

Time allocation in Taganrog, Russia.

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Abstract. Data from a time-use survey made in 1997 and 1998 for the city of Taganrog, Russia, is used to analyse the socio-economic determinants of allocation of time and the gender division of housework among married/cohabiting couples. The main objective of this essay is to identify and assess the impact of a range of socio-economic factors expected to influence the gender division of labour and the time devoted to household activities. The reasons why men and women allocate time differently may be ascribed to efficiency aspects, relative bargaining power, normative and/or discriminatory factors. The results of our estimations suggest that variables such as having children (age 0-12), household income and share of labour income affect the time women spend on housework to a larger extent than men. Furthermore, male education seems to affect both men and women, whereas the education of women has little importance. Thus it seems probable that efficiency factors alone do not suffice to explain the gender differences in time allocation. Our results are to a large extent in line with previous research and do not indicate that Russia differs from Western experience more than Western countries differ among themselves. Gender differences in time allocation show the same pattern over countries and regions even if societies may differ in many other aspects.

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1.1 Introduction

In this paper, data from a time use survey undertaken in 1997 and 1998 in the city of Taganrog, Russia, is used to analyse the socio-economic determinants of the gender allocation of time with specific focus on the gender division of housework among spouses. The main objective is to identify and measure the extent of gender differences and interpret these findings in the light of time allocation theories. Time is an important issue for the economist, as it is one of the resources in the production of market and household goods. However, it is a scarce resource that men and women often allocate differently and there is considerable evidence of intra-household differences between genders (see, e.g. Anxo et. al, 2002 and Anxo and Carlin 2004, Gershuny 2003, Thomas, 1990). The reasons for these gender differences are varied and might be related to efficiency considerations, values, norms and preferences, differences in bargaining power, and/or discrimination in the labour market.

To explore intra-household differences within an area such as housework is relevant not only because housework is a time-intensive activity, but also because of its considerable economic value. In 1992, the value of home production was estimated to account for 40-50 per cent of the total production in Western countries, and in less-advanced economies this fraction is presumably even higher (Bonke, 1992). Nevertheless, in several analyses, time spent doing housework is still regarded as leisure time only (see, e.g. Apps, 2003). If comparative advantage and efficiency factors are not the sole determinants explaining the prevailing gender division of housework, the consequences for the economy, in terms of optimal resource allocation may be substantial. Disregarding housework or considering housework to be leisure limits our understanding of labour supply behaviour, earnings development and relative prices. In sum, to reduce household activities to leisure depreciates the social value of the labour devoted to housework and thus also the economic importance of home-produced goods and services for households' welfare. Thereby the status of the person performing the housework may also decrease, thus affecting the relative position within the marriage.

Time-use studies had a long tradition in the Soviet Union. A high rate of female labour participation was combined with a large gender difference in time spent on housework and childcare. In 1988, according to a survey of workers and employees in manufacturing and mining (Goskomostat SSSR 1989), women spent 3 hours and 13 minutes on housework during a workday while men spent 58 minutes.²

By international standards, female employment rates were high in the USSR. Several studies have emphasized that women may be worse off than men on the labour market in transition countries (see, e.g. Funk and Mueller, 1993). This may be due to, e.g. gender differences in lay-offs, fiscal cuts in childcare, substitution of household production for previously subsidised/free services, discrimination and the prestige of having a housewife. In Russia today people may be employed without earning anything due to wage arrears, or they may

² Cited in Katz and Sand (2005)

receive their earnings in non-monetary goods. They may have a job but may not be working due to underemployment, or they may be officially unemployed but have an informal job.

As far as income is concerned, earnings from formal employment constitute only a part of household total income (Manning, 1998). Another important income source is the production of home grown food. Working at a plot (a dacha) in order to sell but primarily to supply one's own household has become commonplace; household own food production amounts to around 40 per cent of Russia's agricultural output (Seeth et al, 1998). Clarke et al (2000) stress, however, that the rich do not have the time to work on a plot and the poor do not have the money, thus the dacha is not a means of survival for the poorest.

In the Soviet Union, not only the government but also various enterprises provided social services and were responsible for the payment of a range of benefits. Especially in larger enterprises, it was common for housing, health care, childcare and pre-schooling to be provided by the employer for a nominal fee or free of charge (Gimpelson and Lippoldt, 2001). Now, the Russian government have relieved enterprises of many formal social responsibilities and the government have also induced campaigns to convince enterprises to reduce their social assets (McAuley, 1998). Although many enterprises have continued to provide some services throughout the transition, by the end of the 1990's most enterprises had divested at least some of their social infrastructure. As a result of the reduction of services (provided by the state and enterprises) during the transition period, the supply of public- and enterprise-based services have been significantly reduced, especially childcare facilities (Gimpelson and Lippoldt, 2001). The situation on the labour market usually affects time allocation and due to intra-household differences, the resulting effect is likely to vary between genders. Thus, differences in time allocation between spouses may be exacerbated in transition countries.

The innovative contribution of this essay is, to some extent, related to the data set. The data contains information from a city situated in a transition country that has never been used to specifically analyse the socio-economic determinant of the gender division of housework and childcare.³ Furthermore, the advantage of this data set is that the information on individuals' time-use is collected for the 24 hours prior to the survey. The survey is then spread out over the year, taking into account the potential seasonal differences in time allocation over the year. Moreover, the estimations provided below will to some extent follow Anxo and Carlin (2004), Beblo (1999) and Hersh and Stratton (1994), who estimate both time spent and the gender share on aggregated housework in some Western countries (France, Germany, Sweden and the US), enabling us to compare the Russian situation to other industrialized countries. Usually, only time spent on housework is analysed, but the gender share is of greatest interest because it not only reflects the prevailing gender division of housework, but also reveals that households that differ substantially in time spent on household activities may nevertheless share and specialise proportionally the same way. In addition, the present study includes both estimations based on aggregate housework and on a separate range of household activities. Since men and women differ notably in what kind of household activities they perform, the dis-aggregation will bring about better information on gender differences.

