DISCUSSION PAPER SERIES

IZA DP No. 7246

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February 2013

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

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IZA Discussion Paper No. 7246
February 2013

ABSTRACT

Do Parents Drink Their Children's Welfare? A Joint Analysis of Intra-Household Allocation of Time*

The aim of this paper is to investigate whether excessive parental alcohol consumption leads to a reduction of child welfare. To this end, we analyse whether alcohol consumption decreases time spent by parents looking after their children and working. Using the Russia Longitudinal Monitoring Survey, the study focuses on mono-nuclear families with children under fifteen years of age, for whom we estimate a model of intra-household allocation of time. We find that husbands' alcohol consumption has a negative impact on their weekly hours spent doing child care, while no significant effect is observed for mothers' alcohol consumption. We interpret these findings as evidence of a negative impact of fathers' alcohol consumption on child welfare.

JEL Classification: D1, I1, J13, J22

Keywords: child care, time allocation, alcohol consumption, labor supply, Russia

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* The authors thank Tindara Addabbo, Olga Lazareva, the participants to the XXVII National Conference of Labor Economics (AIEL), and the participants to the 26th Annual Conference of the European Society for Population Economics for their useful comments and suggestions. Lucia Mangiavacchi and Luca Piccoli acknowledge financial support from the Spanish Government (Grant ECO2011-28999).

1 Introduction

It is a widely recognized fact that excessive alcohol consumption is a major risk factor for morbidity and mortality. Higher morbidity and mortality rates, however, are not the only negative consequences of alcohol addiction. Alcoholism is also known as a family disease, since it may lead to serious health and socio-economic problems, not only in the short-run, but also in the long-run, through the transmission of its harmful effects to offspring. Parental alcoholism may negatively affect children in several ways. Many children of alcoholics have common symptoms such as low self-esteem, loneliness, guilt, feelings of helplessness, fears of abandonment, and chronic depression (Berger, 1993; Chatterji and Markowitz, 2001). Unfortunately, these and more dramatic consequences, such as violence, psychological annihilation, and love deprivation, are difficult to be measured through general purpose socio-economic surveys.

One of the viable ways of studying the effects of parents' alcohol consumption on children is through parents' time-use. This is possible thanks to the increasing availability of more detailed data on the use of time in general purpose surveys. We argue that a negative impact of excessive alcohol consumption of child care time would imply a welfare loss for the child.

Spouses' allocation of time has been treated jointly since Chiappori (1988, 1992) while time dedicated to domestic work has been endogenised since Gronau (1977), Grossbard-Shechtman (1984), Kooreman and Kapteyn (1987) and Apps and Rees (1996), that extended the original time use model proposed by Becker (1965). In the recent empirical literature, it is a common practice to disentangle child care time from domestic work.[1]

Studies on the determinants of parental child care have been mostly based on systems of simultaneous equations for market work and child care time of individuals, as in Kalenkoski et al (2005, 2007, 2009), mainly using the American Time Use Survey and the U.K. Time Use Study. Kimmel and Connelly (2007) include both domestic work and child care. They use data for the U.S. to estimate a four-equation system in which the dependent variables are the minutes used in home production, active leisure, market work, and child care of mothers. Their main finding is a substantial positive wage elasticity for care time, while both leisure and home production time decline with increased wages.

A strand of literature studies one partner's choices conditioning on spouse's decisions, distinguishing between different activities and modeling them jointly. Powell (2002), for example, examines the impact of child care prices and wage rates on the joint employment and child care decisions of married mothers in Canada. She finds that wages have a positive impact on the probability of choosing any of the working states and that child care prices for center, sitter, and relative care reduce the probability of working and using each respective mode of care. Connelly and Kimmel (2009) extend the model proposed by Kimmel and Connelly (2007) considering the effect of spouse's characteristics on time devoted to leisure, child care, and home production of married mothers and fathers. Their results show little effect of one spouse on the unpaid time use of the partner, while the relative wage does not affect time use choices. On Russia, Lokshin et al (2000) and Lokshin (2004) focus again on mothers, modeling simultaneously household demand for child care, mothers' labor force participation and mothers' working hours. Both studies do not restrict the sample to simple households, so the inclusion of multi-nuclear families implies the need to control not only for the wage of the husband, but also for the average wage of all other members. Their results show that mothers' labor force participation and working hours are responsive to changes in the price of child care and hourly wages. Additionally, Lokshin (2004) evidences the ineffectiveness of family

[1] For the conceptual definition of child care in time use surveys, see Folbre and Yoon (2007).

allowances transfers on a household's choice of child care arrangements.

In a growing number of studies both female and male partners' choices regarding the different types of activities are modeled jointly. Child care time allocation is substantially different between spouses,[2] and, since female and male child care times are not orthogonal, they should be modeled jointly. Hallberg and Klevmarken (2003), for example, develop a simultaneous equation framework for child care and market work. Using panel data for Sweden, they find that a change in the mother's working hours has less influence on the parents' time with their children than a change in the father's working hours. Using a similar methodology, Garcia-Mainar et al (2011) estimate a joint model of parental child care time for five European countries. Bloemen et al (2010) analyze simultaneously the time allocated by husband and wife to market work, child care and housework in Italy. They find that spousal time allocation is sensitive to personal and household characteristics, such as education and children's age. Men married to more highly educated women spend more time with their children and husband's own characteristics have little effect on wives' time allocation.

In this article we propose a model similar to Bloemen et al (2010) to test the effects of parental alcohol consumption on child care time. To our knowledge, this is the first study to address the problem of the effects of excessive alcohol consumption on the allocation of time within the household. So far, the economic literature has focused on the effects of alcoholism on individual labor market outcomes, mainly on U.S. data, finding an unclear effect of alcohol abuse on labor supply. For instance, Mullahy and Sindelar (1991) and French et al (1998) explore respectively gender differences in labor force participation in response to alcoholism and alcohol abuse on the labor supply of young men. Interestingly, Hamilton and Hamilton (1997) find that moderate alcohol consumption leads to higher earnings relative to abstention, while heavy drinking leads to reduced wages relative to moderate drinking. More recently, and again on U.S. data, Feng et al (2001) find that problem drinking has a negative but non-significant impact on employment for women, and a positive and significant impact for men, suggesting the importance of modeling the impact of alcohol consumption on labor supply decisions separately for males and females. French et al (2011) find that alcohol misuse is significantly related to employment problems, suggesting that the transmission mechanism that links alcohol consumption and labor supply works through a conflictive behavior between supervisor and colleagues.

Russia is a particularly interesting setting to study the socio-economic consequences of drinking abuse. Alcohol consumption was the third leading cause of death during the Soviet regime (Baltagi and Geishecker, 2006), and is one of the main causes of increased mortality during the transition decades (Brainerd and Cutler, 2005). Tekin (2004) has exploited the Russia Longitudinal Monitoring Survey (RLMS-HSE) to estimate the effects of alcohol consumption on employment and wages for males and females during transition. His estimates reject the hypothesis of an inverse U-shaped relationship between alcohol consumption and employment outcomes found in Hamilton and Hamilton (1997). Instead, the impact of alcohol consumption turns out to be not significant for labor supply and positive and linear for both male and female wages.

