Where is dad? May be at the bar!

The effects of alcohol consumption on intra-household time allocation

Gianna Claudia Giannelli · Lucia Mangiavacchi · Luca Piccoli

Abstract This paper investigates whether excessive parental alcohol consumption leads to a less altruistic behavior of parents by looking at their time devoted to child care. Using the Russia Longitudinal Monitoring Survey, the study focuses on couples with children under fourteen years of age, for whom we estimate a model of allocation of time, treating market and domestic work supplies as endogenous. We find that husbands' alcohol consumption has a negative impact not only on their own, but also on their wives' weekly hours spent in child care. Moreover, husbands' alcohol consumption negatively affects the amount of domestic work of their wives, but neither their own, nor their wives' market work. As for wives, their alcohol consumption has no significant impact on either their own or their husbands' allocation of time. We interpret these findings as a negative impact of alcohol consumption on fathers' altruism, confirming that, even if drinking is mainly a male issue, the negative effects on the more vulnerable household members cannot be overlooked.

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

Gianna Claudia Giannelli
Department of Economics - University of Florence and IZA. E-mail: giannelli@unifi.it

Lucia Mangiavacchi
Department of Applied Economics - University of the Balearic Islands. E-mail: lucia.mangiavacchi@uib.es

Luca Piccoli (Corresponding author)
Department of Applied Economics - University of the Balearic Islands, Edificio Gaspar Melchor de Jovellanos, Ctra de Valldemossa km 7.5, 07122 - Palma de Mallorca (Spain). Tel +34 971259579 E-mail: luca.piccoli@uib.es.

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.

When one of the parents regularly consumes alcohol in excess, she/he may reduce her/his own time spent in child care. Furthermore, children may also be affected through the negative effects on spouses. Family responsibilities may shift from two parents to one parent and, as a result, the non-alcoholic parent may also reduce time spent in looking after children. Thus, parents' time devoted to child care is a viable source of information that can be fruitfully exploited to infer about the influence of alcohol on parents' effort towards their children.

The relationship between alcohol consumption and the amount of parental child care time is determined simultaneously with market work and domestic work, and jointly between spouses. 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. This is possible thanks to the increasing availability of more detailed data on the use of time.[1]

Studies on the determinants of parental child care have been mostly based on systems of simultaneous equations for market work and childcare 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 declines with increased wages.

A strand of literature, while distinguishing between different activities and modeling them jointly, studies one partner's choices conditioning on spouse's decisions, focusing mainly on mothers. Powell (2002), for example, examines the impact of childcare prices and wage rates on the joint employment and childcare 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 childcare prices for center, sitter, and relative care reduce the probability of working and using each respective mode of care. Connelly and Kimmel

---

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

(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 childcare, 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 childcare and hourly wages. Additionally, Lokshin (2004) evidences the ineffectiveness of family allowances transfers.

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] however, 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, childcare 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 and insignificant impact on employment for women, and a pos-

---

[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.

itive 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 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 the SUR Tobit system using Full Information Maximun Likelihood, accounting for a possible correlation of the errors among time use decisions and between husband's and wife's equations. Our results suggest that father's alcohol consumption makes him more selfish, reducing the time he devotes to child care, and, at the same time, has a negative effect on his wife's child care. As a side effect, husband's alcohol consumption negatively affects the amount of wife's domestic work. In line with Tekin (2004), we find no effects of own and reciprocal alcohol consumption on market work, neither for husbands nor for wives.

The paper is structured as follows. Section 2 outlines the theoretical framework, Section 3 describes the data and the variables used in the empirical specification 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 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 exogenous variables to test its impact on individual 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.[3] This assumption amounts to include partner's and child's utilities among the arguments of each parent's utility function. Having altruistic preferences allows us to interpret the effects of alcohol on child care time as effects on altruism. The child's utility, in fact, depends on the amount of goods that the child consumes, which, in turn, have child care time among the inputs of production. A preference factor, such as being an alcoholic, that reduces child care time, also reduces the child's consumption and hence the child's utility. At the equilibrium, this implies that the weight of the child's utility on the parent's utility is smaller. Or, in other words, that alcohol may induce a parent to 'care less' about his/her child's welfare. That is the same as saying that alcohol reduces altruism towards the child.[4]

In our model individuals have the following altruistic utility functions:

$$U_i = U_i(t_i^l, z_i^a, U_j, U_c)$$
$$U_j = U_j(t_j^l, z_j^a, U_i, U_c)$$
$$U_c = U_c(z^c) \tag{1}$$

where $i, j = f, m$ represent female and male partners, t^l is leisure time, z^a is a composite consumption good consumed by each adult such that $z_i^a + z_j^a = z^a$, produced as a combination of household production time of the two partners and of intermediate goods purchased in the market $z^a = g(t_i^d, t_j^d, \mathbf{x})$, and 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 $z^c = g(t_i^c, t_j^c, \mathbf{x})$. Each parent's utility can, without loss of generality, be rewritten as

$$U_i = U_i(t_i^l, t_j^l, z_i^a, z_j^a, z^c). \tag{2}$$

---

[3] Becker's use of the term 'altruism' was criticized by Pollak (2003), who has suggested the term 'deferential' preferences, since "... the husband defers to his wife's preferences regarding her consumption pattern" (p. 117). Since Beckerian interdependent preferences are useful to interpret our results with respect to the altruistic behavior of parents, we prefer to adopt the Beckerian sense of the term.

