What makes Russian women (un)happy? A closer look to the family

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Abstract

Two decades of economic transition in Russia revealed that Russian women on average are less happy than men, and this persisting evidence might be a signal of a vulnerable position of women in the country. This paper addresses intra-family decision making process and investigates whether this "unusual" gender happiness gap is caused by a mismatch between the socially imposed traditional gender roles and the actual performed ones. Understanding of the forces driving the phenomenon may help in elaboration of the appropriate social policies both for achieving gender equality goals and improving psychological climate in the transforming Russian society. In the article we test three main hypotheses: (1) social disapproval of the increasing earning power of women in relation to men (the latter loose their status of the bread-winners); (2) impact of the equality of the division of housework (different categories of it) on individual well-being; (3) importance of a higher level of freedom for the men's choices with the sequential adjustment of the women's decisions to the choices of the proper partner. Prime-age working adults living in partnership constitute the dataset which is a part of the Russian Longitudinal Monitoring Survey for 1994-2004. Given the ordered character of the satisfaction variable, it is modeled with the help of the seemingly unrelated bivariate ordered probit model aiming at the adjustment for unobserved factors influencing decisions of both partners. The results show, for 1994-1998, a mixture of traditional and pro-equality views in evaluation of the well-being impact of the gender roles performed in a family, with women being less supportive to emancipation then men. In the second period of economic growth (2000-2004) we observe a tendency towards less traditional values when evaluating the time-use decisions' "fairness".

JEL codes: D13, J12, J22
Key words: Russia, subjective well-being, housework, fairness and equality

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> For centuries, the Russian family has been a highly patriarchal institution with the normative prescriptions typical of peasant community life, and this remains the case today.
>
> Cubbins and Vannoy, 2005, p.38

1 Introduction

Studies of the first decade of the Russian transition reveal that Russian women on average are less happy than men, which is noted as an "unusual finding" by several authors. This "national peculiarity" could indicate vulnerability of the women's position in the country and understanding the forces driving the phenomenon may help in both achieving gender equality goals and improving the psychological climate in the transforming Russian society. The purpose of this paper is to address intra-family decision-making process and to investigate whether the gender satisfaction gap is caused by a mismatch between the socially imposed traditional gender roles and the actually performed ones.

After the abolition of the soviet system labor market participation of Russian women is still high as often both spouses have to work to meet their basic needs. The principle of equal labor market opportunities and equal pay for the two genders is, in fact, not followed any more, possibly giving an increased perception of gender discrimination. Moreover, even if Russian women are rather emancipated at work (in terms of the labor market participation rates), they seem not to be in their family life.

The effect of economic factors may be considered as fair or unfair in different cultural settings, which in its turn, increases or decreases the individual well-being. So we test several hypotheses that try to explain the positive gender satisfaction differential in favor of men from the point of view of intra-family interrelationships. (1) Negative gender satisfaction gap is caused by the fact that women are forced to take the leading role in their households, while society attributes the role of bread-winner to men. (2) Women, even if working, hold the main responsibility for housekeeping activities. In general, women are overloaded with work, and negative satisfaction differential is the result of this being considered as "unfair". (3) Negative gender satisfaction gap is caused by the fact that one of the partners, namely the man, has the right of "choosing first", while the female-partner is forced to adjust her behavior.

Life satisfaction of prime-age working individuals living in couples, married officially or de facto, is assessed on the basis of the Russian Longitudinal Monitoring Survey dataset for 1994 – 2004. Given the ordinal character of the satisfaction variable modeled and the presence of unobservable factors influencing the decision making processes of both the spouses, seemingly unrelated bivariate ordered probit strategy is used.

The results show a mixture of traditional (man as the bread- winner, and woman as the housekeeper) and pro-equality views when respondents evaluate the impact of the gender roles performed in a family on their well-being. A slight tendency toward a less traditional society is also noted. Men seem to be

more supportive of this tendency than women, especially when the economic contributions of the spouses are considered.

The rest of the paper is organized as follows. Section 2 contains an overview of previous findings on gender differences in satisfaction in the world and in Russia, in particular. Gender roles in family life and their impact on individual satisfaction are discussed. The model is formalized in Section 3. Dataset and estimation strategy are introduced in Section 4. Section 5 presents the estimation results. Conclusions are in the final section.

