work for the future, and to the replication of parent's behaviours in the gender division of housework time when they live in couples.

6. Conclusions

The intergenerational transmission of income, human capital, and preferences is a flourishing research field in economics. However, only recently has attention been paid to the intergenerational correlation between parental and children's time devoted to housework. Our study contributes to this literature, proposing an estimation of the longitudinal effect of the parental division of housework on the gender distribution of children's housework when those children become adult and form their own families.

Using the Russia Longitudinal Monitoring Survey (RLMS), we exploit its panel structure to analyse the relationship between gender division of housework in parental families during 1994 to 1999 and the housework distribution in the households formed by their sons or daughters in 2006 to 2009. The results suggest that a greater involvement of fathers when their sons were adolescent is related to more time devoted to housework by those sons ten years later, and to less gender inequality in housework distribution when they get married. Our findings are robust to different estimation techniques.

The results also suggest that the intergenerational transmission of gender roles occurs during a crucial moment in children's life: adolescence. Estimates confirm that the amount of domestic work children were required to do during late childhood is an important transmission mechanism of preferences for household production. However, gender role models in the household division of labour are inherited by children through emulation of parental behaviour, independently of the number of domestic tasks done during adolescence. The intergenerational correlation in the use of time is confirmed also for specific domestic activities: a greater proportion of time devoted by fathers to cooking and cleaning is related to more time in these activities by their sons.

This study sheds light on the persistence of parental behaviour across generations and suggests that the progressive shift toward less traditional gender roles among younger generations is likely to improve over time and through paternal example. Our results underline the importance of fathers as role models for their adolescent sons and suggests that policies aimed at increasing women's labour market participation should be designed considering also men's view toward the household division of labour, favouring their involvement in domestic tasks. Adolescents are confirmed to be an important target group for policies designed to eliminate gender inequality.

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Figure 1: Probability density functions of traditional domestic work time by sons, their fathers, and young married males.
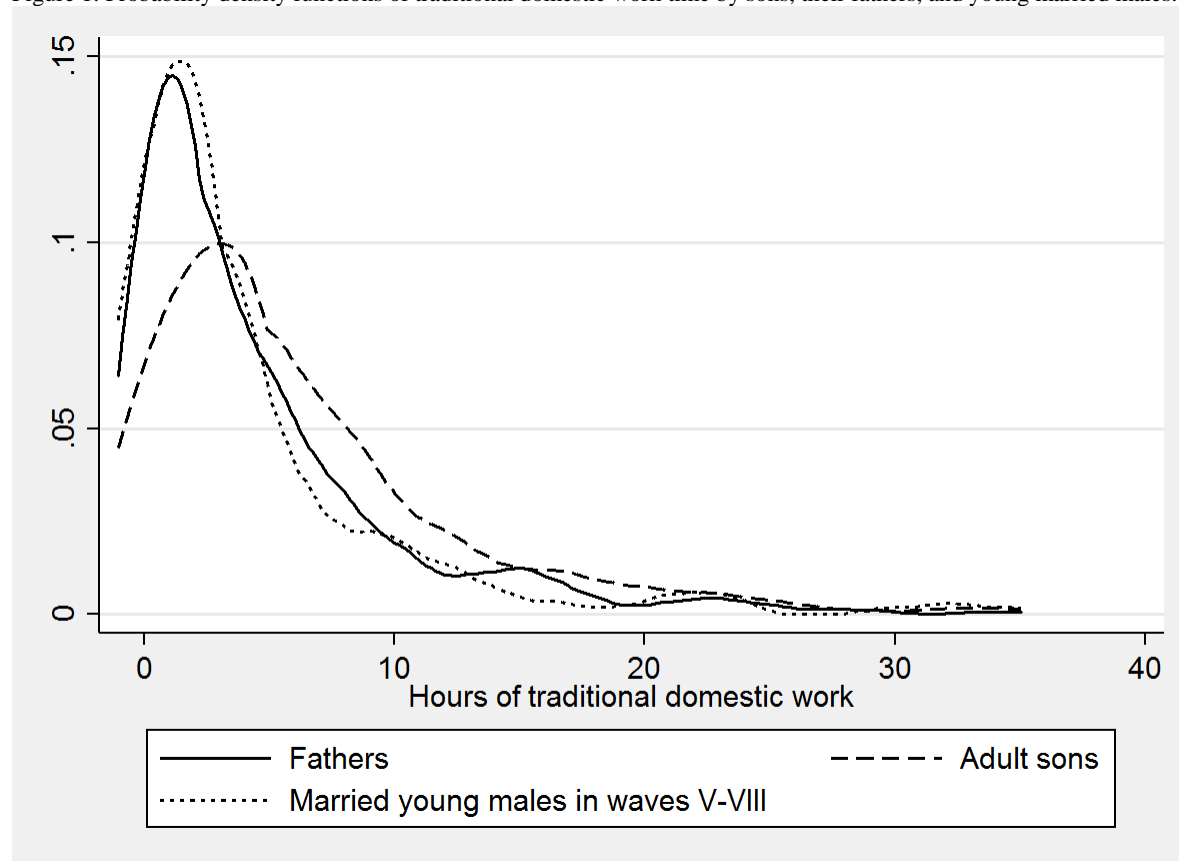