[4] Aside from theoretical reasons, this is a relevant question also because children lacking adult supervision are more likely to skip school, use alcohol or marijuana, steal something or hurt someone with negative consequences for their human capital development and labor market outcomes later in life (Aizer, 2004).

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

$$T_i = t_i^w + t_i^d + t_i^c + t_i^l \qquad (3)$$
$$w_f t_f^w + w_m t_m^w + v = \mathbf{p}'\mathbf{x} \qquad (4)$$

where v is household non-labor income, and $\mathbf{p}$ and $\mathbf{x}$ are the vectors of prices and quantities of market goods.

The solution of the model yields the supply functions of the three uses of time for male and female partners:

$$t_i^w = t_i^w(w_i, w_j, v, P_i, F)$$
$$t_i^d = t_i^d(w_i, w_j, v, P_i, F)$$
$$t_i^c = t_i^c(w_i, w_j, v, P_i, F) \qquad (5)$$

where each category depends on wages w_i and w_j, the value of household non-labor income v, personal and partner's characteristics P_i (that include individual and spouse's alcohol consumption), and family characteristics F. As detailed in Section 4, the empirical strategy consists in estimating a reduced form of system (5). Even though this does not allow us to fully recover the structural preferences parameters, and in particular those that define the degree of altruism towards other family members, it still determines the impact on altruism of an exogenous variable in the time use equations. By assumption, in fact, the time devoted to child care and domestic work have strictly positive productivities: a larger amount of time devoted to these activities increases z^c and z^a respectively. In turn, both z^c and z^a have a strictly positive marginal utility for both the child and the adults. This implies that an exogenous variable that significantly reduces child care time of the husband, for example, significantly reduces z^c. If this is the results of an optimal decision, it means that, *ceteris paribus*, husband's preferences for the child - or in Beckerian terms, altruism towards the child - is reduced by that variable. A similar reasoning holds for domestic work, even though in this case the adult's good z^a is consumed by both members. Hence a negative sign may indicate a larger preference towards leisure with respect to own consumption rather than a reduction of altruism towards the spouse. In this case, a direct interpretation of the sign of an exogenous variable in the domestic work equation in terms of altruism is at least questionable. There is however an exception. That is, when one member's characteristic significantly affects the hours of domestic work of the spouse. Since it is unlikely that the personal characteristics of another person influence spouses' preferences towards consumption/leisure, the most probable transmission of the effect is through the time constraint. For instance, imagine that the time that the wife devotes to domestic work depends significantly on husband's age but not on wife's age, and that husband's age

does not influence his own domestic work and wife's market work decisions. In this case, the most reasonable explanation seems that the wife renounces to some welfare (because she does less domestic work and thus produces less adult good, z^a) to spend some time caring the husband, that, being older may need more attentions. This would imply that the husband is willing to reduce his wife's welfare: he becomes less altruist with age (even though he does not deliberately choose to become older). A similar reasoning could be applied to alcohol consumption.

3 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.[5] 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 2010, the RLMS has collected fifteen 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 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.[6] 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 uncles and grandparents. 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

---

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

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

spent in domestic activities and informal care is recorded only from round XV to round XVIII.[7] 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.

The final sample is composed of 1287 couples of individuals between the ages of 17 and 65, who have children younger than 14, and are not part of a multifamily household.

It is worth noting that due to the sampling design it was not possible to use construct a household panel dataset, 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 family identifier received one more digit, and a changes 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, prevent us from building a household panel dataset.[8]

So, despite the advantages of a panel dataset 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.[9]

3.1 Dependent variables

The dependent variables included in the system of equations are weekly hours spent respectively on child care, domestic work, market work and leisure. 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 altruism 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

---

[7] The first four round of Phase II also record time use information, but not in such a way to be compared with waves XV-XVIII.

[8] To our knowledge, at the time of writing all panel studies using RLMS are conducted at individual level.

[9] 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 dataset each family appears just once, avoiding over-weighting repeated families.

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).