2 Previous literature

Subjective well-being indicators. The reliability and validity of subjective indicators has been extensively studied in literature during the last decades. Life satisfaction measures[1] are proved to be a meaningful concept, to have biological foundations and are able to contribute to economics research[2]. Historically, the concept of happiness is linked in economic research to the concept of utility, and a higher level of subjective well-being is usually related to a higher utility level. Increase in individual well-being contributes positively to the well-being of society. One strain of research explores the factors influencing life satisfaction and its' main components (e.g. "big seven" in Layard, 2005). A rather big number of happiness covariates is already listed. At the same time, only a relatively small number of papers is concentrated on the gender differences in life satisfaction and most of researches just comment on the sign and significance of the respective male or female dummy in their happiness equation.

Gender differences in average satisfaction levels. A paper of Clark, 1997, together with a number of studies from all over the world, has created a widespread opinion attributing higher levels of life satisfaction to women in comparison with men. Job satisfaction seems to be the most addressed life domain when the reasons for why a gender happiness gap has emerged are being studied[3]. Usually the evolution of a gender dummy coefficient (or probability to report some level of satisfaction) is tracked for combinations of explanatory variables (for example, Clark, 1997, Lalive and Stutzer, 2004).

While a positive satisfaction differential is referred as a paradox and a number of its explanations is provided, the reasons driving a negative (or absent) happiness gap are usually seen in unfavorable position of women in the labor market and they are not usually discussed in detail. Unlike the commonly spread view, a (positive) gender satisfaction differential in favor of women is not constant, neither across the strata of population[4], nor over time[5]. Accord-

[1]Further in this paper the terms 'subjective well-being', 'happiness', and 'satisfaction with life' are used as interchangeable.

[2]See reviews in Frey and Stutzer, 2002, Frey and Stutzer, 2005, VanPraag, 2007, and Clark et al., 2007

[3]The explanation of job satisfaction gap include, among others, the sorting of the unsatisfied with job women, especially the married ones, out the labor force (Clark, 1996); different tastes for jobs and perception of 'work-role inputs' and 'outputs' among genders (Sousa-Poza and Sousa-Poza, 2000b); women being less critical to their work environment (Sloane and Williams, 2000); their lower (internal) salary standards (Clark, 1997) and hence, lower reservation wages with respect to men (Ogloblin and Brock, 2005).

[4]Clark, 1997 for the Great Britain in 1991.

[5]Sousa-Poza and Sousa-Poza, 2003 show the transitory character of the positive gender satisfaction gap for the Great Britain in 1991-2000.

ing to Sousa-Poza and Sousa-Poza, 2000a it is only "an Anglo-Saxon paradox"[6]. In contrary, women seem to be happier than men in post-communist Romania (Mitrut and Wolff, 2008). When taking the case of transitional Russia, Senik, 2004 and Graham et al., 2004 report as "an unusual finding" the unhappiness of women relatively to men. Given the insignificant difference in job-satisfaction between men and women in Russia found by Sousa-Poza and Sousa-Poza, 2000b, we turn to the role of the family life issues in explaining the 'unhappy women' phenomenon.

Gender roles in family life and satisfaction. Worldwide research shows a robust positive relationship between marriage and individual happiness even if selection of happy people in marriage is controlled for (e.g. review in Ribar and der Arbeit, 2004). Living in partnership usually means obtaining higher standards of living due to economy of scale, constant emotional support from the partner and division of the total workload between spouses. The latter is composed, indeed, of the tasks which are highly gender-specific. In modern societies, women are much less emancipated "at home" than in the working sphere[7].

The case when the woman bears the main responsibility for housework fits the predictions of the "new home economics" by Gary Becker and the "economic dependence theory", both giving a gender neutral solution for the distribution of time between working and non-working activities chosen by each of the spouses. The former bases its prediction on the fact that two collaborating spouses have different productivity in performing labor market- and house-work. The latter, in its turn, attributes a lower bargaining power, when taking decisions about the time distribution, to that of the partners who earns less[8].

Women are exposed to less social pressure than men when being out of the labor force (or unemployed), but even when working, they still bear the main responsibility for housework in both developing and developed countries, often at the expense of their leisure time (e.g. Fuchs, 1989, Hadfield, 1999). Women traditionally perform the most tedious and routine low-control indoor component of housework, which leads to higher levels of psychological distress (e.g. Hochschild and Machung, 1990, Baxter, 2000). Additionally, an overload with work of one of the spouses, usually wife, may provoke the feeling of dissatisfaction or even health problems, decrease the quality of marriage and increase the likelihood of divorce (e.g. Frisco and Williams, 2003).