Figure 2: Probability density functions of the shares of traditional domestic work performed by fathers and sons.
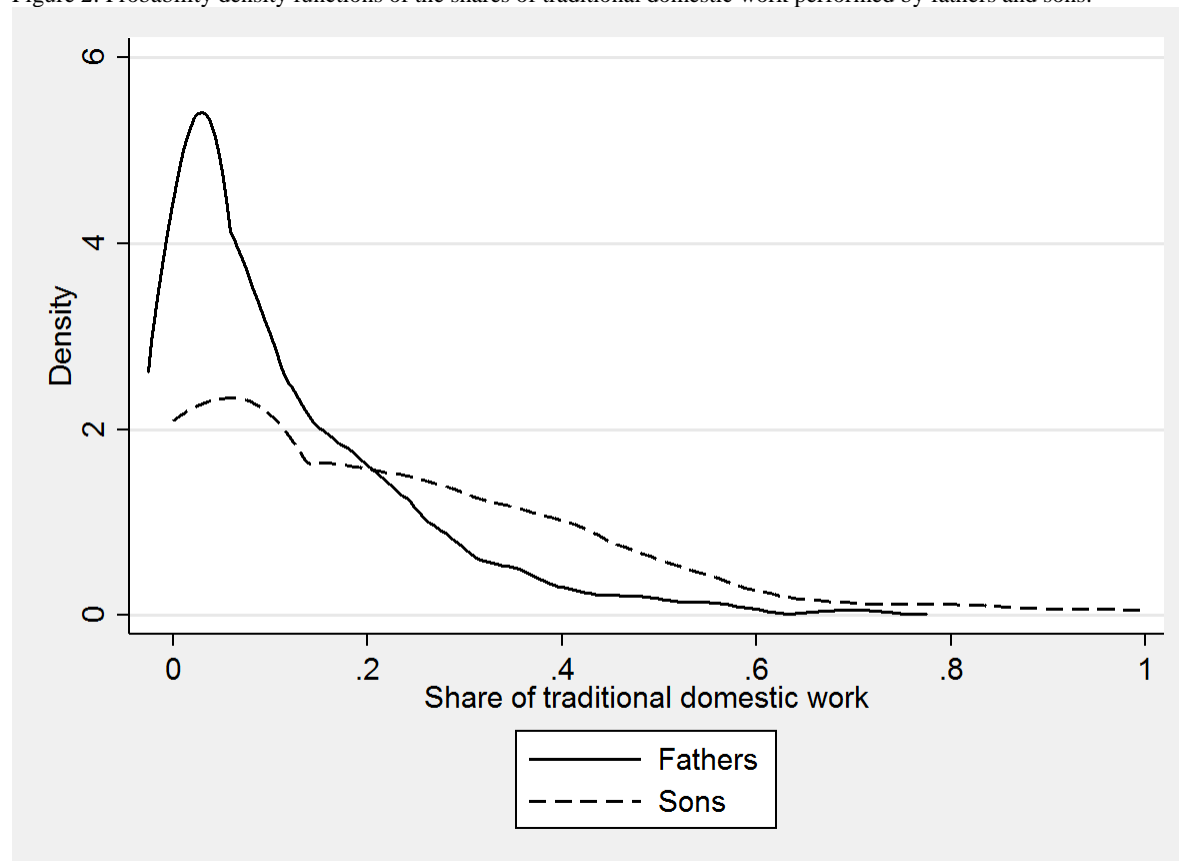
Figure 3: Share of traditional domestic work performed by fathers and their sons in their own family.
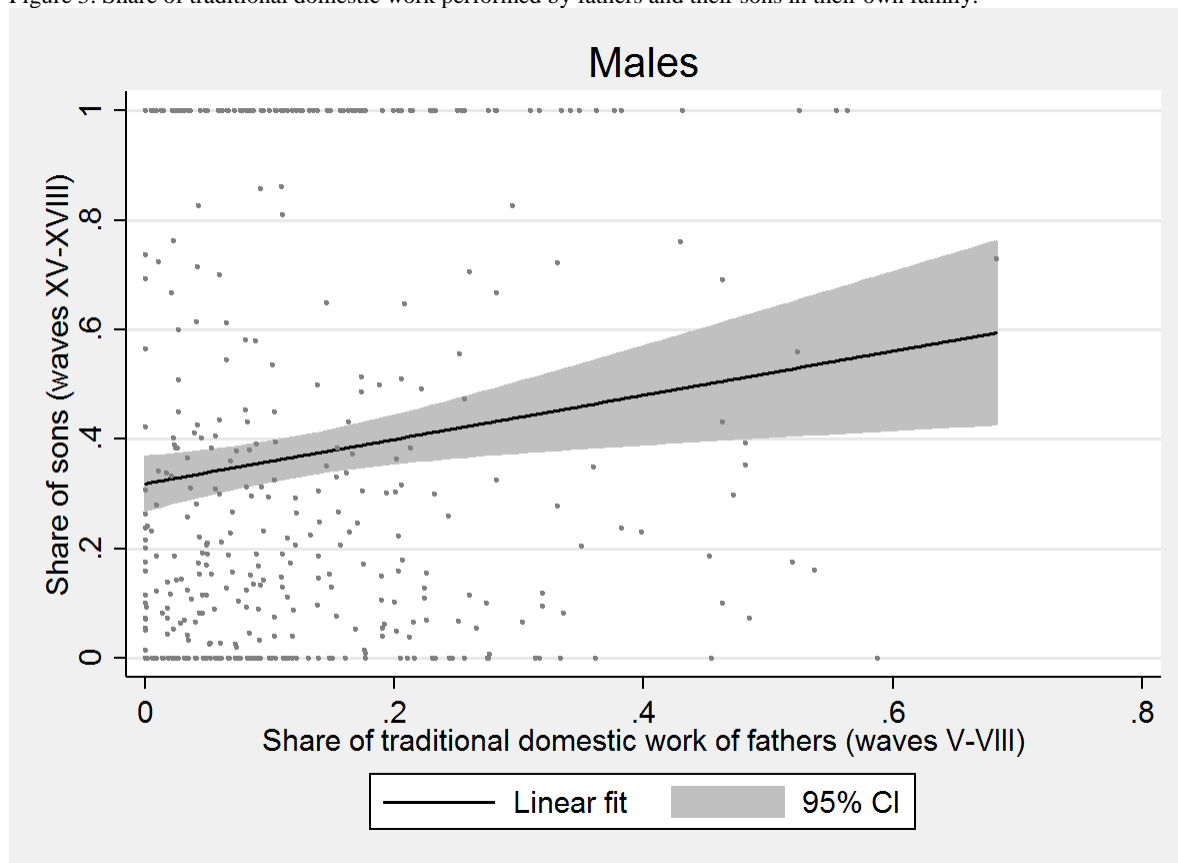