Our paper uses a sample of households drawn from the RLMS-HSE to investigate whether alcohol consumption reduces time parents dedicate to child care, thus changing the intra-household allocation of time in an unfavorable way for children. In line with recent advances in household economics, we analyze the time use decisions of partners under the assumption that the allocation of time of household members among different activities is jointly determined. We estimate a SUR Tobit system using Full Information Maximun Likelihood, accounting for a possible correlation of

[2] See Garcia-Mainar et al (2011), and Giannelli et al (2012) for a recent cross-country comparison of intra-household allocation of child care and domestic work time.

the errors among time use decisions and between husband's and wife's equations.

Our results suggest that father's alcohol consumption reduces the time he devotes to child care, while no effects are observed for mothers' alcohol consumption. We interpret this finding as evidence of a negative impact of fathers' alcohol consumption on child welfare.

The paper is structured as follows. Section 2 outlines the theoretical framework, Section 3 describes the empirical specification, while data and variables used are presented in Section 4. Section 5 discusses the results, and Section 6 concludes.

2 Theoretical underpinning

A bulk of literature, starting from Grossbard-Shechtman (1984) for marriage market models and Apps and Rees (1996) within for the collective framework, have formulated utility models that account for both the multi-person nature of many households and the inclusion of household production. In these models time allocation decisions of male and female partners are jointly determined as well as the allocation of time among the different types of activities.

The model proposed here sets in this stream of literature and presents three main features: i) child care time is included as a separate time use category as in Kimmel and Connelly (2007) and Connelly and Kimmel (2009), ii) husbands' and wives' time use are jointly determined as in Bloemen et al (2010), and iii) alcohol consumption is included as an exogenous variable to test its impact on individuals' allocation of time and on intra-household distribution of market and domestic work.

Theoretically, as postulated by Becker (1981), parents have altruistic preferences towards the other family members.This assumption amounts to include partner's and child's utilities among the arguments of each parent's utility function. In particular, parents have the following altruistic utility functions:

$$\begin{aligned} U_m &= U_m(t^l_m, z^a_m, U_f, U_c) \\ U_f &= U_f(t^l_f, z^a_f, U_m, U_c) \\ U_c &= U_c(z^c) \end{aligned} \tag{1}$$

where m and f represent female and male partners, t^l is leisure time, z^a is a composite consumption good consumed by each adult (such that $z^a_m + z^a_f = z^a$), produced as a combination of household production time of the two partners and of intermediate goods and services purchased in the market $z^a = g(t^d_m, t^d_f, \mathbf{x})$. z^c is a composite consumption goods consumed by the children and produced as a combination of child care time of the two partners and goods and services purchased in the market $z^c = g(t^c_m, t^c_f, \mathbf{x})$. It follows that each parent's utility can, without loss of generality, be rewritten as:

$$U_i = U_i(t^l_m, t^l_f, z^a_m, z^a_f, z^c). \tag{2}$$

Assuming that the adults take the responsibility of the child's maximization problem, they maximize household utility subject to their own time constraints and to the household budget constraint:

$$\begin{aligned} T_m &= t^w_m + t^d_m + t^c_m + t^l_m \\ T_f &= t^w_f + t^d_f + t^c_f + t^l_f \\ w_f t^w_f + w_m t^w_m + v &= \mathbf{p}'\mathbf{x} \end{aligned} \tag{3}$$

where w, d, c and l are time use categories (market work, domestic work, child care and leisure respectively), v is household non-labor income, and $\mathbf{p}'\mathbf{x}$ is household expenditure on market goods. It is worth noting that such set-up is general and embraces both unitary and collective decision models depending on how household utility is specified. The solution of the model yields the supply functions of the uses of time for both partners:

$$t_i^k = t_i^k(w_i, w_j, v) \tag{4}$$

where, for each individual ($i = m, f$) each time use category ($k = c, d, w, l$) depends on wages (w_i and w_j), household non-labor income (v) and the structure of preferences.[3] Family and personal characteristics, indeed, can be included in the time use functions as preference factors.

The system defined by the market work, domestic work and child care equations for each partner (leisure equations are excluded for collinearity), as previously stated, is potentially compatible with a collective specification (see, for example, Bourguignon, 1999; Mangiavacchi et al, 2010; Dunbar et al, 2013). However, since in the data there are no child exclusive goods (for parents we could use the respective leisure times), it would be impossible to identify the child sharing rule. Thus, the use of a collective model would imply a useless excess burden, at least for the aims of the paper.

As detailed in the next section, our empirical strategy is to estimate the reduced form equation system (4). Even though this strategy does not allow us to fully recover the structural parameters of preferences, and, in particular, the sharing rule of the family members, it still allows us to determine the impact of an exogenous variable on the time use equations. In our context, child care time directly affects child welfare, and, by consequence, what affects child care time, also affects child welfare. The child's utility depends on the amount of good z^c that the child consumes, which, in turn, have child care time among its production factors. By assumption, in fact, the time devoted to child care has a strictly positive productivity: a larger amount of time input increases z^c. In turn, z^c has a strictly positive marginal utility for the child. This implies that an exogenous variable that significantly reduces child care time, also significantly reduces z^c. However, since z^c also depends on purchased goods $\mathbf{x}$, a parent might renounce to some child care time in favor of market work time, thus increasing child utility by increasing expenditure on $\mathbf{x}$. However, if an exogenous variable negatively affects both child care time and market labor time of one partner, without affecting the other partner's allocation of time, then there would be a clear negative impact on child welfare. We apply this line of reasoning to understand the transmission mechanisms of the effects of alcohol consumption on child welfare.

3 Empirical Strategy

The empirical specification of the system of equations (4) involves considering several factors to avoid biased estimates. Each time use equation is left censored, since, for some individuals, the minimum amount of child care, domestic work or market work is zero. A suitable econometric model in this case would be a type-1 Tobit (Amemiya, 1985). This specification, however, may be problematic. In fact, non-workers' potential wages must be estimated, and the empirical literature widely recognizes the possibility of a sample selection bias. One solution is to estimate wages

[3]Note that the solution of the maximization problem would also provide Marshallian demand functions for market goods, provided that goods expenditure and prices are observed and that a household production technology is assumed. In that case, time use function should also depend on market price of goods. In our empirical setting, however, market good expenditures and prices are not available and $\mathbf{p}'\mathbf{x}$ is treated as an endogenously determined total household expenditure and prices are not included in the time use equations.

independently for men and women in a first stage using a Heckman selection model (Heckman, 1979). Moreover, estimating the wage equations using a Heckman selection model implies estimating a labor participation equation. So, labor supply equations in (4) could as well be estimated more precisely if estimated jointly with this labor participation equation. This is possible using a system in which one participation equation is used by two different equations, namely the wage and labor supply equations. Finally, our theoretical model requires the reduced form equations to be estimated jointly, allowing for possible correlation among the error terms. In fact, since our unit of observation is the family, we have to take into account that the amount of time devoted to one activity by one individual not only depends on time spent in other activities, but also on time spent in this and other activities by his/her partner. For example, the mother's child care time will depend on her market work status (being on leave, part time or full time, and so on), but also on her husband's market work: if he works more hours in the market, she might do more child care, and vice-versa.