3.1.1 Informal child care in Russia

Child care institutions in Russia, as well as female labor force participation, have declined as a result of economic transition from socialist to market economy during the 90s. 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 childcare and find that the decision to send children to formal child care programs in Russia is made jointly with the mothers' decisions on labor market participation. The main reasons are the non-affordability of private childcare facilities and the ineffectiveness of family allowances transfers. 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 . These phenomena resulted in an increase of in-home care, ranging from 69.4% to 99.9% of total child care time (depending on child age) during the 90s. These findings suggest that Russian children, due to the economic changes driven by the transition to a market economy, rely almost completely on informal child care provided by the family. At the light of this evidence it appears particularly relevant to study whether child care time supplied by the parents could be affected by an other interesting phenomenon occurred during transitional Russia: the increasing trend in alcohol consumption.

3.2 Explanatory variables

3.2.1 Alcohol consumption

It is well known that Russia presents high levels of alcohol consumption, more in form of spirits (vodka) rather than beer or wine, with harmful effects on health and mortality. Moreover, consumption of vodka in Russia is more likely to be binge drinking (Brainerd and Cutler, 2005; Baltagi and Geishecker, 2006), rather than moderate. During transition to market economy positive trends in alcohol consumption patterns are observed by several 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-age men. Even if in the subsequent years this trend released due to an increase in alcohol's prices, since 1998 and afterwards alcohol consumption raised 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 rate during transitional years, explaining about 25% of the increased mortality.[10] 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 be a frequent drinker - 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 sum them up to compute the whole individual alcohol consumption. 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 critics 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 affected by the attempt of heavy drinkers to hide their addiction to the extent that there is no stigma attached to alcohol consumption in the country.

We also include a binge-drinking dummy indicating whether the respondent drinks large quantities just once or twice per week (for example on Saturday nights). This variable is built around the medical indication that drinking more than 80 grams of alcohol in a day (60 for women) induces a pathological state, with negative consequences for individual health, combined with a declared drinking frequency of 1-2 times per week.

---

[10] The authors explored all the possible causes of the dramatic swings in mortality crisis 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.

3.2.2 Other explanatory variables

In addition to alcohol consumption, the other regressors included in the model (see Table 1) are the logarithm wages, estimated using a standard Heckman procedure (Heckman, 1979) for the non-workers,[11] being an entrepreneur, 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). As to the household variables, number of children in the age ranges of [0-3] and [4-6], plus number of grandparents and uncles living in the household are included. It is also possible to control for the economic condition of the household, using non-labor income, dwelling ownership, dwelling size and economic satisfaction.

4 Empirical Strategy

Each type of supply of time in system (5) is left censored, since, for some individuals, the minimum amount of childcare, domestic work or market work is zero. The proper econometric specification in these cases is the Tobit.

Moreover, our theoretical model requires the reduced form equations to be estimated jointly, allowing for possible correlation among the error terms. To this end, we use a SUR specification. Differently from other studies, our unit of observation is the family, accounting for the fact that the amount of time devoted to one activity by one individual not only depends on the time spent in other activities, but also on the time spent in this and other activities by his/her partner. For example, the mother's childcare 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 child care time: if he does more, she can do less, and vice-versa.

The typical reduced form equation in the SUR Tobit system takes the form

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

where $i, j = f, m$ indicates the partner, either the female (f) or the male (m), and $k = w, d, c$ represents the time activity, either market work (m), domestic work (d) or child care (c).[12] The exogenous variables, as stated in

---

[11] Heckman's equations contain variables capturing family composition and individual characteristics as age, education, health status, drinking habits, and so on. Full estimation results, not included because of little relevance for the aim of the paper, are available upon request.

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

the previous section, include economic variables (husband and wife potential wages, non-labor income) plus other individual and household characteristics. Among individual characteristics we include alcohol consumption of each partner and a binge drinking dummy.

The error terms $u_{i,k}$ are drawn from a multivariate normal distribution with zero mean and a 6x6 variance-covariance matrix that have diagonal elements defined by variance terms $\sigma_{i,k}^2$, and off-diagonal covariance terms defined as

$$Cov(u_{i,k}, u_{j,l}) = \rho_{ik,jl} \sigma_{ik} \sigma_{jl},$$

where $i, j = m, f$ denote the household member, and $k, l = c, d, m$ index the time use activities. $\rho_{ik,jl}$ is the correlation coefficient of error terms $u_{i,k}$ and $u_{j,l}$.

Such a specification is very similar to a SUR, except that it is composed by Tobit equations. It is estimated by Full Information Maximum Likelihood using the aML statistical software.[13]

As noted in the previous sections, we regret the impossibility to take advantage of the panel nature of RLMS for this study. Controlling for household and individual fixed effects could have been useful for the analysis of the implications of alcohol consumption on child care. However it turns out that families cannot be uniquely identified across time because of the design of the survey.

5 Results

Tables 2 and 3 present the estimated parameters of the empirical model introduced in the previous section. According to the underlying behavioral model presented in Section 2 and the error structure of the empirical specification, the decisions concerning the use of time are taken jointly among the time use categories and within the couple; hence the six equations are estimated simultaneously. Significance of cross equation correlations and most of the reciprocal variables suggest that the choice of joint estimation is appropriate.