Males

Figure 4: Share of traditional domestic work performed by fathers and their daughter's husbands.
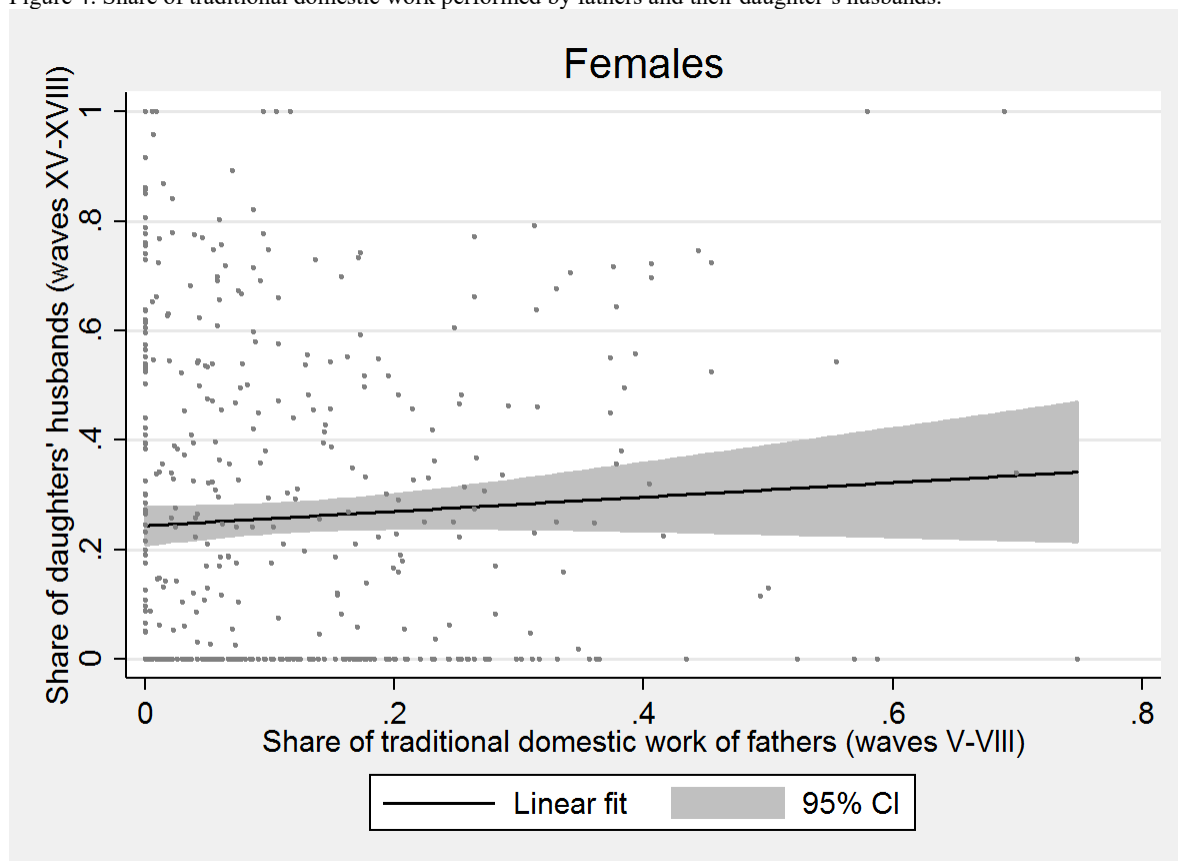
Females