This essay is structured as follows: In Section 1.2, alternative time allocation theories are presented. In Section 1.3, a review of empirical studies on time allocated to housework is

³ An exception is Katz and Sand 2005.

provided. In Section 1.4, the data, some descriptive statistics and the econometric model are presented. The results of the estimations are presented in Section 1.5. Finally, the last chapter provides some conclusive remarks and summarizes the main findings of this study

1.2 Time allocation theory

The first modern time allocation theory, NHE, new home economics, was developed by Becker (1965) and extended by Gronau (1977). Becker acknowledged that the consumer maximizes utility subject, not only to a budget constraint, but also to a *time* constraint. According to Becker, market goods and services can only generate utility if they are combined with a consumer's time; thus in order to have a meal, time is needed to buy food, prepare the meal and then to dine. Gronau (1977) emphasized the difference between non-market work and leisure, and pointed out that not working in the labour market did not necessarily mean spending time on leisure. The difference in time allocation patterns between spouses is explained by the difference in relative productivity. Wage is assumed to be the shadow price of time. In Gronau's model a distinction is made between market work, leisure and housework and the person maximizes utility Z , which is a combination of goods and services (X) and leisure time (L):

$$\text{Maximize:} \quad Z = Z(X, L) \quad \text{where: } X = X_M + X_H$$

The goods can be bought in the market or produced at home, X_M denotes commodities bought in the market and X_H is the values of goods and services produced at home. Home goods are produced by work at home, H (subject to decreasing marginal utility):

$$X_H = f(H)$$

The maximization of Z is bound by two constraints, the budget constraint and the time constraint:

$$\begin{aligned} X_M &= WN + V \\ L + H + N &= T \end{aligned}$$

W is the hourly wage rate, N denotes hours spent on market work, V other income and T total time. The necessary conditions for an interior optimum are that the marginal household productivities equal the marginal rate of substitution between goods and leisure time and this equals the shadow price of time, W^* , and if the person works in the market it equals the real wage rate, W :

$$\frac{\delta Z / \delta L}{\delta Z / \delta X} = f' = W^* = W$$

Becker later specified his model (1991) and argued that the specialisation of labour and hence allocation of time will occur in all efficient households with more than one person. Output is maximized when the marginal products in the household sector equals the marginal

products in the market sector for those who supply time to both sectors; the division of housework and market work is optimal when the partner more efficient in household production spends time on this while the other partner spends time on market work. Thus, comparative advantage can be defined as the relations between the ratios of the marginal products in the market and in the household between the members of the household. Furthermore, Becker suggests that spouses gain from specialization even if the differences in efficiency are very small. The gain comes from increasing returns to investment in human capital that raise productivity. Hence, the traditional gender-based specialisation is a result of rational specialisation, the underlying assumption being that productivity in market work and housework increases with the time spent on the activity. As NHE implies that equilibrium allocation maximizes the utility of the altruist (generally the man) subject to the family's constraint, it is also called the altruist model.

However, according to Browning et al (1994), the empirical support for the altruist model is rather weak; after all, the household is not one consumer but a collection of different individuals. A multi-person household cannot be treated as a single decision maker. Instead the household allocation should be regarded as the outcome of bargaining between its members, otherwise it contradicts the neoclassical point of departure according to which every individual has his or her own preferences. As an example of this critique, Mc Elroy and Horney (1981) present a game theoretical approach and model the household decision as a Nash-bargaining decision on the assumption that bargaining over x (where x_0 is a public household good, x_1 and x_2 are market goods consumed by the husband and the wife respectively, x_3 and x_4 is the quantity of leisure by the husband and the wife respectively) achieves the Nash solution to a two-person, nonzero-sum game. The couple, m and f , chooses x to maximize the utility gain product function, a special case of the Nash production function:

$$N = [U^m(x) - V_0^m(p_m', I_m, ; \alpha_m)] [U^f(x) - V_0^f(p_f', I_f; \alpha_f)]$$

Each term in brackets is the gain from marriage over the next best alternative, being single; U^k is the individual utility function of the k -th individual and V_0^k is interpreted as the threat point and represents the utility he or she could obtain outside the marriage, (p_m and p_f are market prices, I_m and I_f are the non-wage income, α is a shift parameter and may for example be the female /male ratio in the marriage market). Men often have a stronger bargaining position as they have higher wages, and their post-divorce state is likely to be financially better. This suggests that men will often tend to gain more from marriage and thus perform less housework than women. Furthermore, as men often earn more than women, men can more easily use market goods instead of home-produced goods, which taken together leads to gender differences in time allocation.

However, the theory of NHE has also been criticised for not considering social and institutional factors that generate differences in power in the interaction between family members (see, among others, Phipps & Burton, 1995). Juster and Stafford (1991) stress the role of early socialisation patterns for boys and girls and suggest that this may partly account for differences in labour market activities between adult men and women and thus for time

allocation as well.⁴ In addition, Apps (1982) focuses on discrimination due to social and institutional barriers that crowd women into low-wage occupations. Hersch and Stratton (1994) suggest that gender differences in housework cause differences in wages and not the other way around.

This discussion suggests that efficiency is only one of several aspects affecting gender differences in time allocation. Distortions on the labour market such as discrimination, gender wage gap, norms, bargaining power and efficiency may also have an impact on the gender division of labour. According to the NHE theory, comparative advantages (relative efficiency) will determine the allocation. According to the bargaining theory, the relative power within the marriage, which is affected by the relative income and/or a higher threat point, etc., will decide the intra-allocation of time. It may also be the case that norms and discrimination will have the greatest impact.

Thus, we assume that the individuals in the household maximize utility functions restricted by a budget and a time constraint. The time can be used for household work, market work or leisure. In this essay we focus on housework time and share of housework. In the estimations below, the impact of the explanatory variables will be analysed in light of the theories mentioned above. However, we will not be able to test the theories against each other, but will use them as complements in an attempt to enhance our understanding of differences in time allocation. Even though the bargaining, efficiency and norms may affect people in the same way, the interpretation of the impact of different determinants may differ.