In sum, our empirical specification is a SUR consisting of four equations for the partners' child care and domestic work (specified as type-1 Tobit, since almost all individuals participate in these activities, so that the number of censored observations is reasonably small), and six equations for the partners' labor participation, labor supply and wages (specified as type-5 Tobit). Each partner has five equations two of which are for child care and for domestic work and are specified as:

$$\begin{aligned} t_i^{k*} &= \beta_0 + \beta_{w_i} w_i + \beta_{w_j} w_j + \beta_v v + \beta'_{P_i} \mathbf{P_i} + \beta'_{F_i} \mathbf{F} + u_{i,k} \\ t_i^k &= t_i^{k*} \text{ if } t_i^{k*} > 0 \\ t_i^k &= 0, \text{ otherwise,} \end{aligned} \tag{5}$$

with $i, j = f, m$ indicating the partner, either female (f) or male (m), and $k = d, c$ representing domestic work (d) or child care (c);[4] and three of which are for labor market participation, labor supply and wage, and are specified as:

$$\begin{aligned} d_i^* &= \beta'_{X_i} \mathbf{X_i} + e_i \\ w_i^* &= \beta'_{Z_i} \mathbf{Z_i} + v_i \\ t_i^{w*} &= \beta_0 + \beta_{w_i} w_i + \beta_{w_j} w_j + \beta_v v + \beta'_{P_i} \mathbf{P_i} + \beta'_{F_i} \mathbf{F} + u_{i,w} \\ d_i &= 1 \text{ if } d_i^* > 0 \\ d_i &= 0 \text{ otherwise} \\ t_i^w &= t_i^{w*} \text{ if } d_i^* > 0 \\ t_i^w &= 0, \text{ otherwise} \\ w_i &= w_i^* \text{ if } d_i^* > 0 \\ w_i &= 0, \text{ otherwise,} \end{aligned} \tag{6}$$

with the dummy d_i^* indicating the participation equation, w_i^* the wage equation and t_i^{w*} the labor supply equation for member i.

The exogenous variables, presented in the next section, include economic variables, such as partners' potential wages and non-labor income, and other individual and household characteristics, including our variable of interest, namely, alcohol consumption of each partner.

The whole system is composed by 10 equations: 6 for the use of time (market work, t_i^w, domestic work, t_i^d and child care, t_i^c, for $i = m, f$), 2 labor market participation equations and 2 wage

[4] To avoid notation abuse we do not index observations.

equations. The resulting error structure is a bit more complex than a standard SUR. The error terms are drawn from a multivariate normal distribution with zero mean and a 10x10 covariance matrix, correlation between the error terms is allowed between time-use equations and own-wage equations, but participation equations are allowed to be correlated only with their own labor supply and wage equation. So, just to be clear, correlation is not allowed between female labor market participation and male wage, or between male labor market participation and male child care time. Correlation is allowed for all other equations, so, for instance, the error term in the female wage equation may be correlated with the error term in the female domestic work equation.

The covariance matrix, thus, takes the following form:

$$
\begin{array}{cccccccccc}
\sigma^2_{u_{m,c}} & \sigma_{u_{m,c},u_{f,c}} & \sigma_{u_{m,c},u_{m,d}} & \sigma_{u_{m,c},u_{f,d}} & \sigma_{u_{m,c},u_{m,w}} & \sigma_{u_{m,c},u_{f,w}} & 0 & 0 & \sigma_{u_{m,c},v_m} & 0 \\
 & \sigma^2_{u_{f,c}} & \sigma_{u_{f,c},u_{m,d}} & \sigma_{u_{f,c},u_{f,d}} & \sigma_{u_{f,c},u_{m,w}} & \sigma_{u_{f,c},u_{f,w}} & 0 & 0 & 0 & \sigma_{u_{f,c},v_f} \\
 & & \sigma^2_{u_{m,d}} & \sigma_{u_{m,d},u_{f,d}} & \sigma_{u_{m,d},u_{m,w}} & \sigma_{u_{m,d},u_{f,w}} & 0 & 0 & \sigma_{u_{m,d},v_m} & 0 \\
 & & & \sigma^2_{u_{f,d}} & \sigma_{u_{f,d},u_{m,w}} & \sigma_{u_{f,d},u_{f,w}} & 0 & 0 & 0 & \sigma_{u_{f,d},v_f} \\
 & & & & \sigma^2_{u_{m,w}} & \sigma_{u_{m,w},u_{f,w}} & \sigma_{u_{m,w},e_m} & 0 & \sigma_{u_{m,w},v_m} & 0 \\
 & & & & & \sigma^2_{u_{f,w}} & 0 & \sigma_{u_{f,w},e_f} & 0 & \sigma_{u_{f,w},v_f} \\
 & & & & & & \sigma^2_{e_m} & 0 & \sigma_{e_m,v_m} & 0 \\
 & & & & & & & \sigma^2_{e_f} & 0 & \sigma_{e_f,v_f} \\
 & & & & & & & & \sigma^2_{v_m} & \sigma_{v_m,v_f} \\
 & & & & & & & & & \sigma^2_{v_f}
\end{array}
$$

where σ_i^2 indicates the variance of error terms, and $\sigma_{i,j}$ indicates the covariance between two error terms, with $i, j = u_{m,c}$, $u_{f,c}$, $u_{m,d}$, $u_{f,d}$, $u_{m,w}$, $u_{f,w}$, e_m, e_f, v_m, v_f.

The system is estimated by Full Information Maximum Likelihood using the aML statistical software.[5]

It is worth stressing that, in our model, parents' attitude towards alcohol may be endogenous. One weakness of our analysis is that we were not able to find a suitable instrument to apply an instrumental variable estimation technique.[6]

4 Data

The empirical analysis is based on four rounds (XV to XVIII, spanning from 2006 to 2009) of the Russia Longitudinal Monitoring Survey (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.[7] The survey has two phases: during the first phase of the project (1992 -1994), the RLMS collected four rounds of data; in the second phase, until 2011, the RLMS collected sixteen further rounds of data. Households participating in the survey were selected trough a multi-stage probability sampling procedure in order to guarantee national representativeness. Within each selected primary sample unit, the population was stratified into

[5] Lillard, Lee A. and Constantijn W.A. Panis. 2003. aML Multilevel Multiprocess Statistical Software, Version 2.0. EconWare, Los Angeles, California.

[6] Among the inspected variables we tried: average regional alcohol price (in several specifications), average regional alcohol consumption, percentage of alcoholics in the region, past shocks(job loss and year of loss), suffering chronic illness (diabetes), etc. None of these variables was significant in determining alcohol consumption.