The fact of being socially accepted and "fitting the norm" is found to be particularly important for women. Even in dual-earner households women still

[6]Two international studies, Sousa-Poza and Sousa-Poza, 2000a and Sousa-Poza and Sousa-Poza, 2000b, showed the presence of a positive gender (job)satisfaction gap in the United States and Great Britain. The latter paper adds Switzerland in this list, at the same time demonstrating the 'happier men' evidence for Japan and a 'neutral' result for 17 countries from Western and Eastern Europe.

[7]The latter was possible due to the fact that gender equality has been proclaimed as one of the key objectives by a number of international organization and governmental bodies, such as UNICEF, ILO, European Commission and so on.

[8]Preferences over the leisure and income might be not only different among spouses, who possibly have contradictory goals, but also depend on the level of cooperation while deciding on the amount of time to put into housework and work in the labor market. Cooperative behavior would induce a greater amount of time dedicated to the market and household work, while leisure is more preferred in non-cooperative setting. See a review in Neuwirth and Haider, 2004 discussing the modern approaches to a family decision making process modeling.

try to fulfill the "gender specific familial expectations" (see several papers cited by Frisco and Williams, 2003). But while they compare the housework sharing in their own family with that of friends, men often use an imaginary reference group "who performed less"(Himsel and Goldberg, 2003). An increasing equality in housework sharing in a reference group creates the image of the own situation as being "not normal", but mainly among wives and much less among husbands with the respective strands of influence on life satisfaction level (Kluwer et al., 1996, Freudenthaler and Mikula, 1998). Women, in general, are more concerned with the "fairness" issues then men (Widmalm, 1998, Frisco and Williams, 2003).

"Equality" and "fairness" of the housework division do not necessarily coincide (Greenstein, 1996). "Perceived fairness" of tasks and time distribution is not only different for the two genders, but even more important for the well-being evaluation than hours actually worked at home (e.g. Lennon and Rosenfield, 1994, Wilkie et al., 1998, Baxter, 2000, Frisco and Williams, 2003). The sense of fairness depends on the characteristics of the comparison group, individual expectations of the own role in a couple (Thompson, 1991). Then intra-family choices made by each partner, and hence the "perceived fairness", are strongly influenced by the ratio of traditionalism-liberalism views in a society (e.g. a study of Lalive and Stutzer, 2004 for Switzerland).

In a traditional society greater career opportunities and higher wages for men are considered to be a "fair" practice, as man's role of a bread-winner is fundamental. Husband's participation in housework then is perceived by his wife as a supportive behavior with a positive effect on her life satisfaction, especially among full-time working wives (Pina and Bengtson, 1993). More traditional is the view of women on the gender roles within family, her personal well-being is less affected by an unequal division of housework between spouses (Greenstein, 1996). When a woman becomes the primary breadwinner, she tends to evaluate her husband's contribution to housework differently "feeling entitled to more help" from her spouse (Ferree, 1987). Not only relative incomes but the "autonomous earnings of women" influence the number of hours she spends on housework (e.g. Gupta, 2007).

A "leisure gap", which is often the consequence of a "wage gap", nevertheless can be asymmetric between partners. Beblo and Robledo, 2007, using German data, showed that husbands enjoy more leisure time than their wives (other things equal) when the latter earn more. Although contributing more to the family budget, women do not exercise their economic power and spend more time on housework to affirm their gender-atypical relative incomes. Possibly, in this case the unequal proportions of income provided by each spouse are reflected in the structure of household consumption. An unequal sharing of the household income is one of the important determinants of the subjective household economic well-being and hence, of the individual life satisfaction (e.g. Kalugina et al., 2006), Plug and VanPraag, 1998).