1.3 Previous empirical studies

This section reviews previous empirical studies on time allocated to household work. Malathy (1994) studies the determinants of the amount of time women allocate to different household activities in Madras, India. The major determinant turned out to be women's level of education. A study analysing the situation in Switzerland showed that time spent by men on housework and children is largely invariant to changes in socio-economic factors whereas time spent by women on housework and childcare depend on several social, economic and demographic factors (Sousa-Poza et. al., 2001). Anxo and Carlin (2004) find that in France, the larger the husband's share of labour income, the lower his part of housework time. However, the larger the wife's market hours, the lower his housework time, but the higher his part of housework time. In Germany (Beblo, 1999), the market hours of the wife and the years of education of both spouses had a positive effect on the husband's share of housework. Household income and labour income share had a negative effect. In the US, Hersch and Stratton (1994) find that a high education of the husband and the wife had a positive effect on the husband's share of housework. Children age 7-12 also had a positive effect on the share, whereas children aged 13-17 had a negative effect. Similar to the results in France and Germany, household income and labour income share of the husband had a negative impact on the husband's share of housework in the US.⁵ In Sweden, Anxo, Flood and Kocoglu (2002) find that the higher the share of husbands' labour income, the longer the time the wife spends on housework, and vice versa. The spouse's educational attainment does not affect

⁴ According to Gershuny (2003), time allocation is likely to change over the life cycle by age, experience and changes in family circumstances through the life course. Hours of market work are probably highest in an individual's middle years and schooling will naturally be highest when people are young. Leisure is likely to be concentrated to early and later phases of life.

⁵ It should be noted that sampling methods, econometric methods and definition of housework varies between studies.

the division of housework (it should be noted, however, that childcare is estimated separately and is not included in house work). Children have a significant impact on the wife's housework time only when they are very small, 0-3 years. The husband's share of housework remains almost unaffected by children.

1.3.1 Some previous studies on Russia

In Russia, not only time spent on market work, but also time spent on housework is likely to have changed during the transition. The fall in income during the transition has had a negative impact on consumption and it has probably altered the likelihood of taking on a secondary job and/or investing more labour on home production. The withdrawal of the state brought about expensive childcare and increased unemployment. Furthermore, there has been an increase in informal production and non-monetary payment; the widening of income distribution and increasing inequality are likely to have affected the relative value of home-produced goods compared to market goods. On the other hand, the time needed for shopping has been reduced, due to less queuing. All these changes are likely to affect time allocation.

Regarding time allocation during the Soviet era, there is some information on time allocation in a Taganrog study from 1989, although according to Katz (2001), it must be interpreted with care.⁶ On average men spent 21 hours and women 36 hours per week on housework. Among the working population, men spent 3 hours more on market work (including travel time), and 13 hour less on housework than women did (including activities with children, gardening, maintenance and repairs). Repair and maintenance is the only principally male undertaking.

Regarding changes in the allocation of time in Russia, (Vernon, 2002) based on the RLMS survey, women increased the time spent on childcare by about 1.5 hours/week between 1992 and 1998. The time spent by men on childcare was approximately the same in 1998 as in 1992. In 1992, women performed 41.5 per cent of all market work and 72 per cent of all housework. In 1998 women performed 43.5 per cent of the market work and 78 per cent of the housework. However, total hours of work declined for both men and women, especially the time spent on housework. Overall, both women and men increased the time spent on leisure during this period.

According to Gvozdeva and Gvozdeva (2003) who also analysed the data from the RLMS survey, the weekly time spent on *paid* work in urban areas in 1998 for employed men, was 37.1 hours, and for employed women was 34.9 hours. The weekly time spent on unpaid work was 5.4 hours for employed men and 21.7 hours for employed women.⁷

1.4 Data, descriptive statistics and the econometric model

In the 1960's, Russian researchers chose Taganrog as representing a typical middle-sized Soviet town (Katz 2001), and a number of surveys have been carried out there. According to Katz (2001), it was legitimate to make generalizations from this sample during the Soviet period. Now, however, society is less uniform, especially regarding wages and income, and regional differences in Russia are large. The data should be viewed as an indication only.

⁶ Respondents were asked "How many hours did you spend doing x?"

⁷As mentioned above, in the RLMS survey, the respondents are asked about the time spent the previous week. This is a relatively long period, and it may be hard to remember it correctly.

The data set analysed in this paper comes from a survey performed in Taganrog in 1997/1998. It is based on a household survey carried out on a stratified (as regards living area), random sample of 1000 households where all adults were asked about time use. The survey contains a list of specific activities and the respondents answer questions on how much time they used on a particular activity the previous day, thus a retrospective diary is used. The fact that the respondents only need to remember the previous day's activities is a clear advantage compared to other time surveys such as the RLMS where the respondents report time spent on various activities during the entire previous week. Furthermore, in the Taganrog survey the interviews were spread out over four waves, one in each quarter of the year. Hence, seasonal differences are taken into account; this is important, for example, for activities such as plot work. A problem with time allocation data is that daily variations in time allocation affect the estimates, especially as there is only one interview. However, according to Anxo and Carlin (2004), having only one interview is less severe a problem for housework than for market work, as nil observations is less likely in the former.⁸ Another problem arises because people often do several things at the same time. Different persons may not treat joint activities in the same way and some kinds of "work" can be regarded as pleasure or even leisure for one person, but regarded as work for the other.

In the estimates below, the impact of various socio-economic variables on the dependent variables total housework, male and female share of total housework and different types of housework, will be compared between genders. To be able to interpret the differences across gender, total housework will also be divided into four smaller categories, making it possible not only to compare between gender, but also between various types of housework.

- Childcare (is divided into two kinds of activities, the first is "care for" which entails activities such as feeding, dressing and putting children to bed, etc. The other is "activities with" which entails playing, reading, helping children with homework, etc.).
- Traditional housework (cooking, dishwashing, canning and bottling, cleaning, laundry and shopping).
- Work at the household plot.
- Other housework (repair and maintenance of furniture, houses, dachas, clothes and shoes, cars, electronics and white goods, wood chopping and haircutting.)