[7] RLMS-HSE site: http://www.cpc.unc.edu/projects/rlms-hse .

urban and rural substrata in order to guarantee representativeness of the sample in both areas. Between rounds XV and XVIII, data contain approximately 5,000 households, 12,000 adults and 2,000 children per wave.

Since the RLMS was originally designed to monitor the health impact of economic transition in Russia, it contains detailed information on alcohol consumption of the respondents, use of time and market labor supply. The RLMS permits identifying the relationship between each member in the household, not only with respect to the household head. This allows us to select only households with no more than one nuclear family, avoiding problems due to the presence of more than one family with children in the same household.[8] This could be a serious issue, since, as found by Lokshin et al (2000) and Lokshin (2004), the share of extended families in Russia raised substantially during transition, and more than half of Russian children live in extended families. The availability of the relationship between all household members also permits the identification of the number of potential suppliers of non-parental informal child care in the family, such as grandparents. Therefore, even if multifamily households are excluded from the analysis, we have kept in the sample households with co-resident grandparents. The final sample is composed of 1287 household with children younger than 15 and with both parents' age in the range 17-65.

Individual alcohol consumption is recorded by the RLMS for all rounds of Phase II. However, only from round XV it is possible to identify the actual monthly consumption. The dataset is also rich in time-use information, even if time spent in domestic activities and informal care is recorded only from rounds XV to XVIII.[9] In these four rounds, time use is recorded within the labor module of the survey, where people declared minutes spent per day in different activities in the last 30 days both in working days and weekends.

It is worth noting that, due to the sampling design, it was not possible to construct a household panel data-set, because families are not uniquely identified over time. While it is rather easy to track individuals, a unique family identifier cannot be constructed. For example, consider two subsequent waves in which an household splits because a son gets married. It is not possible to follow this family over time because: i) the two new families maintain the old household identification number that refers to the previous wave, but for the current wave one keeps the same identification number and the other gets a new one, ii) cross sectional identification numbers may be different in the way they are constructed (in round XV the family identifier received one more digit, and a change in the sample design in round XVIII implied that identification numbers are constructed using different stratification variables). The combination of these two conditions together with the explicit recommendation of HSE to not reconstruct a certain wave's identification number using different wave's stratification data, prevented us from building a household panel data-set.[10]

So, despite the advantages of a panel data-set, we were forced to pool the four waves into a cross section. In particular, we took all families present in round XVIII and added families from the previous waves that were not present in that round.[11]

[8] For instance, there may be compensation of child care between families, and, in any case, it would not be possible to identify whether child care is provided to own children, or to those of other families within the household.

[9] The first four round of Phase II also record time use information, but the measures are not directly comparable and a separate analysis of those years should be carried out, which is left for a future work.

[10] To our knowledge, at the time of writing the only panel study at the household level using RMLS is Lacroix and Radtchenko (2011) Indeed, constructing the household panel is possible at the cost of dropping conflicting households and the households appearing only once in the sample. Some exploratory investigations have led to a drastic reduction of the sample size that implies the impossibility of obtaining meaningful results.

[11] To clarify, we keep all families in the last round (XVIII). If one of these families is present in other waves we keep only the observation that corresponds to the last wave. Then we add families of round XVII that are not present in XVIII and so on. This way, in the pooled data-set each family appears just once, avoiding over-weighting repeated

4.1 Dependent variables

The dependent variables included in the system of equations are the logarithms of weekly hours spent respectively on child care, domestic work and market work. Even though time-use patterns may differ between weekdays and weekends, weekly amounts are used since alcohol consumption is not recorded separately for weekends and weekdays. Regarding time-use categories, as previously mentioned, to identify the effect of parental alcohol consumption on child welfare we separate child care from domestic work, as in Kimmel and Connelly (2007), Connelly and Kimmel (2009) and Bloemen et al (2010). Average weekly child care hours are 9.7 hours for men and 15.3 hours for women. Domestic work time is 12.9 hours for men and 22.8 hours for women, and market work time is on average 42.1 hours for men and 31.4 hours for women (Table 1 shows the descriptive statistics for the logarithms of the time use variables, as used in the estimation).

Table 2 shows the joint distribution of time use categories and alcohol consumption for the sample under analysis.[12] It can be seen that rarely fathers do more child care than mothers, but still almost 60% of them dedicate at least 5 hours weekly to child care. This figure rises to 75.4% for mothers. The domestic tasks rely even more heavily on women. Almost 42% of husbands do less than 10 weekly hours of domestic work, while almost 85% of wives do more than 10 hours. The situation changes respect to market work, where only 15% of fathers are unemployed or part-time workers, with an impressive 38% of overtime workers. Women, however, do show large percentages for full-time and overtime work: 48% and 18% respectively.

During the 90s, child care institutions in Russia, as well as female labor force participation, declined as a result of the economic transition from a socialist to a market economy. At the same time, the cost of child care supplied by the government increased, making daycare services not affordable for low income families with young children. Lokshin et al (2000) and Lokshin (2004) use the 1994 - 1996 rounds of RLMS to estimate a model of consumer demand for state provided child care and find that mothers' decisions to send children to formal child care and to participate in the labor market are taken jointly. They find that the cost of private child care is a disincentive to participation, while public transfers in the form of family allowances are ineffective. Similarly, Grogan and Koka (2010) estimate a discrete choice model of mothers' labor force participation for a longer panel and find an even stronger negative effect for having children under 3 in the 2000s. As a result, during the 90s, in-home care increased to levels ranging from 69.4% to 99.9% of total child care time, depending on child age. These findings suggest that Russian couples, after the economic transition, have to rely almost completely on informal child care provided within the household. Since child care is so crucial for children's welfare, the question whether child care time supplied by parents could be affected by heavy alcohol consumption appears particularly relevant.

4.2 Explanatory variables

4.2.1 Alcohol consumption

It is well known that in Russia alcohol consumption is high, with effects on health that increase morbidity and mortality. Moreover, consumption of vodka is more likely to be binge rather than moderate drinking (Brainerd and Cutler, 2005; Baltagi and Geishecker, 2006). During the transition to a market economy, positive trends in alcohol consumption patterns are observed by several

families.

[12] Clearly, these figures cannot be generalized to the Russian population, being computed on a much restricted sub-sample.

studies, all of them using RLMS data. Zohoori et al (1998) and Brainerd and Cutler (2005) find that in the early 1990s, per-capita consumption of alcohol doubled in particular among middle-aged men. In the following years, this upward trend was interrupted by an increase in the price of alcohol, until 1998 when it started to raise again (RLMS data suggest an increase of 27% in alcohol consumption in the whole period 1992-2000). The last five waves of RLMS (2006-2010) partially confirm the previous trends, with total daily alcohol intake for drinkers being slightly increasing for males and substantially stable for females (see Figure 1).