The main focus of this study is to analyze how alcohol consumption influences the altruistic behavior of the parents in deciding the distribution of available time. In particular we look at the amount of time devoted to child care, and at the intra-household allocation of domestic work. Our results suggest, in line with previous literature about alcohol consumption, that alcohol is mainly a male issue. Interestingly for the objectives of our study, husbands' alcohol consumption also affects how wives allocate their time. The level of alcohol consumption is a relevant factor in determining fathers' child care time decisions, influencing negatively and significantly (at 5%) their weekly hours of child care time. Fathers' alcohol consumption has negative consequences also on how much time mothers spend with their children: problems related

---

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

with excessive alcohol consumption by male partners could require care and time by the spouses, distracting them from their maternal duties. As stated in Section 2, these effects can be directly interpreted as negative effects of father's alcohol consumption on their altruism towards children. Alcohol reduces the time they devoted to children, reducing the amount of child composite good z^c produced and thus children utility. At the equilibrium this means that alcohol reduces the preference of the father for child's utility. Moreover, the significant negative effect on mother's child care time enforces an even stronger egoistic effect: either personal health/labor/psychological problems force the wife to reduce the time devoted to children, or an overbearing behavior induced by alcohol may impose a reduction of wife's child care time.

The fact that female partners dedicate less time to household production if their spouses consume more alcohol can as well be interpreted as an alteration in the altruistic behavior of the husband. In fact, the wife does not retrieve any utility from husband's alcohol consumption and it is unlikely that the time not spent in domestic activities is translated into leisure. Rather, it is more probable that husband's alcohol related problems require the wife to spend some time taking care of him. Thus the wife consumes less adult good z^a and is not compensated by increasing her leisure time, with a negative impact on her welfare.

The dummy variable indicating if the individual is a binge drinker is not significant in any equation. A binge drinker is an occasional drinker that typically drinks a lot but few times a week, for example on Saturday nights. This behavior, although dangerous for the effects of drunk driving, or unproductive due to some hangover consequences, may have little effect on his/her daily life. For them, health consequences of alcohol consumption may be less important in the short run, if compared with those of alcohol addicts.

In absence of other studies on the effects of alcohol consumption on couples' use of time, the only comparison can be made with a recent study on the effects of alcohol consumption on the intra household distribution of resources in Italy.[14] The authors find that husbands' alcohol consumption significantly reduces wives' shares of economic resources, confirming that although excessive drinking is mainly a male phenomenon, it significantly affects wives' well-being. In our estimates, we find that alcohol consumption has no significant effects on paid work. This result is in line with some literature finding positive association between moderate drinking and earnings (Berger and Leigh, 1988; Zarkin et al, 1998; MacDonald and Shields, 2001) and with Tekin (2004) that, investigating the association between alcohol consumption and labour market outcomes in Russia during transition, finds that alcohol consumption has no significant effect on employment and wages for either males or females.

As to the other individual variables included in the model, as expected and in line with Kimmel and Connelly (2007), age has a clear negative effect on child care time and market labor supply, and is not relevant for the amount of

---

[14] Menon, M., F. Perali and L. Piccoli, 2012. "The Passive Drinking Effect: A Collective Demand Application," Working Papers 05/2012, Università di Verona, Dipartimento di Scienze Economiche.

domestic work. The wage rate is positively and significantly associated with more child care and domestic work for fathers, while for mothers it has no significant impact on child care or domestic work. Regarding the labor supply, while for males the income effect of a higher wage predominates over the substitution effect, for females the substitution effect is greater, as in most of the previous empirical literature. Mothers' child care time benefits from husband's wage rate: if the husband's wage rate is higher, his wife decides to make less hours of paid work (the coefficient is negative and significant) in order to have more time to spend with the children. Similarly to Bloemen et al (2010), we find a positive and significant coefficient of the wage rate of the wife in the equation explaining husband's time devoted to household chores: the higher her wage rate, the more domestic work he performs. Alternatively, the husband's greater involvement in home production allows the wife concentrating more on the labor marker, earning a higher wage. Women with higher education do more child care and domestic work, while husbands' education has only an impact on the wives' hours of child care, maybe because non-educated husbands have less preference for child care and do not allow their wives to spend very much time with the children. Bloemen et al (2010) also found negative signs for the coefficients of the primary school education, both in the husband's and wife's child care equations for Italian couples. On the other hand, Kimmel and Connelly (2007) and Connelly and Kimmel (2009) found for American mothers 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 Russian and Italian labor markets present lower returns to education and educated mothers may decide to supply less hours in the market when they have children since their opportunity cost is small.