Furthermore, male total housework time and the male share of total housework time will be estimated, since the total time devoted to housework for different households may differ substantially, even if the share of time is similar. When taking both time spent and share into consideration, we are likely to get a more precise picture of the time allocation and the bargaining process. Furthermore, by estimating both time and share we will be able to detect whether an increase in, for example, male share is due to fewer hours spent by the woman or by more hours spent by the man on total housework. However, the analysis of the gender share will only be performed for aggregated housework, since for the smaller categories, both spouses in many couples report zero hours.

The following explanatory variables have been retained: age, being retired, educational attainment (own and spouse's), number of children and age of the youngest child, the presence of a multi-generational household, weekday, ownership of a house, total household income for the last month prior to the interview, the male share of labour income,

⁸ We do however have several observations that fill in 0 hours in some activities.

respectively female (i.e. labour income of the man or the woman divided by the household's total income), time spent on market work by the spouse and age differences between the spouses (age of the man – age of the woman) .

Higher age is likely to be related to longer work experience both at home and in the market, and thus with higher productivity. Age may also be linked to more traditional values regarding the gender division of tasks and is likely to affect the time spent with children. Thus, the variable age captures both the effects that are due to the fact of being older, i.e. longer work experience, working less in the market, having older children and grandchildren, etc., but also the effects of having other values than younger people (cohort effect). To be retired is likely to affect the time spent on unpaid work and also to affect the gender division of labour between spouses. In the multigenerational household, the older generation may provide some childcare. Educational attainment is expected to affect time spent on housework through a wage effect. On the other hand, higher education may be related to egalitarian values leading to more equal sharing of housework and market work.

We assume that children are exogenous determinants of the time allocated to housework. Activities related to children are time-intensive. The number of children and the age of the youngest child are likely to affect time spent on childcare, and also the time spent on traditional housework, as more cooking and laundry are needed when the household grows. Children are grouped into four different age groups, depending of the age of the youngest. The need for care and supervision is likely to differ between ages and older children may help out and even decrease adults' household work.

Furthermore, in Russia multigenerational living is rather common.⁹ This may affect work at home in several ways. If members of the older generation work or receive a pension, the total household income increases. If they do not work, their share of unpaid work at home is likely to increase, as they may provide childcare, plot work, etc., thereby allowing younger household members more time to allocate to market work. There may also be some economics of scale regarding cooking, cleaning etc. However, expenditures also increase with more people in the household, as does time needed for unpaid work.

The variable weekday is also included since time spent on housework may differ between weekdays (Monday-Friday) and weekends (Saturday and Sunday), as employed people generally work during the week. The variable ownership of a house is included as ownership may bring about extra work (repair, maintenance, gardening, etc). To own a house in Taganrog may have a negative correlation to income, though many houses in Taganrog are rather poorly maintained.

Total household income for the month preceding the interview and the variable labour income share will also be used in the analysis, since not only the level of income but also the relative income is likely to be important for time allocation.¹⁰ The male/ female share of labour income may be a proxy reflecting both comparative advantage for market work and bargaining power. A high household income may induce more substitutions of home-produced goods and services for market-produced and for machines that facilitate housework. Still, a high income may also be positively related to a larger residence, which is likely to bring about more unpaid work, especially repair and maintenance work.

⁹ 40 per cent of the households in the survey from Taganrog are multigenerational

¹⁰ Unfortunately we do not have the wage variable.

Market work of the spouse is also assumed to be an exogenous variable. This is not in accordance with the original assumptions made by Becker, where hours spent on market work and home production are determined jointly, on the basis of the relative shadow price of both spouses. In the estimations below, only the market work of the *spouse* is included.¹¹ Hence, we assume that market work of the spouse is exogenously determined, i.e. that both spouses in a first stage decide upon the time they want to devote to market work and thereafter decide upon the time they want to spend on housework given hours spent on market work.¹² Finally, differences in age and educational attainment of the spouses are included as they may affect bargaining power, efficiency and values. Large age differences may cause unequal sharing as a relatively large age differential probably reflects differences in human capital, endowment and relative productivity.

1.4.1 Descriptive statistics

The sub-sample analysed in this paper will include all married and cohabiting men and women above the age of 17. There is no upper age limit as there is no pension age in the informal labour market (the formal pension age is 55 for women and 60 for men), but also because we want to assess to what extent ages affect housework. In our sample, originally consisting of 2,869 observations, we are left with 681 married and cohabiting couples, i.e. 681 women and 681 men, totally 1362 observations. In the table below, descriptive statistics are provided.

¹¹ Transport time is included in market work.

¹² The fact that we do not include own market work is related to the time constraint.

Table 1.1. Descriptive statistics:

Variable	Mean for women	Std.Dev. women	Mean for men	Std.Dev. Men
Age	45.95	14.80	48.01	15.07
Age Difference	2.07	4.12	2.07	4.12
Retirement (d)	.36	.48	.32	.47
Multigeneration (d)	.40	.49	.40	.49
Weekday (d)	.74	.44	.74	.44
Number of children	.75	.87	.75	.87
Number of children**	1.38	.65	1.38	.65
Child age 0-3 (d)	.13	.34	.13	.34
Child age 4-6 (d)	.08	.27	.08	.27
Child age 7-12 (d)	.20	.40	.20	.40
Child age 13-17(d)	.12	.33	.12	.33
Education high (d) *	.22	.42	.25	.43
Education medium (d)	.64	.48	.59	.49
Education medium (d)	.14	.35	.16	.37
Education high spouse (d)	.25	.43	.22	.42
Education med. spouse (d)	.59	.49	.64	.48
Education low spouse (d)	.16	.37	.14	.35
Labour income share	.17	.25	.39	.356
Household income/1000	1.215	.80	1.215	.80
House-owner (d)	.17	.37	.17	.37
Market work	3.56	4.69	5.87	5.61
Market work, spouse	5.87	5.61	3.56	4.69
Plot work	.38	1.27	.55	1.71
Traditional housework	4.53	2.54	1.14	1.63
Childcare	1.49	2.68	.66	1.57
Housework total	6.84	4.03	3.47	3.47
Other work	.44	1.12	1.11	2.17
Share of total housework	.70	.25	.30	.25
Share of childcare**	.70	.33	.30	.33
Number of observations	681		681	

(d) =dummy 0-1

* High education means graduation from higher education, generally 15 years. Middle education means unfinished university education, upper secondary school of various kinds, generally 10-14 years. Low education means vocational school (that is not an upper secondary school), comprehensive school, primary school or less, generally less than 10 years in school.