Historical background. Russia. On the eve of transition, equal labor market opportunities for men and women were an officially declared principle in Russia, and the officially fixed "wage grids" existed to ensure equal salary for the same job regardless of the gender of a worker. In fact, Soviet women were educated as well as men (by 1970s), had one of the highest world rates of participation in the labor force (about 90%), and their earnings sometimes even exceeded

those of husbands (Cubbins and Vannoy, 2005). Extensive supply of child care facilities and fully paid maternity leaves stimulated women to work, as well as the stigmatization of nonworking citizens. Nevertheless, gender discrimination existed, manifested in the gender wage gap on the level of about 0.7 (as in other planning economies, according to Newell and Reilly, 1996, Brainerd, 1998), and practices hampering women's careers. Women were not only encouraged to find employment in "traditionally female" jobs (which were often low paid), but also had no access to some occupations which could be harmful for their ability to have children. The socially approved "dual roles" and inability to substitute between household work and the formal sector work, were forcing them to choose easier jobs with more convenient work schedules, or even just those closer to home (Deloach and Hoffman, 2002). Low commitment to jobs among women were accompanied by the rigidity toward the job changes due to a higher level of job uncertainly associated with a new employer (Linz, 1996). All these were creating a vicious circle, solidifying the women's unfavorable position in the labor market.

After the beginning of transition, even if their educational attainment was still high (Paci, 2002), the Russian women themselves took for granted their role of an employee with a lower status (Ashwin and Yakubovich, 2005, Ogloblin and Brock, 2005). The gender wage gap increased in 1991-1994 (Newell and Reilly, 1996, Kazakova, 2007, Lehmann and Wadsworth, 2007). Possibilities for women's career development were scarce (Roshchin and Solntcev, 2006). Nevertheless, most of the women had no possibility to decide whether to work or to stay at home, as incomes of husbands were generally not enough to keep a household on the subsistence level (Vannoy, 1999). Glinskaya and Mroz, 2000 report that in the period of 1992-1995 the rate of women working in formal employment dropped from 82% to 72%, while these figures for men were 89% and 81% respectively. Despite the transition toward market economy, and social and economic changes, only slight modifications of the traditional role of women in the Russian society (and family) were observed (Cubbins and Vannoy, 2005).

Nowadays working women spend nearly the same amount of time for paid work as in the EU countries, and even more time in unpaid family work (Malysheva and Verashchagina, 2008). Housekeeping activities are traditionally considered as a (completely) female responsibility, and family income does not play a significant role in determining the amount of housework performed. Men's housework decreases as the household size increases, shifting the burden of it on women (Deloach and Hoffman, 2002).

While there is a number of papers studying different life dimensions of life satisfaction in transitional Russia (e.g. role of income and income comparisons: Rose and McAllister, 1996, Schyns, 2001, Graham et al., 2004, Senik, 2004; of self-rated economic welfare: Ravallion and Lokshin, 2001, 2002; of unemployment and informal employment: Eggers et al., 2006, Beuran and Kalugina, 2006; mental risk-sharing in marriage: Powdthavee, 2005, chapter 6), to my knowledge, the impact of the intra-family time-allocation decisions and role of traditions on individual well-being in Russia has not been discussed yet.

3 Formalization of the model

Further in this section, we formulate three hypotheses attempting to explain a lower level of life satisfaction of Russian women with respect to men. The manifestations of the socially approved traditional gender roles in the society, which has been changing, are emphasized.

(1) "Man is the bread-winner"
(2) "Women perform most of the housework"
(3) "Man chooses first"

3.1 Basic set-up

This sub-section describes the basic set-up for the wife's and husband's decision making process, taking into consideration the case of two (labor market and "non-labor market") and three (labor market, housework, leisure) possible time-use categories. It is a contribution from each of the factors entering the individual utility functions, that is of interest. For the sake of simplicity, non-labor income is set to be zero, and it is implicitly assumed that all the income received is consumed.

Market vs. "non-market" activity. Let us start with a simple set-up, where individual utility functions of two partners in couple/household include as inputs individual hours of "non-working activities" Z_i and pooled labor income of two spouses Y. An augment of the joint income could be evaluated differently by wife and husband (and so $\beta_{2f} \neq \beta_{2m}$). At the same time, spouses do not distinguish between the sources (herself/himself or partner) contributed to this augment.

$$\max U_i = \beta_{1i} \ln(Z_i) + \beta_{2i} \ln(Y) \tag{1}$$

$$\text{s.t. } Y = w_f L_f + w_m L_m$$
$$Z_i = 24 - L_i$$
$$i = f(\text{emale}), m(\text{ale})$$

Here L_i stands for the hours supplied to the labor market by a spouse i for an exogenously given per hour wage rate w_i. The coefficients β ($\beta_{1i} > 0$, $\beta_{2i} > 0$) reflect preferences of individuals over leisure time and income(consumption) and can differ between individuals of two types ($female$ or $male$) in the population.