Among household characteristics, non-labor income is statistically significant in explaining market labor supply for both husbands and wives with a negative coefficient as predicted by the theory. The non-labor income reduces hours devoted to child care for both fathers and mothers, relaxing the budget constraint that limits the household access to formal child care. A similar explanation applies to the negative sign of the coefficients for the impact of dwelling size on both parental child care equations. As to household composition, the number of children aged 0-3 and 4-6 have a positive impact on the child care equation for both fathers and mothers, but reduce the possibility to supply paid and unpaid work only for mothers. Grandparents in the household clearly help with household production, reducing hours of domestic work for both males and females, however their presence do not significantly reduce parents' time devoted to child care. Common sense suggests that if parents need help with child care they may leave the children with the grandparents even if they do not live together. On the other hand, they would probably not ask to grandparents to help with domestic chores if they lived independently.

The correlation coefficients of the error terms capture the correlation between unobservable factors - both unobserved individual preferences and omit-

ted variables - that influence the time use equations. In interpreting the correlation coefficients, we implicitly assume that there are no omitted variables in our empirical specification. In line with Bloemen et al (2010), the bottom part of Table 2 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, i.e. individuals marry each other if they have similar (unobserved) preferences. The same is not true for market work, since we observe a significant negative correlation. This could indicate a tendency towards a patriarchal model where the working husband prefers the wife to take care of the house and the children (indeed, the correlations between husband's market work, and wife's domestic work and child care are positive). Another quite common explanation for this result is specialization in the performed tasks (wives are more productive in the house, husbands in the market), however this should not be the case here. The economic explanatory variables included in the specification should properly account for differences in productivity (at least in the labor market) and a significant negative correlation between unobservable factors in the labor supply equations suggests a different explanation. The fact that unobservables in child care time determinants for both partners are positively correlated with the unobservable in own domestic and paid work equations, suggests that complementarity of time uses is well captured, at the individual level, by the covariates in the equations. Similarly, the fact that there is little to no correlation between a particular time use category of one member with the other categories of the spouse (for instance husband's child care is not related to wife's domestic and market work), indicates that the intra-household decision making about the time allocation between spouses is fairly well captured by the empirical specification of the model.

6 Concluding Remarks

The main aim of this paper is to assess the influence of alcohol consumption on parental altruism towards children. 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, while studying the determinants of time spent in child care, we are able to infer about parental preferences towards child welfare.

Empirically, we estimate a system of time supply equations (hours of child care, domestic work and market work) for both parents simultaneously, allowing for correlation among the residuals. Our results show that excessive

alcohol consumption of the husband negatively affects his and his spouse's hours spent doing child care. In our setting, a father's excessive consumption of alcohol reduces his preferences for his child's well-being, not only directly, but also indirectly, by limiting his wife's availability for child care. This evidence can be directly interpreted as a negative significant impact of alcohol on fathers' altruism towards his children. We find no effects of mother's alcohol consumption on any time use category.

As an additional result, we find that husbands' alcohol consumption also negatively affects the domestic work of their wives, and we interpret this result as a negative effect on husband's altruism towards his wife. Nevertheless, husband's alcohol consumption does not affect his wife's labor supply. One possible explanation of this asymmetry is that alcohol abuse may generate health problems to the husband, such that he needs more attentions from his wife. This would reflect more on time devoted to child care and domestic work rather than on time for market work, which is typically less flexible.

Overall, our findings confirm that excessive alcohol consumption is mainly a male phenomenon, and that it negatively affects other family members. In particular, the degree of husbands' altruism towards their children and their wives is reduced by alcohol intake, with a welfare loss for the more vulnerable household members. 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.

References

Aizer A (2004) Home alone: supervision after school and child behavior. Journal of Public Economics 88(9):1835–1848

Apps P, Rees R (1996) Labour supply, household production and intra-family welfare distribution. Journal of Public Economics 60(2):199–219

Baltagi BH, Geishecker I (2006) Rational alcohol addiction: Evidence from the russian longitudinal monitoring survey. Health Economics 15(9):893–914

Becker GS (1965) A theory of the allocation of time. The Economic Journal 75(299):493–517

Becker GS (1981) A Treatise on the Family. Harvard University Press, Cambridge, enlarged Edition, 1991

Berger G (1993) Alcoholism and the family, franklin watts edn. Franklin Watts, New York

Berger M, Leigh J (1988) The effect of alcohol use on wages. Applied Economics 20(10):1343–1351

Bloemen H, Pasqua S, Stancanelli E (2010) An empirical analysis of the time allocation of italian couples: are they responsive? Review of Economics of the Household 8(3):345–369

Brainerd E, Cutler D (2005) Autopsy on an empire: Understanding mortality in russia and the former soviet union. Journal of Economic Perspectives 19(1):107–130

Chatterji P, Markowitz S (2001) The impact of maternal alcohol and illicit drug use on children's behavior problems: evidence from the children of the national longitudinal survey of youth. Journal of Health Economics 20(5):703–731

Chiappori P (1988) Rational household labor supply. Econometrica 56(1):63–90

Chiappori PA (1992) Collective labor supply and welfare. Journal of Political Economy 100(3):437–67