** if children in household, N = 360 women and 360 men

As shown in the table, men are on average slightly older than the women, the mean age differences being around 2 years. Around 32 % of male and 36% of female respondents indicate they are retired. Among the males who are retired, 22% are under age 60 while 10 % of the women who are retired are under age 55, i.e. younger than the statutory retirement age. Regarding education, the gender differences are small, however more men than women have high and low educations. Few people have a low education compared to France and Sweden, for example (Anxo, Flood, Kocoglu Y, 2002). On average men earn more than twice as much as women, but women work only 3.6 hours, while men work 5.9 hours in the market. Conversely, women spend 6.8 hours on housework, while men only spend 3.5 hours. Women do more traditional housework and spend more time with children, whereas men spend more time on other household activities such as repair and maintenance, though only slightly more

time at plot work than women. Forty per cent of couples live in a multigenerational household, and relatively few couples (17 per cent), own the house they live in.

As far as the female share is concerned, women do 41 per cent of the plot-work, 80 per cent of the traditional housework, 69 per cent of the childcare, and 28 per cent of the other work. Altogether, women do around 70 per cent of the housework and 38 per cent of the market work. The corresponding figures from France and Sweden are 70 and 30 per cent, and 60 and 40 per cent, respectively (Anxo, Flood, Kocoglu, 2002). According to Sousa-Poza et al. (2000), women do 65 per cent of the housework in Switzerland. When combining market work with housework, women do approximately 53 per cent of total work in Taganrog. This suggests that women and men work on average the same amount of hours (although women work a little more), and women work more at home than on the market.¹³

According to Katz (2001), in Taganrog in 1989, women spent on average 36 hours and men 21 hours a week on housework, suggesting that women did approximately 63 percent of the housework. Comparing this with western countries implies that women have increased their share of housework which is in line with the figures from RLMS, according to which women did 71.8 per cent of the housework in 1992, but 78 per cent in 1998. Women's share of housework is high according to RLMS which may be due to the difficulty of remembering household time for an entire week. It should also be noted that the RLMS surveys are made late in the year and do not control for seasonal variations.

1.4.2 The econometric model

In our model we assume that household members maximize utility subject to a budget and a time constraint. As mentioned above, we furthermore assume that number of children and hours spent on market work are decided first, and that decisions about time spent on housework are conditional on this allocation. Thus our model is sequential. This is because it is likely that working hours and income level are decided initially, depending on the labour market, choices of living standard, values etc, and that hours spent on housework are decided subsequently. Anxo and Carlin (2004) suggest that one way of justifying the sequential model is by viewing the household as optimising within a life-cycle context where hours of work and number of children during the lifetime are chosen based on the expected development of wages, human capital and wealth accumulation over the life cycle.

Since several individuals do not report participation in certain kinds of household activities, a Generalized Tobit (Tobit Type II) is used. The generalized Tobit model entails a structural equation (preferred hours supply function), an index function (participation in housework), a threshold equation linking preferred and observed hours and finally a stochastic specification. Thus in the Tobit Type II, the decision whether or not to participate in a certain activity is separated from the decision of how much to participate.

1) Structural equation:
$$y_i^* = x_{ii}' B_1 + \varepsilon_i$$

¹³ As regards household appliances, 589 out of 681 households have washing machines in the family, 636 have refrigerators, but only 34 have fans, microwaves, air conditioners or other home electronics items used for housework. 315 have telephones, 18 computers, 516 vacuum cleaners. These figures suggest that the households are reasonably well-equipped.

- 2) Index equation: $d_i^* = x_{2i}' B_2 + v_i$
- 3) Threshold index equation: $d_i = 1$ if $d_i^* > 0$
 $d_i = 0$ otherwise
- 4) Threshold structural equation $y_i = y_i^*$ if $d_i = 1$
 $y_i = 0$ otherwise
- 5) Stochastic equation $\varepsilon_i, v_1 \sim N(0,0,\sigma^2,1, \rho)$

y_i^* stands for the non-observed, latent endogenous variable, preferred hours of household work and y_i denotes the corresponding observed variable, measured hours of household work. x_{2i} and x_{1i} are vectors of explanatory variables, which are assumed to be uncorrelated with the error terms ε_i, v_1 . B_1, B_2 are vectors of parameters. d_i^* is a latent variable that represents binary censoring and d_i is the observed value (1 if the individual reports housework, otherwise 0). Note that the stochastic specification allows for the error terms to be correlated with the correlation coefficient ρ . (Flood, Gråsjö 2001).

We use separate equations for each activity, i.e. one for total housework, one for share of housework, one for childcare, one for plot work, one for traditional housework, and finally, one for other housework, explaining the probability of the activity. As the estimated parameters have no natural interpretation, only marginal effects are reported.

1.5 Results

Table 3.2. displays the estimates of the determinants of hours spent on total housework for women and men. These are followed by estimates of the determinants of the share of housework by men and women. Finally, results from the estimates of time spent on different kinds of housework are presented.¹⁴

¹⁴ It should be noted that the variable household income/1000 is divided by 1000 in all estimates below to take account of the small value of a marginal change of one rouble.

Table 3.2. Determinants of time spent on total housework for women and men.