If each of the spouses takes the other's behavior as given and decides non-cooperatively on the number of hours to supply to the labor market, then two optimization problems are solved *simultaneously*:

$$\max_{L_m} U_m = \beta_{1m} \ln(24 - L_m) + \beta_{2m} \ln(w_f \bar{L}_f + w_m L_m)$$

$$\max_{L_f} U_f = \beta_{1f} \ln(24 - L_f) + \beta_{2f} \ln(w_f L_f + w_m \bar{L}_m)$$

One can note, for example, for the wife's problem that $\frac{\partial U_f}{\partial L_m} = \frac{w_m \beta_{2f}}{w_m L_m + w_f L_f} > 0$. She receives a positive marginal utility when her husband augments his labor supply (given fixed wage rate it is equivalent to an increase in their pooled

income). At the same time, wife will tend to decrease her own hours worked (as $\frac{\partial L_f}{\partial L_m} = \frac{-\beta_{1f} w_m}{(\beta_{1f}+\beta_{2f}) w_f} < 0$).

Market work vs. housework vs. leisure set-up. In the problem (1) we were not distinguishing between the time spent on housework (H_i) and pure leisure (Z_i^*) (these two categories were aggregated in one called "non-market activity"). Now let us assume that a household produces some "household (public) good" G, with the Cobb-Douglas production technology requiring both spouses' housework time among the inputs (in line with the time allocation approach). Then if L_i stays for the hours of remunerated work, and η_1 and η_2 are elasticities of the household production function[9] with the time input of wife and husband respectively, we rewrite the individual optimization problems as following.

$$\begin{gathered} \max U_i = \gamma_{1i} \ln(Y) + \gamma_{2i} \ln(G) + \gamma_{3i} \ln(Z_i^*) \\ \text{s.t. } Y = w_f L_f + w_m L_m \\ 24 = L_i + H_i + Z_i^* \\ G = H_f^{\eta_1} H_m^{\eta_2} \\ i = f(\text{emale}),m(\text{ale}) \end{gathered} \tag{2}$$

Wages w_m and w_f are exogenously given. Three time use categories produce the additive contributions to individual utility function. Each of the time uses is "normal", so the increase of the time endowment would entail an increase in time spent on these activities. Every unit of the total labor income of the household (Y) is equally valuable regardless of its source. Both spouses contribute to the household good production and derive the same marginal utility from it. Leisure time (Z_i^*) is "consumed" individually by each of the partners.

If the problem is solved as simultaneous independent optimization (Nash-Cournot), each of the spouses takes the behavior of the partner as given. For example, the woman optimizes with respect to L_f and H_f the following indirect utility function:

$$U_f = \gamma_{1f} \ln(w_f L_f + w_m L_m) + (\gamma_{2f}\eta_1) \ln(H_f) + (\gamma_{2f}\eta_2) \ln(H_m) + \gamma_{3f} \ln(24 - L_f - H_f)$$

In case when the weights (coefficients γ) of each of the three components of the individual utility function are the same for both partners in the household, husbands and wives with similar wage rates should enjoy the same amounts of leisure time, while a better-paid spouse should have less leisure time (result reported by Beblo and Robledo, 2007). Also, an increase in the hours worked by men L_m (or man's labor income $Y_m = w_m L_m$) reduces the optimal number of hours supplied to the labor market by his wife, but augments the amount of time spent by her on household keeping activities.

On the basis of the set-up in (1) and (2), three hypothesis are formulated further.

3.2 "Man is the bread-winner"

Hypothesis 1: *Negative gender satisfaction gap is caused by the fact that women are forced to take the leading role in their households, while society attributes the role of bread-winner to men.*

[9] If constant return to scale is assumed for the 'household good' production function then $\eta_1 + \eta_2 = 1$.

In the case of a traditional society, with its prescribed gender roles of men as family bread-winners, and women as taking care of the household, the balance of "relative economic forces" in a household plays an important role. Matching with the socially approved gender roles would influence positively the spouses' satisfaction level. In Russia, even if women participate quite actively in the labor market, their earnings are considered to be of the "supportive character"[10]. A husband who earns less than his wife is not considered successful, neither by other men, nor by his own wife.