Male share of domestic work	Fixed Effect		All		Males		Females	
Gender (1=male)			0.014	(0.020)				
Share of traditional domestic work performed by the father (waves V-VIII)			0.214***	(0.072)	0.320**	(0.142)	0.174**	(0.088)
Domestic work of family members (minus husband) per working age adult	0.027***	(0.002)	0.027***	(0.002)	0.023***	(0.004)	0.028***	(0.003)
Logarithm of predicted wage rate	-0.015	(0.014)	-0.015	(0.014)	-0.020	(0.028)	-0.015	(0.021)
Age	-0.004	(0.057)	-0.003	(0.057)	-0.199	(0.121)	0.039	(0.063)
Age squared	0.000	(0.001)	0.000	(0.001)	0.004*	(0.002)	-0.001	(0.001)
Chronic illness	-0.003	(0.023)	-0.003	(0.023)	0.023	(0.043)	-0.000	(0.026)
Number of children	0.078***	(0.021)	0.078***	(0.021)	0.106***	(0.034)	0.082***	(0.027)
Number of elderly members	0.011	(0.031)	0.011	(0.031)	-0.054	(0.041)	0.128***	(0.046)
Number of working age members	-0.041***	(0.009)	-0.042***	(0.009)	-0.035***	(0.012)	-0.026*	(0.013)
Age ratio of the couple: female / (male + female)	0.819***	(0.187)	0.815***	(0.187)	1.503***	(0.431)	0.847***	(0.211)
Education ratio of the couple: female / (male + female)	-0.226	(0.165)	-0.223	(0.165)	0.114	(0.310)	-0.470**	(0.185)
Predicted wage ratio of the couple: female / (male + female)	-0.025	(0.047)	-0.024	(0.047)	-0.002	(0.107)	-0.005	(0.068)
Divorce ratio	-0.489	(0.303)	-0.483	(0.303)	-1.263**	(0.506)	-0.066	(0.364)
Average weekly hours of domestic work in waves V-VIII			0.003	(0.007)	0.026	(0.017)	-0.005	(0.008)
Age in wave V			-0.005	(0.013)	-0.037	(0.023)	-0.001	(0.016)
Mother interviewed during or after the 1997 crisis			-0.002	(0.047)	-0.038	(0.105)	0.043	(0.058)
Average father work status in waves V-VIII (in each wave 1=work)			0.098***	(0.035)	0.238***	(0.072)	0.046	(0.041)
Average mother work status in waves V-VIII (in each wave 1=work)			0.036	(0.027)	0.067	(0.062)	0.025	(0.032)
Father absent during childhood			0.083**	(0.038)	0.206**	(0.086)	0.041	(0.045)
Mother absent during childhood			-0.187**	(0.093)	-0.046	(0.192)	-0.163	(0.108)
Per-adult hours of domestic work in the family of origin			-0.001	(0.001)	0.001	(0.001)	-0.001*	(0.001)
Mother's highest completed grade is in primary education			0.030	(0.025)	0.067	(0.049)	-0.003	(0.031)
Father's highest completed grade is in primary education			-0.020	(0.024)	0.046	(0.055)	-0.023	(0.027)
Mother's highest completed grade is in tertiary education			0.005	(0.021)	-0.038	(0.039)	0.024	(0.026)
Father's highest completed grade is in tertiary education			-0.021	(0.024)	-0.094**	(0.046)	0.008	(0.029)
Northern and North Western			-0.067	(0.052)	-0.008	(0.101)	-0.049	(0.067)
Central and Central Black-Earth			-0.042	(0.045)	0.040	(0.075)	-0.054	(0.060)
Volga-Vaytski and Volga Basin			-0.101**	(0.046)	-0.086	(0.071)	-0.106*	(0.062)
North Caucasian			-0.083*	(0.049)	-0.031	(0.077)	-0.146**	(0.069)
Ural			-0.084*	(0.046)	-0.068	(0.072)	-0.085	(0.063)
Western Siberian			-0.079	(0.049)	-0.051	(0.082)	-0.091	(0.065)

Eastern Siberian and Far Eastern			-0.111**	(0.052)	-0.185**	(0.091)	-0.060	(0.068)
Non-Russian nationality			0.013	(0.025)	-0.030	(0.043)	0.034	(0.031)
Mean of time-variant variables			Yes		Yes		Yes	
Constant	-0.019	(0.702)	0.137	(0.681)	0.590	(1.527)	0.101	(0.794)
Observations	693		693		257		436	
Number of individuals	277		277		105		172	

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2 – The impact of father's share of housework in waves V-VIII on the hours of domestic activities in waves XV-XVIII.

	Tobit		Mundlak		Mundlak-Tobit	
Males						
Hours of female-type housework	8.046***	(2.327)	4.686***	(1.749)	7.874***	(2.326)
Hours of purchasing food	-0.214	(0.449)	-0.250	(0.265)	-0.188	(0.447)
Hours of cooking	3.838**	(1.909)	1.088*	(0.588)	3.956**	(1.911)
Hours of cleaning	2.453***	(0.815)	0.948***	(0.328)	2.431***	(0.817)
Hours of doing laundry	0.486	(2.504)	-0.669	(0.490)	0.232	(2.491)
Females						
Hours of female-type housework	-2.664	(2.815)	-2.597	(2.772)	-2.971	(2.817)
Hours of purchasing food	0.050	(0.390)	0.014	(0.325)	-0.040	(0.389)
Hours of cooking	-1.728	(1.065)	-1.379	(0.865)	-1.701	(1.063)
Hours of cleaning	-0.560	(0.637)	-0.734	(0.602)	-0.663	(0.638)
Hours of doing laundry	-0.104	(1.038)	-0.015	(0.888)	-0.123	(1.041)

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 1 – Full Tables

Table A1.1 – Descriptive statistics

	Mean	Std. Dev.	Min.	Max.
Dependent variables				
Male share of traditional domestic work	0.310	0.342	0.000	1.000
Hours per week spent in traditional domestic tasks	10.28	10.37	0.000	73.50
Hours per week purchasing food	1.993	2.257	0.000	19.00
Hours per week cooking food	2.708	3.744	0.000	44.00
Hours per week cleaning	2.555	3.256	0.000	35.00
Hours per week making laundry	1.962	3.035	0.000	28.00
Parents' time use variables in 1994-1999				
Share of traditional domestic work performed by the father in waves V-VIII	0.114	0.125	0.000	0.748
Share of time spent purchasing food by the father in waves V-VIII	0.205	0.256	0.000	1.000
Share of time spent cooking food by the father in waves V-VIII	0.094	0.145	0.000	1.000
Share of time spent cleaning by the father in waves V-VIII	0.151	0.196	0.000	1.000
Share of time spent making laundry by the father in waves V-VIII	0.040	0.104	0.000	1.000
Adult children variables in 2006-2009				
Gender (1=male)	0.496	0.500	0.000	1.000
Domestic work of family members (minus husband) per working age adult	6.630	5.353	0.000	40.94
Logarithm of predicted wage rate	3.436	1.031	0.468	8.047
Age	21.99	2.93	18.00	32.00
Age squared	492.0	132.6	324.0	1024
Chronic illness	0.294	0.456	0.000	1.000
Married	0.182	0.386	0.000	1.000
Cohabiting	0.049	0.216	0.000	1.000
Number of children	0.229	0.473	0.000	3.000
Number of elderly members	0.265	0.535	0.000	3.000
Number of working age members	2.815	1.326	0.000	9.000
Age ratio of the couple: female / (male + female)	0.494	0.132	0.000	1.000
Education ratio of the couple: female / (male + female)	0.455	0.142	0.000	1.000
Predicted wage ratio of the couple: female / (male + female)	0.591	0.237	0.000	1.000
Divorce ratio	0.096	0.038	0.025	0.185
region 1- Metropolitan areas: Moscow and St. Petersburg	0.061	0.239	0.000	1.000
region 2 - Northern and North Western	0.067	0.250	0.000	1.000
region 3 - Central and Central Black-Earth	0.175	0.380	0.000	1.000
region 4 - Volga-Vaytski and Volga Basin	0.173	0.378	0.000	1.000
region 5 - North Caucasian	0.174	0.379	0.000	1.000
region 6 - Ural	0.187	0.390	0.000	1.000
region 7 - Western Siberian	0.080	0.272	0.000	1.000
region 8 - Eastern Siberian and Far Eastern	0.083	0.276	0.000	1.000
Non-Russian nationality	0.063	0.242	0.000	1.000
Parents variables in 1994-1999 (when present)				
Average father work status in waves V-VIII (in each wave 1=employed)	0.796	0.304	0.000	1.000
Average mother work status in waves V-VIII (in each wave 1=employed)	0.741	0.342	0.000	1.000
Father absent during childhood	0.246	0.431	0.000	1.000
Mother absent during childhood	0.059	0.236	0.000	1.000
Per-adult hours of domestic work in the family of origin	27.22	14.70	0.000	97.71
Mother's highest completed grade is in primary education	0.033	0.178	0.000	1.000