Housework	Women Marginal effect	Std. Err.	Men Marginal effect	Std. Err.
Age	-.020	.016	-.011	.015
Age difference	.018	.031	-.024	.032
Retired	1.238**	.493	1.283**	.510
Number of children	-.017	.254	.446*	.247
Child age 0-3	4.726***	.639	1.143*	.652
Child age 4-6	3.165***	.699	.618	.690
Child age 7-12	1.986***	.559	-.044	.538
Child age 13-17	1.051*	.542	.290	.571
Multigeneration	-.305	.276	.095	.276
Education high	-.030	.345	.916***	.331
Education low	-.105	.450	-.635*	.372
Education high sp.	.876***	.333	-.132	.324
Education low sp.	-.014	.273	.400***	.013
Labour income share	-5.387***	.610	-2.091***	.531
Total household income	-.503***	.172	.079	.168
Market work spouse	.0436	.027	.014	.034
Own house	.390	.357	.276	.492
Weekday	.413	.291	-.176	.365
Observations	681		681	

*** Significant at 1 per cent, ** significant at 5 per cent *significant at 10 per cent

Log Likelihood Housework men: -1571.344

Log Likelihood Housework women: -1775.16

Regardless of gender, being retired increases time spent on housework. The increase of time devoted to housework might partly be ascribed to an intergenerational reallocation of housework, and partly to the fact that the reduction of income when retired may be compensated to some extent by an increase of home production.

Regarding women, the presence of children (all ages) increases time spent on housework; the effect decreases with increasing age of the youngest child, confirming that young pre-school children need more time. The number of children, however, has no significant effect on women's time spent on housework.¹⁵ These figures can be compared with the figures from Switzerland (Sousa-Poza et al. 2001), where the number of children increases the time spent on housework, though a substantial economics of scale with regard to childcare is also reported. In our results, to be married/cohabiting with a highly-educated man increases the time the woman devotes to housework whereas own educational attainment has no significant effect (medium level of education category is the reference).¹⁶ Thus, female education does not seem to affect time spent by women on total housework. The impact of

¹⁵ We also estimated the impact of housework *without childcare*, and these results suggest that fathers with children aged 4-12 spend *less* time at housework without childcare (while mothers with children aged 0-12 spend more time at housework without childcare). Thus, it seems that male contribution to housework to a large extent is due to childcare. Fathers with many children also contribute more to housework without childcare (but substantially less than they do with housework when childcare is included). Results from these estimates are available on request.

¹⁶ There is a clear tendency for assortative mating, regarding education, in our sample.

relative labour income is high and negatively correlated with total housework. The impact of household income on female housework is also negative, but weaker. These results are partly in line with Gronau (1977), who suggested that an increase in the market wage rate decreases time spent on housework whereas a rise in other household income increases leisure and mainly decreases market work.¹⁷

The results for men differ somewhat from those for women. As in Sweden (see Anxo et al., 2002), only young pre-school children (0 to 3 years) increase the time the husband spends on housework, albeit substantially less than for women. On the other hand, the number of children has a positive effect, suggesting that men contribute more to household activities when the number of children increases. These results can be compared with France (Anxo and Carlin, 2004) or Switzerland (Sousa-Poza et al. 2001) where the presence of children does not affect men's allocation of time spent on housework at all. Furthermore, in our estimates, a high education of the man increases the time spent on housework; however, as mentioned above, it also increases the time spent by the *woman* on housework. This suggests that in households where the man is highly educated, both men and women spend more time on housework. This may have to do with possession of a greater number of appliances that need repair, maintenance and care, but also due to more time spent on children by the highly-educated man. This is partly in line with Sousa-Poza et al. (2001) who find that high levels of education increase the male's time spent on housework and childcare. Our figures may also be compared with the figures from France, where the husbands of wives with high educations spend more time on home production (Anxo and Carlin, 2004). In our results, however, a high education of the woman does not affect time allocated by the man. A high share of income decreases the time spent by men on housework, but the impact is smaller compared to women.

Overall, fewer variables showed a significant effect for men, and the marginal effects are generally weaker. This is in line with the results of Sousa-Poza et al. (2001), who concluded that men are less affected by socio-economic variables than women. According to Apps and Rees (2003), time allocation studies show that the arrival of a child leads to a relatively larger fall in mother's leisure. In line with this, we would expect the presence of children to increase the housework time for both mothers and fathers, albeit less for fathers; our results confirm this. Hence, in several respects, our results are in accordance with the results obtained in previous research.

¹⁷ Note however that Gronau discusses other household income and not total household income.

To further explore the relationship between time allocation and gender, we estimate the male share of housework time. Table 3.3. below displays the results of our estimations.

Table 3.3. Male share of total housework.

Share, men	Marginal effect	Std. Err.
Age	-.001	.001
Age difference	.000	.002
Retired	.088**	.036
Number of children	.034**	.017
Child age 0-3	-.011	.042
Child age 4-6	-.041	.043
Child age 7-12	-.046	.037
Child age 13-17	.019	.038
Multigeneration	.023	.019
Education high	.043*	.023
Education low	-.030	.031
Education high sp.	-.012	.024
Education low sp.	.034	.035
Labour income share	-.150***	.036
Total household income	.008	.012
Market work spouse	.015***	.002
Own house	.027	.024
Weekday	-.021	.020
Observations	681	

*** Significant at 1 per cent, ** significant at 5 per cent *significant at 10 per cent
Log Likelihood Male share of total housework: -190.985

As shown by Table 3.3, being retired increases the relative contribution of husband by 9 per cent. At first sight, our results suggest that retired men exhibit more egalitarian values concerning the gender division of housework. However, if both spouses are retired, the husband's share actually decreases¹⁸. Thus, the increase in the relative contribution of the retired husband is mainly due to the wife still working. The number of children positively affects the male share of housework. This might reflect the fact that fathers of many children have family-oriented preferences and are thereby inclined to devote more time at home.¹⁹ High educational attainment of the husband also has a positive impact on its relative contribution to housework. This suggests that for males, high educational attainment might be associated with more egalitarian values. The education of the woman has no effect on the male share, however. As expected, a higher male share of labour income has a negative effect on husband's relative contribution to housework while an increase of female market work has the reverse effect. A positive effect of the market hours of the wife has also been reported in France (Anxo and Carlin 2004) and Germany (Beblo, 1999). In France, Germany and the US (Hersch and Stratton, 1994), an increase of husband's share of total household income reduced his relative contribution to housework.²⁰ Thus, our results are similar to previous

¹⁸ Results available on request.