Brainerd and Cutler (2005) suggest that the increase in alcohol consumption is one of the leading causes of the dramatic positive trend in mortality rates during transitional years, explaining about 25% of the increased mortality.[13] As to the drinker's profile, drinking is mostly a male phenomenon (see Baltagi and Geishecker, 2006); Table 1 shows that in our sample more than 77% of men reported drinking, and 5% declared to frequent drinkers - drinking every day or almost every day. For women, these figures are 60% and 0.5%, respectively. Even in the level of consumption there is a substantial difference. As shown by Figure 1, male drinkers drink at least twice as much as women. Baltagi and Geishecker (2006) also show that male drinkers are likely to be married, to have children, to be well educated and to have higher household income with respect to non-drinkers.

In the RLMS, individual alcohol consumption is self-reported by the respondent in the health module. In Russia, alcohol consumption is measured in grams instead of liters, so each respondent is asked to declare how many grams of beer, wine, fortified wine, home-made liquor, vodka, and other alcohol they usually drank per day in the last 30 days. However, only from round XV it is possible to identify the actual monthly consumption, since respondents have also to declare the days per month they have been drinking. Following Baltagi and Geishecker (2006), these amounts are adjusted for pure alcohol content in order to make the various types of alcoholic beverages comparable and then summed up to compute total individual alcohol consumption. The weights used are 5% for alcohol content of beer, 10% for wine, 19% for fortified wine, 45% for home made liquor, 40% for vodka, and 20% for other alcohol. Finally, the alcohol variables included in the equations are computed as the logarithm of grams of total alcohol intake per week, and divided by the weight of the person, in order to control for the possibly different impact of similar amounts of alcohol on different-sized individuals. As to the possible doubts on the validity of self-reported measures of alcohol consumption, we follow the idea, again found in Baltagi and Geishecker (2006), that self-declared alcohol consumption in Russia should not be underreported, since there is no stigma attached to alcohol consumption in the country.

The figures presented in Table 2 confirm that alcohol in Russia is mainly a male phenomenon. More than 70% of fathers drink more than 2 grams of pure alcohol per day (on average) and 37% more than 10 grams (that corresponds to 25 grams - a small glass - of vodka). 10% of males drink more than 30 grams of alcohol per day (not shown in the table). Women drink much less, most of them (65%) consuming less than 2 grams of alcohol per day, which amounts approximately to one glass of vodka per week. Only a few consume more than one glass of vodka per day (less than 7%) and almost 40% are abstemious (compared with 23% of males).

[13]The authors explored all the possible causes of the dramatic swings in mortality in the country and found that one of the most important factor is alcohol consumption, especially as it relates to external causes of death such as homicide, suicide and accidents.

4.2.2 Other explanatory variables

Although the focus of this paper is on the effects of alcohol on child welfare, wages are a critical variable that needs special attention in the analysis. As already discussed, previous analyses on the relation between alcohol and wages suggest a positive correlation (see Tekin, 2004). Thus a wage equation for each of the spouses is included in the system, and to correct possible self-selection bias, correlation between the error terms of the wage equation and the equation for participation to the labor market is allowed.

Other regressors included in the model (see Table 1) are the number of children in the age ranges of [0-3] and [4-6], the number of grandparents and uncles living in the household, a dummy for being an entrepreneur, the health status (a categorical indicator equal to one in presence of chronic illness or disability and 2 if both of them are present, and a dummy indicating if receiving some pension, excluding retirement pension), the number of cigarettes and a standard list of individual demographic controls (age, education, nationality). We also control for the economic condition of the household, using non-labor income, dwelling ownership, and dwelling size. Finally some regional variables are included, namely, average males/females ratio, male/female wage ratio, average wage, regional dummies and a dummy indicating the presence of a nursery in the community.

5 Results

Tables 3 and 4 present the estimated parameters of the empirical model introduced in Section 3. As to the joint nature of the decision processes, the significance of cross-equation correlations and of most of the reciprocal variables suggests that the choice of joint estimation is appropriate.

As to the main focus of this paper, our results suggest that the amount of consumed alcohol is a relevant factor in determining fathers' child care time, influencing negatively and significantly (at 5%) their weekly hours spent in this activity. According to our theoretical specification, this effect can be interpreted as a negative effects of father's alcohol consumption on child welfare. Alcohol reduces the time fathers devote to children thus reducing the amount of child composite good z^c produced and, therefore, children's utility. Mothers' alcohol consumption, instead, has no significant effect on child care. Also, for both parents, it has no significant effects on household income, either through hours of work for the market or wages, so that we do not observe a compensation in the welfare loss through an increase in market goods expenditure, $\mathbf{x}$. This result is in line with Tekin (2004), who finds that alcohol consumption has no significant effect on employment and wages for either males or females.

We find, however, a positive effect of moderate drinking on market work that is probably linked to the social aggregation value that occasional drinking may generate, especially in a country like Russia, where drinking is not seen with social stigma. This is observed trough a positive and significant effect of being an occasional drinker on the participation to the labor market both for husbands and wives. Moreover, being an occasional drinker has a positive effect on wives' wages. Again, this is in line with previous findings of a positive association between moderate drinking and earnings (Berger and Leigh, 1988; Zarkin et al, 1998; MacDonald and Shields, 2001).

In the absence of other studies on the effects of alcohol consumption on the couples' use of time, a comparison can be done with a recent study on the effects of alcohol consumption on the intra household distribution of resources in Italy (Menon et al, 2012). The authors find that husbands' alcohol consumption significantly reduces wives' shares of economic resources (while the reverse is not true), thus significantly affecting wives' well-being.

As to the other individual variables included in the model, differently from Kimmel and Connelly (2007), age has no effects on child care and domestic work, while it has a positive (quadratic) impact on wives' participation to the labor market (the largest impact is at around 35 years). The husband/wife age ratio is significant and positive in determining wives' domestic work, meaning that wives with a much older husband tend to do more domestic work. This is as expected, since this situation may be a proxy of a very traditional household type.

The own and partner's wage rate is positively and significantly associated with more child care for both spouses. This seems to suggest that child care has a positive value *per se* and that time spent with children increases with family's social position (in terms of market work status). Wages also significantly affect domestic work, and in particular the partner's wage rate increases the hours of domestic work - a result similar to Bloemen et al (2010). If the estimated model was a collective specification this would have been a sign of the increased bargaining power of the partner when he/she has a larger wage rate. Finally, the wage rate of the wife reduces husband's hours of market work, while the opposite effect is not observed.

Women with higher education do more child care, they may be more conscious that the time parents spend with their children is a strong contribution to child's development. Husbands' education, on the other hand, increase their time spent in domestic work. This may be sign of more modern, non-patriarchal households types. Having at most primary education tends to reduce husbands' wage rate. For Italian couples, Bloemen et al (2010) find negative signs for the coefficients of primary school education, both in the husband's and wife's child care equations. On the other hand, for American mothers Kimmel and Connelly (2007) and Connelly and Kimmel (2009) find a negative impact of education on child care time. This discrepancy may be due to the differences in the level of efficiency of the three labor markets. The American labor market is efficient and education allows workers to achieve higher wage rates, while in the Russian and Italian labor markets returns to education are low and the opportunity cost of work is small even for educated workers. Moreover, in Russia people with only primary education are still a relevant part of the population, as shown in Table 2.