Connelly R, Kimmel J (2009) Spousal influences on parents non-market time choices. Review of Economics of the Household 7(4):361–394

Feng W, Zhou W, Butler J, Booth B, French M (2001) The impact of problem drinking on employment. Health Economics 10(6):509–521

Folbre N, Yoon J (2007) What is child care? lessons from time-use surveys of major english-speaking countries. Review of Economics of the Household 5(3):223–248

French M, Zarkin G, Mroz T, Bray J (1998) The relationship between drug use and labor supply for young men. Labour Economics 5(4):385–409

French M, Maclean J, Sindelar J, Fang H (2011) The morning after: alcohol misuse and employment problems. Applied Economics 43(21):2705–2720

Garcia-Mainar I, Molina J, Montuenga V (2011) Gender differences in childcare: time allocation in five european countries. Feminist Economics 17(1):119–150

Giannelli G, Mangiavacchi L, Piccoli L (2012) Gdp and the value of family caretaking: how much does europe care? Applied Economics 44(16)(16):2111–2131

Grogan L, Koka K (2010) Young children and women's labour force participation in russia, 1992-2004. Economics of Transition 18(4):715–739

Gronau R (1977) Leisure, home production, and work-the theory of the allocation of time revisited. The Journal of Political Economy 85(6):1099–1124

Grossbard-Shechtman A (1984) A theory of allocation of time in markets for labour and marriage. The Economic Journal 94(376):863–882

Hallberg D, Klevmarken A (2003) Time for children: A study of parent's time allocation. Journal of Population Economics 16(2):205–226

Hamilton V, Hamilton B (1997) Alcohol and earnings: does drinking yield a wage premium? Canadian Journal of Economics pp 135–151

Heckman J (1979) Sample selection bias as a specification error. Econometrica 47(1):153–162

Kalenkoski C, Ribar D, Stratton L (2007) The effect of family structure on parents child care time in the united states and the united kingdom. Review of Economics of the Household 5(4):353–384

Kalenkoski C, Ribar D, Stratton L (2009) The influence of wages on parents allocations of time to child care and market work in the united kingdom. Journal of Population Economics 22(2):399–419

Kalenkoski CM, Ribar DC, Stratton LS (2005) Parental child care in single-parent, cohabiting, and married-couple families: Time-diary evidence from the united kingdom. American Economic Review 95(2):194–198

Kimmel J, Connelly R (2007) Mothers time choices. Journal of Human Resources 42(3):643–681

Kooreman P, Kapteyn A (1987) A disaggregated analysis of the allocation of time within the household. Journal of Political Economy 95:223–249

Lokshin M (2004) Household childcare choices and womens work behavior in russia. Journal of Human Resources 39(4):1094–1115

Lokshin M, Harris K, Popkin B (2000) Single mothers in russia: Household strategies for coping with poverty. World Development 28(12):2183–2198, cited By (since 1996) 13

MacDonald Z, Shields M (2001) The impact of alcohol consumption on occupational attainment in england. Economica 68(271):427–453

Mullahy J, Sindelar J (1991) Gender differences in labor market effects of alcoholism. American Economic Review 81(2):161–65

Pollak R (2003) Gary becker's contributions to family and household economics. Review of Economics of the Household 1(1):111–141

Powell L (2002) Joint labor supply and childcare choice decisions of married mothers. Journal of Human Resources 37(1):106–128

Tekin E (2004) Employment, wages, and alcohol consumption in russia. Southern Economic Journal pp 397–417

Zarkin G, French M, Mroz T, Bray J (1998) Alcohol use and wages: new results from the national household survey on drug abuse. Journal of Health Economics 17(1):53–68

Zohoori N, Mroz T, Popkin B, Glinskaya E, Lokshin M, Mancini D, Kozyreva P, Kosolapov M, Swafford M (1998) Monitoring the economic transition in the russian federation and its implications for the demographic crisis–the russian longitudinal monitoring survey. World Development 26(11):1977–1993.

Table 1 Descriptive Statistics of the variables used for the SUR Tobit estimation.

Individual Variables	Husband		Wife	
	Mean	SD	Mean	SD
Ln of predicted wage rate	4.2926	0.7364	3.9774	0.6812
Enterpreneur	0.0342	0.1818	0.0148	0.1206
Economic satisfaction	4.2479	1.3518	4.1896	1.3215
Age	35.3745	7.4685	32.8741	7.1889
Weight	80.7633	14.1280	66.9638	13.8743
Non-Russian	0.2727	0.4455	0.2448	0.4301
Pension (not retired)	0.0505	0.2191	0.0249	0.1558
Ln of childcare hours	2.3341	0.7260	2.7190	0.6922
Ln of domestic work hours	2.4436	0.7911	3.0338	0.5485
Ln of market work hours	3.8594	0.2651	3.7001	0.2948
Chronic illness	0.3131	0.4639	0.3559	0.4790
Disability	0.0194	0.1381	0.0132	0.1142
Smoke	0.6620	0.4732	0.2168	0.4122
Number of cigarettes	11.3108	10.2433	2.2688	5.0365
Frequent drinker	0.0583	0.2344	0.0054	0.0736
Occasional drinker	0.7172	0.4505	0.5975	0.4906
Binge drinking	0.4452	0.4972	0.1943	0.3958
Average daily grams of pure alcohol	13.5982	23.8010	3.1644	10.2778