¹⁹ It may also be true that women living with more "egalitarian" men are more prone to have more children. However, this explanation implies that the number of children is endogenous.

²⁰ As mentioned above, definitions, methods and sampling procedures differ between studies. As an example, in the analysis from the US, Germany and France, childcare was not included in housework.

studies in several respects. However, total household income negatively affects the male share in France, Germany and the US, a result that differs from our results for Taganrog.

Generally, men are less sensitive than women to changes in socio-economic variables. Furthermore, it is interesting to note that a high education of the woman has no effect on time spent or time share, whereas a high education of the man has a large impact on male relative contribution to housework and also on the time both spouses spend on housework. Note also that the impact of household income is insignificant for men. Women are thus more sensitive to variation of total household income than men.²¹ However, even though the aggregate results reported above yield valuable information, a deeper analysis of the gender division of housework requires a decomposition of housework into sub categories.

Table 3.4. Determinants of total hours of childcare and plot work for women and men.

	Childcare, women Marg. Eff.	Std. Err.	Childcare, men Marg. Eff.	Std. Err.	Plotwork women, Marg. eff.	Std. Err.	Plotwork men, Marg. Eff.	Std. Err.
Age	-.030***	.006	-.008***	.003	.008	.005	.017**	.007
Age difference	-.001	.017	.010	.010	-.003	.009	-.040***	.014
Retired	.910***	.049	.393**	.196	.003	.140	-.061	.207
Number of children	-.052	.091	.042	.044	.079	.070	.017	.099
Child age 0-3	5.753***	.124	2.979***	.177	-.256**	.108	.021	.287
Child age 4-6	4.299***	.105	2.759***	.445	-.100	.181	.119	.397
Child age 7-12	2.768***	.288	1.467***	.244	-.097	.131	-.118	.193
Child age 13-17	1.807***	.356	.966***	.283	-.129	.114	-.316**	.130
Multigeneration	-.378***	.144	-.150*	.083	.130	.086	.172	.122
Education high	.0704	.185	.199*	.117	-.057	.100	.262	.179
Education low	.617	.465	-.152	.130	.019	.122	-.283**	.135
Education high sp.	.077	.183	-.011	.095	.091	.117	-.250**	.122
Education low sp.	-.546*	.307	-.146	.145	-.020	.096	.290	.255
Labour income share	-1.125***	.304	-.434***	.136	-.616***	.219	-.396	.244
Total household inc.	-.065	.088	-.067	.053	-.043	.050	.097	.065
Market work spouse	.020	.013	-.006	.008	.003	.008	.013	.014
Own house	-.111	.179	-.096	.094	.546***	.157	.221	.163
Weekday	.140	.155	-.006	.086	-.029	.090	-.247	.146
Observations	681		681		681		681	

*** Significant at 1 per cent, ** significant at 5 per cent *significant at 10 per cent

Log Likelihood Childcare men: -571.6043

Log Likelihood Childcare women: -840.4895

Log Likelihood Plot-work men: -470.6511

Log Likelihood Plot-work women: -380.4895

Concerning time spent on childcare, it is interesting to note that both retired men and retired women clearly contribute to childcare in Russia. Both men and women are also positively affected by the age of the youngest child; the effect decreases with the age of the child, as older children generally need less care. Independent of gender, an increase of the spouse's

²¹ To men, a large amount of the total household income is probably dependent on their own working time, to women however the causality is not clear.

labour income reduces the time devoted to children which can be ascribed to either comparative advantage or bargaining factors. A couple living in a multigenerational household also reduces the time they devote to children, reflecting the childcare implication of the older generation. Furthermore, women living with low-educated men spend less time on childcare. A low education of the man is correlated with a lower number of children (see Appendix), and maybe also with certain values regarding upbringing that are connected with less time spent on childcare. A low-educated man, because of low earnings and lower attachment to the labour market, may also induce the woman to work more and therefore spend less time with childcare. For men, high educational attainment has a positive effect on time devoted to children. As can be seen in the appendix, high education is positively correlated with number of children.

Regarding plot work, men are positively affected by age and women by ownership of a house. It may be that older people are more likely to have inherited or purchased a plot and the necessary tools with which to work on it. The reason why age is only significant for men and not for women may partly be because retired women do more childcare (and thus have less time for the plot than men, see Table 3.4). To own a house may include owning a piece of land or a garden, as well. It appears that women are more prone to work on a plot if it is connected to the house, whereas men work on plots that are separated from the residence. Furthermore, women are also negatively affected by their share of labour income. Men, on the other hand are also affected negatively by age differences, which may be due to the bargaining effect. Household income has no effect, thus plot work does not seem to be a way to counteract the effect of low household income on consumption. This result reminds us of the findings of Clarke et al (2000) mentioned in the introduction, that the rich do not have the time to work on a plot and the poor do not have the money, thus plot-work is mainly done by the middle class. Furthermore, men are affected negatively by low education and also by high education of the spouse. Since education is correlated to income, this may also be related to the findings of Clarke et al (2000).

Table 3.5. below, shows the estimates for traditional housework and other work.

Table 3.5. Traditional housework and other work for women and men.