Father's highest completed grade is in primary education	0.178	0.382	0.000	1.000
Mother's highest completed grade is in tertiary education	0.219	0.414	0.000	1.000
Father's highest completed grade is in tertiary education	0.200	0.400	0.000	1.000
Children variables in 1994-1999				
Average weekly hours of domestic work in waves V-VIII	1.997	1.991	0	14
Age in wave V	10.42	2.932	5	19
Number of observations	3445			
Number of individuals	1215			

Table A1.2 - Hours of domestic work for males: Tobit, Mundlak, and Mundlak Tobit

Hours of domestic work	Tobit		Mundlak		Mundlak-Tobit	
Share of traditional domestic work performed by the father (waves V-VIII)	8.046***	(2.327)	4.686***	(1.749)	7.874***	(2.326)
Domestic work of family members (minus self) per working age adult	0.243***	(0.039)	0.181***	(0.039)	0.200***	(0.051)
Logarithm of predicted wage rate	0.620**	(0.253)	-0.155	(0.354)	-0.184	(0.464)
Age	-1.645	(1.036)	-0.747	(1.022)	-0.890	(1.375)
Age squared	0.038*	(0.023)	0.020	(0.023)	0.026	(0.030)
Chronic illness	0.479	(0.459)	-0.249	(0.492)	-0.515	(0.642)
Married	1.783***	(0.663)	1.056**	(0.501)	1.851***	(0.663)
Cohabiting	-0.633	(1.014)	-0.828	(0.766)	-0.607	(1.016)
Average weekly hours of domestic work in waves V-VIII	1.110***	(0.390)	0.846***	(0.290)	1.147***	(0.389)
Age in wave V	-0.350**	(0.168)	0.326	(0.326)	0.544	(0.433)
Parents interviewed during or after the 1997 crisis	-1.966	(1.378)	-1.599	(1.043)	-2.131	(1.371)
Average father work status in waves V-VIII (in each wave 1=work)	1.988**	(0.939)	0.793	(0.686)	1.747*	(0.939)
Average mother work status in waves V-VIII (in each wave 1=work)	0.582	(0.801)	-0.122	(0.592)	0.344	(0.803)
Father absent during childhood	3.455***	(1.074)	1.632**	(0.789)	3.119***	(1.075)
Mother absent during childhood	-2.520	(3.194)	-1.109	(2.410)	-2.750	(3.189)
Per-adult hours of domestic work in the family of origin	0.004	(0.019)	0.003	(0.014)	-0.000	(0.019)
Mother's highest completed grade is in primary education	0.713	(0.717)	0.446	(0.536)	0.662	(0.715)
Father's highest completed grade is in primary education	-0.203	(0.784)	-0.282	(0.583)	-0.239	(0.782)
Mother's highest completed grade is in tertiary education	0.084	(0.613)	-0.101	(0.464)	-0.098	(0.613)
Father's highest completed grade is in tertiary education	0.658	(0.733)	0.373	(0.546)	0.616	(0.731)
Northern and North Western	-2.357*	(1.384)	-1.317	(1.062)	-2.625*	(1.396)
Central and Central Black-Earth	-1.194	(1.169)	-0.537	(0.896)	-1.101	(1.172)
Volga-Vaytski and Volga Basin	-1.032	(1.175)	-0.282	(0.903)	-0.773	(1.182)
North Caucasian	-3.014**	(1.171)	-1.362	(0.894)	-2.444**	(1.174)
Ural	-0.772	(1.167)	-0.432	(0.893)	-0.648	(1.167)
Western Siberian	-2.264	(1.379)	-1.022	(1.042)	-2.108	(1.380)
Eastern Siberian and Far Eastern	-1.103	(1.344)	-0.614	(1.026)	-0.890	(1.345)
Non-Russian nationality	-1.740**	(0.853)	-0.748	(0.592)	-1.617*	(0.854)
Mean of time-variant variables			Yes		Yes	
Constant	18.663	(11.491)	38.364**	(15.012)	49.352**	(20.071)
Sigma_u	4.314***	(0.248)			4.272***	(0.246)