Among household characteristics, household composition is, as expected, one of the main determinants of both child care and domestic work. The number of young children, aged 0-3 and 4-6, have a positive impact on the child care equation of both fathers and mothers, with a larger impact for younger children. The number of children aged 0-3 has an impact on domestic work, increasing husbands' and reducing wives' hours of domestic work. This is a sensible result, since, when children are small, husbands may substitute their wives doing more domestic work. Grandparents in the household clearly help with household production, reducing hours of domestic work for both males and females, not reducing, however, parents' child care. Finally, non-Russian parents dedicate less time to their children and non-Russian wives participate less to the labor market.

The correlation coefficients of the error terms capture the correlation between unobservable factors - both unobserved individual preferences and omitted variables - that influence the equations in system (5 and 6).

In line with Bloemen et al (2010), Table 4 shows that almost all the estimated correlation coefficients are statistically significant. This means that unobserved preferences of husband and wife can be correlated, which is also a feature of the underlying theoretical model presented in Section 3. Focusing on child care equations, unobservables of the equation for father's child care are positively correlated with mother's child care, suggesting similar tastes, rather than complementarity, with respect to child care. Positive correlation for child care and domestic work between spouses seems to indicate a positive assortative mating, namely, individuals marry each other if they have similar

(unobserved) preferences. The same is not true for market work, since we observe no significant correlations, except for a negative correlation between female child care and market work, and female domestic work and market work. This is a sign that the explanatory variables were unable to capture all the existing trade-off between domestic activities and market work for women. Finally, participation to the labor market is significantly correlated with hours of work for both partners and with the wage equation for wives, confirming the presence of self-selection in the sample.

6 Concluding Remarks

The main contribution of this article consists in assessing the influence of alcohol consumption on parental altruism towards children. Moreover, to our knowledge, this is the first study to address the problem of the effects of excessive alcohol consumption on the allocation of time within the household. Building on Becker's hypothesis of altruistic preferences, we assume that parents' utilities depend on their children's welfare. In turn, a child's utility is determined by a composite child good that is produced in the household through market goods and child care time. This way, studying the determinants of time spent doing child care, domestic work and market work, permits to infer about parental preferences towards child welfare.

Empirically, we estimate a system of time supply equations (hours of child care, of domestic work and of market work) integrated with labor market participation and wage equations. Ten equations (five for each partner) are estimated simultaneously allowing for correlation among the residuals. Our results show that excessive alcohol consumption of the husband negatively affects his time spent doing child care, but has no effects on his or his spouse's labor supply or wage. In our model, child welfare is determined by child's consumption of a composite good produced by the parents using childcare time and market goods. We find that father's excessive alcohol consumption significantly reduces child care time without affecting family income, thus reducing child welfare through a reduction of the composite good consumed by his children. We find no effects of mother's alcohol consumption on any time use category, labor participation or wages.

Overall, our findings confirm that excessive alcohol consumption is mainly a male phenomenon, and that it negatively affects other family members. In particular, it seems that husbands' preferences for their children's welfare are reduced by alcohol intake, with a welfare loss for the more vulnerable components of the household. This, jointly with the increasing medical and psychological evidence on the damages of alcohol consumption, should be a matter of thorough discussion at the institutional level.

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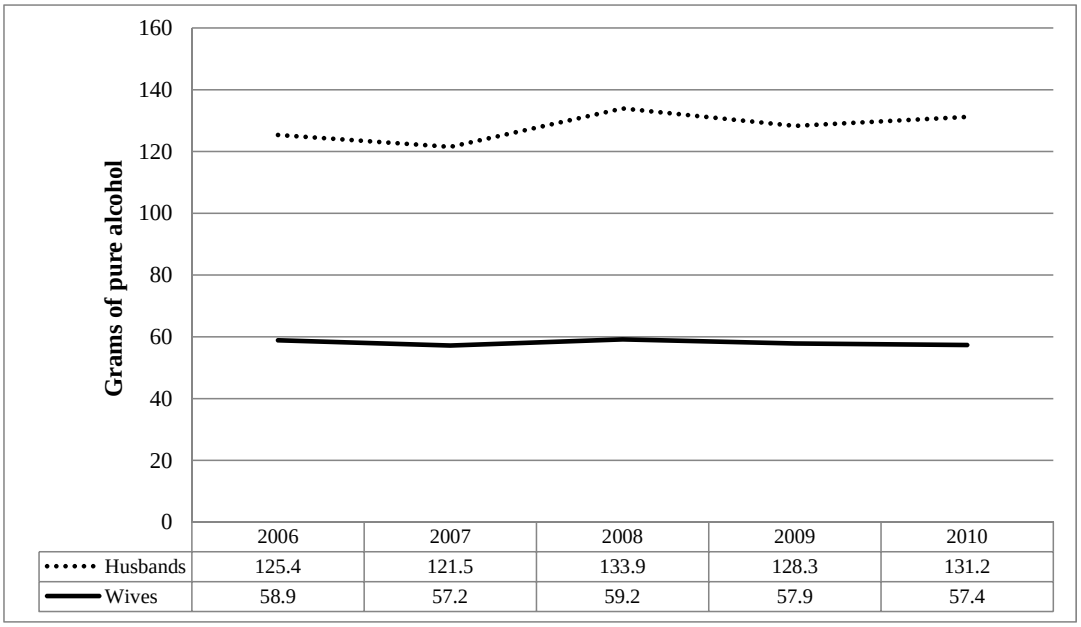
Figure 1: Evolution of alcohol consumption, 2006-2010: average daily grams of pure alcohol for drinkers



	2006	2007	2008	2009	2010
Husbands	125.4	121.5	133.9	128.3	131.2
Wives	58.9	57.2	59.2	57.9	57.4

Table 1: Descriptive Statistics

Individual variables	Husband		Wife	
	Mean	SD	Mean	SD
Ln of weekly childcare hours	2.3341	0.7260	2.7190	0.6922
Ln of weekly domestic work hours	2.4436	0.7911	3.0338	0.5485
Ln of weekly market work hours	3.8594	0.2651	3.7001	0.2948
Grams of alcohol per day / BMI	0.5379	0.9884	0.1314	0.4132
Ln of wage rate	4.2715	0.7401	3.9438	0.6884
Age	35.3745	7.4685	32.8741	7.1889
Non-Russian	0.2727	-	0.2448	-
Pension (not retired)	0.0505	-	0.0249	-
Primary education	0.2821	-	0.4367	-
Tertiary education	0.3963	-	0.2580	-
Occasional drinker	0.7172	-	0.5975	-
Pregnant	-	-	0.0163	-
Self-reported health status (cat.)	2.5144	0.5964	2.6169	0.5995
Disability + Chronic illness	0.3326	0.5063	0.3691	0.5063
Number of cigarettes	11.3108	10.2433	2.2688	5.0365