	Traditional Housework Women Marg. eff.	Std. Err.	Traditional Housework Men, Marg. eff	Std. Err.	Other Work Women Marg. eff.	Std. Err.	Other Work Men Marg. Eff.	Std. Err.
Age	-.001	.012	-.008	.007	-.026	.021	-.007	.010
Age difference	.023	.022	-.015	.014	-.042	.055	.006	.022
Retired	.752**	.356	.930***	.263	-.322	.399	.112	.322
Number of children	.062	.182	.088	.114	-.134	.192	.381**	.188
Child age 0-3	.289	.457	-.298	.252	-.562	.547	-.766***	.295
Child age 4-6	.379	.489	-.316	.262	-.132	.436	-.717**	.286
Child age 7-12	.581	.394	-.259	.230	.058	.439	-.518	.334
Child age 13-17	.322	.383	.020	.239	-.176	.367	.159	.389
Multigeneration	-.159	.226	-.115	.123	.136	.271	.246	.183
Education high	-.035	.244	.079	.153	.128	.312	.376*	.228
Education low	-.284	.316	-.007	.198	.274	.357	.018	.288
Education high sp.	.402*	.246	.193	.163	-.238	.301	-.130	.213
Education low sp.	.166	.194	.074	.224	.041	.326	-.174	.282
Labour income sh	-2.748***	.435	-.261	.234	-.214	.454	-.789**	.342
Total household inc	-.306**	.127	-.025	.077	.001	.148	.029	.112
Market work sp.	.027	.020	.022	.014	-.056**	.023	-.013	.019
Own house	.130	.253	.224	.165	-.309	.276	.011	.226
Weekday	.278	.207	-.308**	.140	-.247	.511	.346**	.175
Observations	681		681		681		681	

*** Significant at 1 per cent, ** significant at 5 per cent *significant at 10 per cent

Log Likelihood Traditional housework, men: -977.4431

Log Likelihood Traditional housework, women: -1583.544

Log Likelihood Other work, men: -899.0313

Log Likelihood Other work, women: -755.655

For women, the time devoted to traditional housework is negatively related to the share of labour income and also to household total income. Thus working more at home may be a way for women to compensate for a low income (or women may have a low income because they work at home to a large extent). Women also spend more time on traditional housework when married (cohabiting) with a highly educated man. Men, however, are affected negatively by weekday. This is not very surprising as men work more on the market and this normally takes place during the week, hence men do more traditional housework during the weekends. As mentioned above, the increase of time devoted to housework by retired individuals might partly be ascribed to an intergenerational reallocation of housework, and partly to the fact that the reduction of income when retired may be compensated for (to some extent) by an increase in home production.

Men devote more time to other work than women do and women are affected negatively only by market work of the spouse. Thus if the husband does more market work, the women do *less* other work. This seems a bit puzzling but may be explained by the fact that if the spouse works a lot, there is simply less time for the woman to do “other work” as she is occupied with other types of housework. High education has a positive effect on men. This confirms that men with higher educations do more “other” housework, which may be due to owning more products that need repair and maintenance or due to values connected with education. Furthermore, labour income is negatively connected with other work, for men. Men are also

affected positively by week day, thus other work is performed mainly during the week. It is notable that the impact of household income seems to be insignificant for both men and women. Men are affected negatively by the presence of small children but positively by number of children. The latter may perhaps be due to needing to repair of children's equipment, clothes, instruments, electronics, etc.

3.6 Conclusion

The results of our estimations reveal clearly that men's and women's housework is affected differently by socio-economic factors. Men are more sensitive to changes in socio-economic variables regarding other work and plot work, but frequently the impacts of the variables are stronger for women.

The relative income of men and women turns out to be significant in all estimates except for plot work and traditional housework for men and other work for women, as expected from the efficiency theory and bargaining models. A variation of relative income affects time spent on housework for women significantly more compared to men. It is also worth noting that household income has no significant impact on men's behaviour, but significantly reduces the time women spend on total housework and on traditional housework. Increasing home production seems to be a way for women to compensate for low household income. As mentioned above, second jobs in Russia are held mainly by men. There are therefore grounds to presume that men compensate for a low income by working extra outside the home whereas women work at home.²²

Female educational attainment matters only for male plot-work (where a low education of the spouse significantly *decreases* the time spent on this activity), and for male total housework (where a low education of the spouse significantly *increases* the time spent on this activity). High education of the women had no effect on time allocation. This is interesting, especially since Russian women are on average well-educated. In contrast, male education is shown to be important for both men and women in several estimates, suggesting that female education is of substantially less importance regarding bargaining or efficiency. As it is unlikely that highly educated men and women should differ substantially in work efficiency (men and women do have different salary though), other explanations for the different impacts of education could be norms and differences in power or bargaining power between spouses. A high education of the man increases time spent by both men and women on housework and increases men's share. This indicates that more housework is produced in households where a highly educated man is present, and that on average the gender division of housework is more evenly distributed in highly educated couples. High educational attainment increases the man's time spent on childcare and other household activities; the former may suggest that egalitarian values are positively associated with high education, and the latter may suggest that high education is correlated with a higher likelihood of owning equipment that needs repair and maintenance. Overall, the variable differences in age had no/little importance.²³

Several variables have differentiated impact on share and time spent on housework. Although men are relatively less influenced by the presence of children, the number of children increases the time spent on housework, the male share of total housework and also the time

²² It was mentioned above that workers who have experienced wage arrears, involuntary leave, or work less than full time are more likely to take on a second job. (Foley, 1997).

²³ The effects of different age-groups were also estimated and were seen to be somewhat larger than the effect of age, but there were no differences in significance

spent on other work. Market work of the spouse affects the share of total housework (positively) for men, but not the hours spent on housework.

Generally, the variables have a larger impact on women than on men. As determinants such as share of income, household income, education and education of the spouse affect men and women differently, it seems probable that the efficiency theory does not suffice to explain the gender differences. Thus, other theories have to be mobilised as complements. To disentangle the effect of bargaining power, norms and institutions is probably an impossible task; they are all likely to be interrelated. Our results are to a large degree in line with previous research and they do not indicate that Russian experience differs from Western experiences more than Western experiences differ among themselves.²⁴ Gender differences in time allocation show the same pattern over countries and regions even if societies may differ in many other aspects.

²⁴ Sweden is in this regard, an exception (see Anxo et al., 2002)

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