Sigma_e	5.892***	(0.149)	38.364**	(15.012)	5.882***	(0.149)
Number of observations	1,715		1,715		1,715	
Left censored observations	503				503	
Number of individuals	626		626		626	

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A1.3 - Hours of domestic work for females: Tobit, Mundlak, and Mundlak Tobit

Hours of domestic work	Tobit		Mundlak		Mundlak-Tobit	
Share of traditional domestic work performed by the father (waves V-VIII)	-2.664	(2.815)	-2.597	(2.772)	-2.971	(2.817)
Domestic work of family members (minus self) per working age adult	0.312***	(0.056)	0.323***	(0.075)	0.320***	(0.076)
Logarithm of predicted wage rate	0.921***	(0.322)	1.207**	(0.597)	1.258**	(0.610)
Age	0.535	(1.445)	-0.214	(1.860)	-0.441	(1.902)
Age squared	-0.016	(0.031)	0.004	(0.040)	0.009	(0.041)
Chronic illness	-0.792	(0.608)	-0.945	(0.879)	-0.969	(0.900)
Married	4.997***	(0.787)	4.813***	(0.781)	5.066***	(0.795)
Cohabiting	4.347***	(1.096)	4.296***	(1.078)	4.455***	(1.098)
Average weekly hours of domestic work in waves V-VIII	0.528*	(0.280)	0.538*	(0.277)	0.563**	(0.280)
Age in wave V	0.209	(0.241)	1.743***	(0.641)	1.874***	(0.659)
Parents interviewed during or after the 1997 crisis	2.596	(1.940)	2.566	(1.917)	2.479	(1.939)
Average father work status in waves V-VIII (in each wave 1=work)	-1.116	(1.338)	-0.869	(1.320)	-0.919	(1.337)
Average mother work status in waves V-VIII (in each wave 1=work)	-1.530	(1.028)	-1.666	(1.017)	-1.580	(1.032)
Father absent during childhood	-1.378	(1.495)	-1.358	(1.473)	-1.354	(1.492)
Mother absent during childhood	3.197	(3.793)	2.470	(3.733)	2.858	(3.793)
Per-adult hours of domestic work in the family of origin	0.033	(0.025)	0.035	(0.025)	0.035	(0.025)
Mother's highest completed grade is in primary education	-0.435	(1.029)	-0.279	(1.025)	-0.298	(1.039)
Father's highest completed grade is in primary education	-1.114	(0.946)	-1.385	(0.935)	-1.277	(0.946)
Mother's highest completed grade is in tertiary education	1.239	(0.918)	0.927	(0.908)	1.137	(0.919)
Father's highest completed grade is in tertiary education	-0.106	(1.002)	-0.114	(0.987)	-0.154	(1.000)
Northern and North Western	8.433***	(2.254)	8.528***	(2.218)	8.468***	(2.248)
Central and Central Black-Earth	5.009**	(2.046)	4.967**	(2.015)	5.004**	(2.041)
Volga-Vaytski and Volga Basin	6.844***	(2.067)	6.393***	(2.042)	6.611***	(2.067)
North Caucasian	5.310**	(2.117)	5.303**	(2.098)	5.294**	(2.125)
Ural	6.022***	(2.057)	5.529***	(2.032)	5.768***	(2.058)
Western Siberian	6.631***	(2.247)	6.164***	(2.224)	6.488***	(2.250)
Eastern Siberian and Far Eastern	5.792***	(2.213)	5.129**	(2.189)	5.398**	(2.216)
Non-Russian nationality	-1.782	(1.100)	-1.426	(1.065)	-1.794	(1.098)
Mean of time-variant variables			Yes		Yes	
Constant	-4.136	(16.517)	23.910	(29.050)	27.343	(29.663)
Sigma_u	5.616***	(0.332)			5.589***	(0.329)
Sigma_e	8.958***	(0.189)	23.910	(29.050)	8.938***	(0.188)
Number of observations	1,730		1,730		1,730	

Left censored observations	59		59
Number of individuals	589	589	589

Standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table A1.4 - Hours of domestic activities for males – Panel Tobit