Household Variables	Mean	SD
Number of children [0-1]	0.0785	0.2719
Number of children [4-6]	0.6263	0.6206
Number of children [0-3]	0.3737	0.5329
Presence of a nursery in the community	0.3737	0.5329
Community males/females ratio	0.9987	0.0572
Community male/female wage ratio	1.2138	0.1224
Community average wage	50.0878	13.3053
Receive help with childcare (cat.)	0.4476	0.5904
Ln of non labour income	6.0025	3.5253
Dwelling dimension (cat.)	1.9751	0.7072
Number of granparents	0.0505	0.2426
Number of uncles	0.0186	0.1709
Dwelling dimension (cat.)	1.9829	0.7096
Owner of dwelling	0.6807	-
Female headed household	0.0016	-
Region 1 - Metropolitan area	0.0948	-
Region 2 - Northern area	0.0824	-
Region 3 - Central area	0.1748	-
Region 4 - Volga	0.1810	-
Region 5 - Caucas	0.1298	-
Region 6 - Ural	0.1399	-
Region 7 - West Siberia	0.0925	-
Region 8 - East Siberia	0.1049	-
Round XV	0.0824	-
Round XVI	0.1033	-
Round XVII	0.0948	-
Round XVIII	0.7195	-

1287 observatoins.

Table 2: Joint distribution of child care, domestic work, market work (in hours per week) and alcohol consumption (in grams per day)

		Wives				
	Childcare	0	(0-5]	(5-20]	>20	Total
Husbands	0	10.3	2.6	6.1	2.4	21.4
	(0-5]	1.0	4.4	11.7	2.6	19.7
	(5-20]	2.3	3.0	24.9	15.3	45.5
	>20	0.5	0.5	4.7	7.5	13.4
	Total	14.1	10.5	47.5	27.9	100

		Wives				
	Domestic work	0	(0-10]	(10-30]	>30	Total
Husbands	0	0.5	1.6	5.8	2.3	10.3
	(0-10]	0.0	7.4	25.6	8.3	41.3
	(10-30]	0.2	5.3	22.6	11.7	39.7
	>30	0.0	0.5	4.7	3.5	8.8
	Total	0.6	14.8	58.7	25.8	100

		Wives				
	Market work	0	(0-32]	(32-45]	>45	Total
Husbands	0	4.4	1.5	4.2	2.4	12.5
	(0-32]	0.3	0.5	1.6	0.2	2.6
	(32-45]	8.3	4.6	26.4	7.6	46.9
	>45	10.6	3.7	15.9	7.9	38.0
	Total	23.6	10.2	48.2	18.0	100

		Wives				
	Alcohol consumption	0	(0-2]	(2-10]	>10	Total
Husbands	0	14.8	4.0	3.3	0.6	22.7
	(0-2]	3.3	2.6	0.8	0.1	6.8
	(2-10]	12.6	10.8	9.2	0.9	33.5
	>10	8.9	8.0	14.8	5.3	37.0
	Total	39.7	25.4	28.0	6.9	100

1287 observations

Table 3: SUR Tobit estimation of couples' allocation of time, work participation and wages