Household Variables	Mean	SD
Number of children below 14	1.2587	0.5238
Number of children [4-6]	0.6263	0.6206
Number of children [0-3]	0.3737	0.5329
Ln of non labour income	9.4012	0.8890
Owner of dwelling	0.6807	0.4664
Number of granparents	0.0505	0.2426
Number of uncles	0.0186	0.1709
Dwelling dimension (cat.)	1.9829	0.7096
Round 1	0.0824	0.2750
Round 2	0.1033	0.3045
Round 3	0.0948	0.2930

Fig. 1 Evolution of Alcohol Consumption 2006-2010: Average daily grams of pure alcohol for drinkers. Source: RMLS, rounds XV-XIX
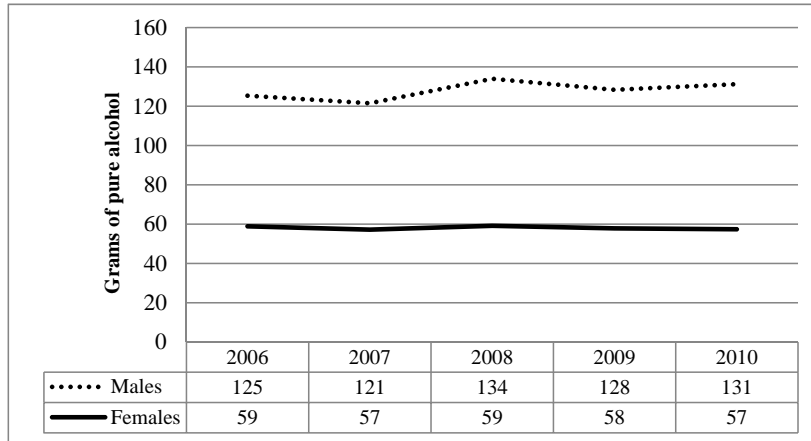

	2006	2007	2008	2009	2010
⋯⋯ Males	125	121	134	128	131
── Females	59	57	59	58	57

Table 2 SUR Tobit Estimation of couples' allocation of time.