	Purchasing food		Cooking		Cleaning		Doing laundry	
Male share in the specific activity	-0.214	(0.449)	3.838**	(1.909)	2.453***	(0.815)	0.486	(2.504)
Domestic work of family members (minus self) per working age adult	0.069***	(0.017)	0.056	(0.039)	0.153***	(0.025)	0.100**	(0.039)
Logarithm of predicted wage rate	0.321***	(0.107)	0.053	(0.256)	0.301*	(0.156)	0.073	(0.254)
Age	-0.040	(0.443)	-1.236	(1.055)	-1.575**	(0.663)	0.507	(1.109)
Age squared	0.005	(0.010)	0.023	(0.023)	0.031**	(0.014)	-0.012	(0.024)
Chronic illness	0.063	(0.196)	0.197	(0.464)	0.590**	(0.284)	0.438	(0.465)
Married	1.345***	(0.277)	1.072	(0.671)	0.116	(0.421)	-0.836	(0.739)
Cohabiting	1.046**	(0.421)	-0.284	(1.002)	-1.183*	(0.683)	-0.354	(1.082)
Average weekly hours of domestic work in waves V-VIII	0.304*	(0.163)	0.752*	(0.388)	0.748***	(0.229)	0.345	(0.374)
Age in wave V	-0.210***	(0.073)	0.083	(0.170)	-0.084	(0.109)	-0.061	(0.178)
Parents interviewed during or after the 1997 crisis	-1.489**	(0.594)	-1.586	(1.281)	0.224	(0.826)	-0.979	(1.284)
Average father work status in waves V-VIII (in each wave 1=work)	0.903**	(0.391)	0.253	(0.952)	0.912	(0.563)	-0.633	(0.877)
Average mother work status in waves V-VIII (in each wave 1=work)	0.144	(0.327)	0.515	(0.817)	0.447	(0.485)	-0.075	(0.768)
Father absent during childhood	0.983**	(0.430)	1.973*	(1.051)	0.949	(0.624)	0.078	(0.932)
Mother absent during childhood	1.351	(1.058)	1.966	(2.868)	1.043	(1.543)	5.953*	(3.088)
Per-adult hours of domestic work in the family of origin	0.009	(0.008)	-0.003	(0.019)	-0.002	(0.011)	0.006	(0.017)
Mother's highest completed grade is in primary education	-0.038	(0.293)	1.386**	(0.705)	0.983**	(0.419)	-0.466	(0.698)
Father's highest completed grade is in primary education	-0.370	(0.331)	0.073	(0.784)	-0.313	(0.469)	0.432	(0.737)
Mother's highest completed grade is in tertiary education	-0.095	(0.249)	0.586	(0.613)	0.540	(0.355)	0.386	(0.570)
Father's highest completed grade is in tertiary education	0.173	(0.300)	0.922	(0.740)	0.269	(0.434)	0.745	(0.699)
Northern and North Western	-1.761***	(0.563)	1.832	(1.367)	-1.583*	(0.808)	2.065	(1.377)
Central and Central Black-Earth	-1.428***	(0.469)	1.232	(1.192)	-1.034	(0.675)	1.671	(1.212)
Volga-Vaytski and Volga Basin	-0.976**	(0.476)	0.615	(1.208)	-0.921	(0.684)	2.077*	(1.223)
North Caucasian	-1.011**	(0.468)	-2.191*	(1.246)	-2.538***	(0.694)	0.564	(1.229)
Ural	-1.317***	(0.470)	1.837	(1.188)	-0.032	(0.674)	1.434	(1.225)
Western Siberian	-1.144**	(0.557)	1.000	(1.388)	-1.939**	(0.811)	1.157	(1.402)
Eastern Siberian and Far Eastern	-1.394**	(0.543)	1.992	(1.349)	-1.145	(0.785)	2.858**	(1.339)
Non-Russian nationality	-0.567	(0.368)	-1.363	(0.971)	-0.827	(0.600)	-1.240	(0.991)
Constant	0.588	(4.919)	9.006	(11.651)	14.922**	(7.315)	-11.854	(12.268)
Sigma_u	1.587***	(0.119)	3.990***	(0.294)	2.157***	(0.174)	3.144***	(0.331)
Sigma_e	2.456***	(0.073)	4.575***	(0.196)	3.402***	(0.119)	4.137***	(0.256)

Observations	1,629	1,704	1,700	1,697
Left censored observations	711	1,244	1,056	1,450
Number of individuals	599	623	621	617

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A1.5 - Hours of domestic activities for females – Panel Tobit

Hours purchasing food	Purchasing food		Cooking		Cleaning		Doing laundry	
Male share in the specific activity	0.050	(0.390)	-1.728	(1.065)	-0.560	(0.637)	-0.104	(1.038)
Domestic work of family members (minus self) per working age adult	0.042***	(0.015)	0.045*	(0.026)	0.095***	(0.020)	0.072***	(0.021)
Logarithm of predicted wage rate	0.293***	(0.087)	0.334**	(0.146)	0.256**	(0.113)	0.045	(0.117)
Age	0.481	(0.398)	0.867	(0.671)	0.166	(0.516)	-0.023	(0.542)
Age squared	-0.007	(0.008)	-0.016	(0.014)	-0.007	(0.011)	-0.003	(0.012)
Chronic illness	-0.121	(0.166)	-0.310	(0.278)	-0.097	(0.215)	-0.251	(0.225)
Married	1.027***	(0.210)	3.145***	(0.354)	0.519*	(0.276)	1.207***	(0.286)
Cohabiting	1.265***	(0.295)	2.415***	(0.494)	0.247	(0.391)	1.190***	(0.406)
Average weekly hours of domestic work in waves V-VIII	-0.012	(0.074)	0.188	(0.122)	-0.003	(0.096)	0.272***	(0.097)
Age in wave V	-0.159**	(0.067)	-0.081	(0.112)	0.138	(0.087)	0.210**	(0.092)
Parents interviewed during or after the 1997 crisis	-0.115	(0.547)	1.167	(0.859)	0.733	(0.662)	0.528	(0.681)
Average father work status in waves V-VIII (in each wave 1=work)	0.138	(0.354)	-0.103	(0.592)	-0.207	(0.460)	-0.478	(0.468)
Average mother work status in waves V-VIII (in each wave 1=work)	-0.240	(0.273)	0.192	(0.461)	-0.272	(0.353)	-1.077***	(0.362)
Father absent during childhood	0.178	(0.386)	-0.661	(0.648)	-0.077	(0.502)	-0.432	(0.502)
Mother absent during childhood	0.866	(0.808)	3.301**	(1.604)	0.616	(1.153)	-0.145	(1.420)
Per-adult hours of domestic work in the family of origin	0.007	(0.007)	0.018	(0.011)	0.008	(0.009)	0.008	(0.009)
Mother's highest completed grade is in primary education	-0.356	(0.273)	0.130	(0.458)	-0.096	(0.352)	-0.375	(0.360)
Father's highest completed grade is in primary education	0.033	(0.252)	-0.340	(0.420)	-0.172	(0.324)	-0.354	(0.331)
Mother's highest completed grade is in tertiary education	0.566**	(0.242)	0.593	(0.403)	0.492	(0.315)	-0.175	(0.322)
Father's highest completed grade is in tertiary education	-0.363	(0.268)	-0.076	(0.443)	0.052	(0.342)	-0.433	(0.350)
Northern and North Western	0.082	(0.587)	4.258***	(1.012)	2.735***	(0.774)	2.481***	(0.804)
Central and Central Black-Earth	0.055	(0.532)	2.879***	(0.926)	1.498**	(0.704)	1.806**	(0.732)
Volga-Vaytski and Volga Basin	0.097	(0.540)	3.568***	(0.935)	2.163***	(0.710)	1.947***	(0.740)
North Caucasian	-0.475	(0.553)	2.447**	(0.964)	2.279***	(0.731)	2.357***	(0.757)
Ural	-0.202	(0.537)	3.243***	(0.932)	2.153***	(0.707)	2.173***	(0.735)
Western Siberian	-0.044	(0.590)	2.842***	(1.013)	3.023***	(0.773)	2.430***	(0.798)
Eastern Siberian and Far Eastern	-0.283	(0.583)	3.495***	(0.999)	1.730**	(0.761)	2.694***	(0.788)
Non-Russian nationality	-0.440	(0.314)	-1.678***	(0.524)	-0.005	(0.401)	0.065	(0.419)
Constant	-4.621	(4.557)	-13.604*	(7.690)	-2.031	(5.893)	0.366	(6.192)
Sigma_u	1.378***	(0.099)	2.300***	(0.171)	1.799***	(0.123)	1.744***	(0.137)
Sigma_e	2.408***	(0.057)	4.073***	(0.097)	3.228***	(0.071)	3.393***	(0.078)
Observations	1,655		1,699		1,690		1,681	