	Childcare		Domestic work		Market work		Work participation		Wage	
	Husband	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband	Wife
Constant	-2.4704	-1.3490	2.6235	0.8920	3.3917 ***	4.1657 ***	0.4759	-4.8002 ***	3.0383 ***	1.8864
	(2.2833)	(2.1725)	(1.9897)	(1.0965)	(.63356)	(.83443)	(1.9652)	(1.6746)	(.74643)	(1.2547)
Alcohol	-0.0973 **	-0.0079	0.0011	0.0717	0.0168	0.0005			0.0378	0.0315
	(.04751)	(.15193)	(.04072)	(.08889)	(.01363)	(.03917)			(.03354)	(.25665)
Alcohol - partner	-0.0612	-0.0649	0.1009	-0.0182	-0.0102	0.0055				
	(.17791)	(.04909)	(.16485)	(.02012)	(.02972)	(.01292)				
Occasional drinker							0.2875 ***	0.2602 ***	0.0213	0.2328 ***
							(.10298)	(.09161)	(.05861)	(.08779)
Presence of nursery	0.2220 **	0.1101	0.1015	-0.0060	0.0059	0.0530 *	0.2354 **	0.3068 ***	0.2318 ***	0.1172
	(.09292)	(.09385)	(.08241)	(.04067)	(.02411)	(.03018)	(0.1067)	(.09302)	(.05938)	(.10549)
Males/female ratio	-0.5220	0.1580	-1.8410	-0.2930	1.2559 **	0.0845	0.6353	0.4532		
	(1.7697)	(1.6817)	(1.6965)	(.71607)	(.54703)	(.59898)	(1.4627)	(1.487)		
Male/female wage ratio	2.5636 ***	1.6303 *	-0.0695	0.6723	0.0417	-0.1316				
	(.85723)	(.84098)	(0.7761)	(0.4211)	(.19615)	(.26162)				
Average wage	0.0226	0.0104	0.0061	0.0154 *	-0.0139 **	-0.0056			-0.0025	-0.0145
	(.02217)	(.02155)	(.02025)	(.00848)	(.00606)	(.00652)			(.01056)	(.01715)
Help with childcare	0.1065	0.1359 *	-0.0176	-0.0340	-0.0045	0.0138	0.1179	0.0996		
	(.08128)	(.08081)	(.06574)	(0.0267)	(.01713)	(.02067)	(.08511)	(.08261)		
Number of grandparents	0.3474 *	0.1051	-0.2256 *	-0.2156 ***	-0.0689	0.0387	-0.2152	-0.1534		
	(.20054)	(.21086)	(.12052)	(.06058)	(.05016)	(.05845)	(.19973)	(.19119)		
Age	-0.2966	0.0860	0.0073	0.0908	0.0090	-0.1501	0.2021	2.6074 ***	0.4643	1.2394 **
	(.45831)	(0.3836)	(.40631)	(.19774)	(.10083)	(.18565)	(0.5941)	(.46815)	(.31869)	(.61251)
Age squared	0.0200	-0.0399	0.0106	-0.0118	-0.0001	0.0167	-0.0424	-0.3543 ***	-0.0636	-0.1529
	(.05946)	(0.0524)	(.05426)	(.02855)	(.01351)	(.02597)	(.07642)	(.06497)	(.04227)	(.09475)
Age ratio	0.1530	0.0601	0.0248	0.2205 *	-0.0054	0.1011				
	(.28802)	(0.2829)	(.24641)	(.11664)	(.07074)	(.08344)				
Wage rate	0.1653 ***	0.0629 **	0.0820 ***	-0.0077	-0.0401	-0.0021				
	(.02927)	(.02763)	(.02797)	(.01196)	(.05082)	(.00839)				
Wage rate - partner	0.0531 **	0.1408 ***	0.1277 ***	0.1560 ***	-0.0164 ***	0.0274				
	(.02521)	(.02792)	(.02029)	(.01198)	(.00615)	(.05179)				
Non-labour income	-0.0091	0.0072	0.0186 *	0.0027	-0.0046	-0.0043				
	(.01243)	(.01183)	(.01071)	(.00528)	(.00285)	(.00359)				
Primary education									-0.1410 **	-0.1645
									(.06987)	(.11351)
Tertiary education	0.0777	0.1695 *	0.1546 *	0.0124	-0.0114	-0.0319			0.0078	0.0104
	(.10471)	(0.0935)	(.09346)	(.04059)	(.02297)	(.02807)			(.08135)	(.10996)
Tertiary education - partner	0.0908	-0.0371	-0.0512	0.0469	0.0202	0.0350				
	(.09498)	(.09415)	(.07986)	(.04188)	(.02077)	(.02915)				
Pregnant								0.9923 **		
								(.43138)		
Number of children [0-1]							0.1190	0.3339 *	-0.1292	-0.3364 **
							(.23312)	(.17092)	(.09264)	(.13405)
Number of children [0-3]	0.7903 ***	0.4580 ***	0.2182 **	-0.1899 ***	-0.0048	-0.0241	-0.1412	-0.5732 ***		
	(.11242)	(.08873)	(.09068)	(0.0412)	(.02293)	(.03386)	(.14257)	(.12271)		
Number of children [4-6]	0.5140 ***	0.4016 ***	0.0611	0.0754 *	0.0191	0.0266	0.1072	0.1366	0.0053	-0.2427 ***
	(.10317)	(.09974)	(.08489)	(.04281)	(.02234)	(.03155)	(.11866)	(.09601)	(.05592)	(.08659)
Non-Russian	-0.1540 *	-0.3392 ***	-0.0776	0.0309	0.0184	0.0167	-0.1382	-0.3769 ***		
	(.09169)	(.08075)	(.08378)	(.03984)	(.02526)	(0.0299)	(.15053)	(.12322)		
Bad health	0.1299	-0.3613	-0.1640	-0.0622	-0.0561	-0.1589	-0.1622 **	0.1131		
	(.35899)	(.42834)	(.29125)	(.26532)	(.13324)	(.39767)	(.07518)	(.07532)		
N. of cigarettes	0.0004	0.0097	-0.0067 *	0.0010	0.0020 *	0.0028	0.0017	-0.0277 ***	-0.0097 ***	0.0148
	(.00367)	(.00701)	(.00348)	(.00362)	(.00104)	(.00244)	(.00517)	(.00823)	(.00254)	(0.0104)
Pension (not retired)	0.2441	0.4322	-0.2520	0.1800	-0.0108	-0.0473				
	(.23874)	(.33354)	(.18329)	(.24143)	(.06597)	(.17239)				
Dimension of dwelling	-0.2221 ***	-0.0717	0.0528	0.0022	-0.0037	-0.0118				
	(.05602)	(.05409)	(.05795)	(.02301)	(0.0143)	(.01867)				
Owner of dwelling							-0.1531	0.0549	0.0408	-0.0004
							(.11509)	(.09406)	(.05923)	(.08528)
Region 1 (Metropolitan area)	-0.2783	0.0206	-0.1243	-0.4387	0.5077 **	0.0761	0.7092 ***	-0.0894	0.7735 **	0.7359
	(.79398)	(.77319)	(.72494)	(.30198)	(.22991)	(.24192)	(.24644)	(.14753)	(.35939)	(.59509)
Region 2 (Northern area)	-0.7659	-0.0966	-0.0949	-0.3970	0.4676 **	0.1597	0.2667	0.4829 **	0.5052 *	0.6558
	(.67548)	(.66009)	(.61927)	(.26159)	(0.1886)	(.20537)	(.19294)	(.19836)	(.30064)	(.48866)
Region 3 (Central area)	0.8178 ***	0.3788	0.1882	0.2344 **	-0.0859	-0.0764	0.1561	0.0710	0.0470	-0.0664
	(.25745)	(.24344)	(.24919)	(.10998)	(0.0602)	(.07563)	(0.2337)	(.22816)	(.08147)	(.11721)
Region 4 (Volga)	0.5802 *	0.4764	0.0215	0.3732 ***	-0.1434 *	-0.0675	0.2689 *	0.1229	-0.1828	-0.2506
	(.30451)	(0.2932)	(.27678)	(.12313)	(.07561)	(.08869)	(.14719)	(.12529)	(.12893)	(0.1958)
Round 2							0.1999	0.2315	0.1192	0.0312
							(.24159)	(.20336)	(.12315)	(.25126)
Round 3							-0.0783	0.1053	0.5002 ***	0.2038
							(.26127)	(.20395)	(0.1282)	(.24058)
Round 4							-0.1593	0.0481	0.4897 ***	0.1240
							(.21641)	(.16216)	(.10348)	(.20468)

1287 observations; * Significance at the 10% significance level; ** Significance at 5%; *** Significance at 1%
Standard error in parenthesis.

Table 4: Errors variance/covariance matrix for the SUR Tobit estimation

Variance/covariance matrix	Childcare		Domestic work		Market work		Participation		Wage	
	Husband	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband	Wife
Child care - husband	1.2624 ***	0.4741 ***	0.2334 ***	0.1192 ***	-0.0389	-0.0277	0.0000	0.0000	0.0727 **	0.0000
	(.04129)	(.02274)	(.02865)	(0.0294)	(0.0416)	(0.0359)	(-)	(-)	(.03403)	(-)
Child care - wife		1.1733 ***	0.1038 ***	0.2084 ***	0.0416	-0.0895 **	0.0000	0.0000	0.0000	-0.0280
		(.03532)	(.03131)	(.03001)	(.04315)	(.04442)	(-)	(-)	(-)	(.04654)
Domestic work - husband			1.0834 ***	0.1307 ***	-0.0202	0.0623	0.0000	0.0000	0.1533 ***	0.0000
			(.02657)	(.03288)	(.04223)	(.04157)	(-)	(-)	(.03572)	(-)
Domestic work - wife				0.4984 ***	0.0544	-0.1085 *	0.0000	0.0000	0.0000	-0.1771 ***
				(.00902)	(.04014)	(.05668)	(-)	(-)	(-)	(.04442)
Market work - husband					0.2524 ***	0.0264	-0.3262 ***	0.0000	-0.1210	0.0000
					(.00585)	(.04478)	(0.1031)	(-)	(0.1468)	(-)
Market work - wife						0.2939 ***	0.0000	0.8627 ***	0.0000	-0.2366
						(0.0132)	(-)	(0.2845)	(-)	(.17484)
Participation - husband							1.0000	0.0000	0.0921	0.0000
							(-)	(-)	(.08512)	(-)
Participation - wife								1.0000	0.0000	-0.8781 ***
								(-)	(-)	(.08751)
Wage - husband									0.7466 ***	0.1819 ***
									(.01251)	(.03883)
Wage - wife										1.0645 ***
										(.02265)

1287 observations; * Significance at the 10% significance level; ** Significance at 5%; *** Significance at 1%
Standard error in parenthesis.