	Childcare		Domestic work		Market work	
	Husband	Wife	Husband	Wife	Husband	Wife
Constant	2.2911 ***	2.4672 ***	0.6778 **	2.7049 ***	4.3155 ***	2.8322 ***
	(0.3734)	(0.3019)	(0.3338)	(0.2046)	(0.1097)	(0.6021)
Alcohol	-0.2379 **	-0.1170	-0.0091	0.1421	0.0006	-0.1758
	(0.1036)	(0.3274)	(0.0926)	(0.2358)	(0.0328)	(0.4071)
Binge drinking	-0.0377	0.0815	0.0378	0.0265	0.0293	0.2030
	(0.0567)	(0.0672)	(0.0557)	(0.0480)	(0.0195)	(0.1271)
Alcohol - partner	-0.0249	-0.2067 **	0.2421	-0.0870 *	0.0039	0.0104
	(0.3565)	(0.0821)	(0.3580)	(0.0483)	(0.0990)	(0.1346)
Age	-1.4136 **	-1.3021 *	0.0860	0.3087	-0.1547	3.7167 ***
	(0.6236)	(0.6929)	(0.6078)	(0.4159)	(0.2057)	(1.0893)
Age - partner	-0.5364	-0.2741	0.5228	0.7266 **	0.0780	0.7100
	(0.6903)	(0.6029)	(0.6545)	(0.3652)	(0.2483)	(0.9722)
Wage rate	0.1262 ***	0.0486	0.1877 ***	-0.0075	-0.1070 ***	0.1427 **
	(0.0439)	(0.0371)	(0.0403)	(0.0252)	(0.0131)	(0.0680)
Wage rate - partner	0.0413	0.1097 **	0.0767 *	0.0108	0.0091	-0.4367 ***
	(0.0485)	(0.0438)	(0.0461)	(0.0286)	(0.0147)	(0.1005)
Non-labour income	-0.0253 ***	-0.0153 **	-0.0024	-0.0094 **	-0.0121 ***	-0.0691 ***
	(0.0092)	(0.0076)	(0.0083)	(0.0047)	(0.0030)	(0.0150)
Primary education	-0.1053	0.1150	0.0414	0.0711	-0.0069	-0.1249
	(0.0758)	(0.0744)	(0.0710)	(0.0476)	(0.0235)	(0.1351)
Tertiary education	-0.0518	0.1939 **	0.1228	0.1015 **	-0.0103	0.1900
	(0.0940)	(0.0772)	(0.0881)	(0.0503)	(0.0287)	(0.1402)
Primary education - partner	-0.0341	-0.1310 **	-0.0287	0.0025	-0.0304	0.0707
	(0.0869)	(0.0642)	(0.0777)	(0.0443)	(0.0277)	(0.1277)
Tertiary education - partner	0.0763	-0.0666	-0.0487	0.0636	0.0091	0.2283
	(0.0900)	(0.0795)	(0.0805)	(0.0519)	(0.0279)	(0.1511)
Number of children [0-3]	0.5991 ***	0.3276 ***	0.1295 *	-0.2841 ***	0.0102	-0.3582 ***
	(0.0681)	(0.0566)	(0.0686)	(0.0408)	(0.0221)	(0.1132)
Number of children [4-6]	0.4099 ***	0.3242 ***	0.1138 *	0.0850 **	0.0166	0.2678 **
	(0.0713)	(0.0605)	(0.0685)	(0.0416)	(0.0225)	(0.1152)
Non-Russian	-0.1302	-0.1327 *	-0.1243	-0.1193 **	-0.0120	-0.3295 **
	(0.0809)	(0.0701)	(0.0813)	(0.0491)	(0.0277)	(0.1384)
Disability + chronic disease	-0.0162	0.0396	0.1456 ***	0.0445	0.0039	0.0200
	(0.0542)	(0.0487)	(0.0561)	(0.0326)	(0.0198)	(0.0930)
N. of cigarettes	-0.0013	0.0009	-0.0045	-0.0029	0.0018 *	-0.0172 *
	(0.0028)	(0.0046)	(0.0028)	(0.0031)	(0.0009)	(0.0091)
Economic satisfaction	0.0021	-0.0020	0.0175	-0.0022	0.0055	0.0671 *
	(0.0203)	(0.0169)	(0.0201)	(0.0125)	(0.0075)	(0.0348)
Pension (not retired)	0.1630	-0.1941	-0.3241 ***	-0.2534 **	-0.0614	-2.3690 ***
	(0.1323)	(0.1646)	(0.1154)	(0.1222)	(0.0500)	(0.2817)
Number of uncles	-0.0129	0.0946	-0.1159	-0.0914	0.0255	-0.7133 ***
	(0.1870)	(0.1323)	(0.2121)	(0.1053)	(0.1060)	(0.2656)
Number of grandparents	0.2231 *	-0.0074	-0.2248 *	-0.1788 ***	-0.0662	-0.0804
	(0.1222)	(0.1149)	(0.1303)	(0.0665)	(0.0474)	(0.1740)
Owner of dwelling	0.0455	-0.0088	0.1282 **	0.0025	-0.0121	0.0675
	(0.0679)	(0.0575)	(0.0622)	(0.0376)	(0.0225)	(0.1013)
Dimension of dwelling	-0.2039 ***	-0.0661 *	0.0317	0.0170	-0.0127	-0.0509
	(0.0465)	(0.0392)	(0.0420)	(0.0238)	(0.0148)	(0.0705)
Enterpreneur	-0.0337	0.1193	-0.1002	0.1054	0.1071 *	0.7484
	(0.1646)	(0.2254)	(0.1611)	(0.1946)	(0.0560)	(0.7440)
Round 1	-0.0082	-0.1250	0.2818 ***	0.1136 *	0.0266	-0.3865 **
	(0.1141)	(0.1120)	(0.1088)	(0.0646)	(0.0372)	(0.1799)
Round 2	-0.2941 ***	-0.2277 **	0.0165	0.1725 ***	0.0052	0.1207
	(0.1133)	(0.0988)	(0.1093)	(0.0660)	(0.0381)	(0.1804)
Round 3	-0.1651 *	-0.1030	0.0856	0.0016	-0.0082	-0.0005
	(0.0986)	(0.0867)	(0.1069)	(0.0522)	(0.0356)	(0.1626)

Table 3 Errors correlation matrix for the SUR Tobit estimation.

	Childcare		Domestic work		Market work	
Cross-equation correlation	Husband	Wife	Husband	Wife	Husband	Wife
Rho: Child care husband/		0.4828 ***	0.2964 ***	0.0384	0.3853 ***	0.0560
		(0.0260)	(0.0304)	(0.0372)	(0.0282)	(0.0352)
Rho: Child care wife/			0.1610 ***	0.1110 ***	0.0682 *	0.1917 ***
			(0.0318)	(0.0334)	(0.0355)	(0.0321)
Rho: Domestic work husband/				0.1515 ***	0.2705 ***	0.0086
				(0.0331)	(0.0330)	(0.0341)
Rho: Domestic work wife/					0.1998 ***	0.4104 ***
					(0.0311)	(0.0297)
Rho: Market work husband/						-0.0611 *
						(0.0359)