Left censored observations	708	1,240	1,052	1,444
Number of individuals	570	586	583	586

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix 2 – Potential wages

In order to compute potential wages, data from waves XV-XXIII are used. First, the sample-selection correction term (Mills ratio) is computed from a Probit equation on the probability of being employed separately for each wave. Then, a panel Mincer equation is estimated, using a fixed effects linear panel model. When a wage is missing, it is replaced with the predicted value, which includes the individual fixed term when the wage is observed in at least one wave.

The variables used in the first stage Probit equations are: being married, the number of children, gender, highest education dummies, age, being owner of dwelling and regional dummies. In the Mincer equation are included educational dummies (a variable indicating the completed years of study is not available, and a reconstruction accounting for achieved grades does not perform well), potential work experience and its square, chronic illness, the body mass index (as a further health indicator), and the Mills ratio.

Results of estimations are presented in tables A2.1 and A2.2.

Table A2.1 - First stage sample selection correction for wage estimation

Wave	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII
Gender (male=1)	-0.023	-0.079	-0.051	-0.041	-0.020	-0.050	-0.053	0.006	-0.051
Married	0.073*	0.093**	0.055	0.057	0.001	0.045	-0.012	-0.024	0.006
Has a chronic illness	-0.137***	-0.181***	-0.207***	-0.159***	-0.147***	-0.160***	-0.127***	-0.106***	-0.084**
Gender*Married	0.451***	0.442***	0.420***	0.265***	0.506***	0.496***	0.540***	0.502***	0.498***
Gender*Chronic Illness	-0.146**	-0.076	-0.063	-0.104*	-0.109**	-0.130***	-0.127***	-0.118**	-0.071
Number of children	-0.063***	-0.089***	-0.043*	-0.057**	-0.043**	-0.067***	-0.037**	-0.059***	-0.068***
Gender*Number of children	0.077**	0.133***	0.084**	0.115***	0.043	0.066***	0.081***	0.057**	0.073***
Household member is owner	-0.143***	-0.163***	-0.102***	-0.094***	0.002	-0.072**	-0.098***	-0.073**	-0.111***
Years of schooling	-0.844***	-0.925***	-0.604***	-0.727***	-0.804***	-0.106	-0.852***	-0.626***	-0.615***
Years of schooling^2	0.094***	0.106***	0.073***	0.089***	0.094***	0.039**	0.101***	0.077***	0.074***
Years of schooling^3	-0.003***	-0.003***	-0.002***	-0.003***	-0.003***	-0.002***	-0.003***	-0.003***	-0.002***
Potential experience	0.337***	0.218***	0.180***	0.207***	0.180***	0.099***	0.169***	0.179***	0.254***
Potential experience^2	-0.012***	-0.005**	-0.004	-0.004*	-0.003	0.002	-0.003	-0.002	-0.006***
Potential experience^3	0.000***	0.000	-0.000	-0.000	-0.000	-0.000***	-0.000	-0.000	0.000
Potential experience^4	-0.000*	0.000	0.000	0.000	0.000**	0.000***	0.000***	0.000**	0.000
Regional dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES
Body mass index	0.006***	0.016***	0.016***	0.015***	0.015***	0.011***	0.010***	0.012***	0.010***
Constant	-0.654*	-0.026	-0.521	-0.568	-0.399	-2.274***	0.231	-0.704**	-1.147***
Observations	10,081	10,069	9,724	9,768	13,515	15,250	15,471	14,818	12,363

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A2.2 - Fixed Effects panel estimation of the Mincer equation

Logarithm of wage rate		
Years of schooling	0.121***	(0.011)
Years of schooling^2	0.000	(0.000)
Potential experience	0.128***	(0.004)
Potential experience^2	0.000	(0.000)
Chronic illness	-0.007	(0.009)
Body mass index	0.000	(0.002)
Mills	-0.291***	(0.041)
Gender*# Years of schooling	-0.002	(0.014)
Gender*# Years of schooling^2	0.000	(0.001)
Gender*Potential experience	0.012**	(0.006)
Gender*Potential experience^2	-0.000***	(0.000)
Gender* Chronic illness	0.016	(0.013)
Gender*Body Mass index	0.005**	(0.002)
Gender*Mills	0.133**	(0.054)
Constant	-0.692***	(0.077)
Observations	71,823	
R-squared	0.263	
Number of individuals	20,455	

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1