Let us modify the problem (1) by including in the individual utility functions a share of the joint income earned by a spouse. [11]. Then the individual problems can be formalized as

$$\max U_i = \beta_{1i} \ln(Z_i) + \beta_{2i} \ln(Y) + \beta_{3i} \ln(\frac{w_f L_f}{Y}) \tag{3}$$

$$\text{s.t. } Y = w_f L_f + w_m L_m$$
$$Z_i = 24 - L_i$$
$$i = f(\text{emale}), m(\text{ale})$$

Then we would expect $\beta_{1i} > 0$, $\beta_{2i} > 0$ for $i = f(emale), m(ale)$, while $\beta_{3i} < 0$. A "traditional man", when his earnings increase, receives a positive marginal utility from the augmentation of the total household income. Moreover, the greater his share of income earned, the smaller is the marginal negative utility from the share of income produced by his wife (socially approved role of man as the bread-winner is reaffirmed). A "traditional wife" then receives a negative marginal utility from an augment of the own share of income earned relatively to that of husband[12]. An "emancipated wife" ($\beta_{3f} > 0$) then is happier only if $\beta_{2f} > \beta_{3f}$, her main focus is on the increase of the household income not on the source (spouse) the money came from.

3.3 "Women perform most of the housework"

Hypothesis 2: *Women, even if working, hold the main responsibility for the housekeeping activities. In total, women are overload with work, and consider an unequal division of housework between spouses as "unfair", which induces their lower satisfaction with respect to their husbands.*

Let us modify the problem (2) by including some preferences for "fairness" of the division of household work between the two spouses. We assume that the wife has her subjective judgment/opinion on how big her share of the household work responsibilities is supposed to be. A share greater than the subjectively

[10] In this case we would expect a women's wage to have an insignificant impact on her personal satisfaction, while the men's wage increase would give a significantly positive direct effect on his personal well-being.

[11] Other possibilities could be inclusion in the utility function not the fraction itself, but of an indicator function, reflecting that the share of income of a spouse is greater than 0.5 ($I(\frac{w_i L_i}{Y} > 0.5)$). Or, for example, how in Sanchez and Thomson, 1997, to use an index of economic dependency (Ed): $Ed = (Y_m - Y_f)/(Y_f + Y_m)$. $Ed = -1$ if husband has no earnings and $Ed = +1$ if wife has no earnings. $Ed = 0$ if both spouses have equal incomes.

[12] Wife is happier when husband's earnings grow if $\beta_{3f} < 0$

$$\frac{\partial U_f}{\partial w_m} = \frac{\beta_{2f} L_m}{w_f L_f + w_m L_m} - \frac{\beta_{3f} L_m}{w_f L_f + w_m L_m} = \frac{L_m(\beta_{2f} - \beta_{3f})}{w_f L_f + w_m L_m} > 0$$

accepted one, is considered by her as "unfair". It is possible to assume that both spouses care about their shares of housework performed, but given a higher total work load of women, the latter are more likely to have a concern about it. We assume that it is the wife who cares about "equality" of distribution of the household work, but not the husband, and hence we include the respective term only into the her utility function. Then each of the spouses solves his/her own individual problem, taking the other's decision as given (conjecture of the other's L_i, H_i)

$$\begin{gathered} \max U_f = \gamma_{1f} \ln(Y) + \gamma_{2f} \ln(G) + \gamma_{3f} \ln(Z_f^*) + \gamma_{4f} \ln(H_m/H_f) \\ \text{s.t. } Y = w_f L_f + w_m L_m \\ 24 = L_f + H_f + Z_f^* \\ G = H_f^{\eta_1} H_m^{\eta_2} \end{gathered} \tag{4}$$

$$\begin{gathered} \max U_m = \gamma_{1m} \ln(Y) + \gamma_{2m} \ln(G) + \gamma_{3m} \ln(Z_m^*) \\ \text{s.t. } Y = w_f L_f + w_m L_m \\ 24 = L_m + H_m + Z_m^* \\ G = H_f^{\eta_1} H_m^{\eta_2} \end{gathered}$$

all the coefficients $\gamma_{ji} > 0$ for $i = f(email), m(ale), j = 1, 2, 3$. H_m/H_f is the ratio of housework hours performed by husband to the housework hours performed by wife. Then $\ln(H_m/H_f)$ disappears in case of the "fair" equal division of household work. In all the cases, when wife performs more household work than husband $\gamma_{4f} \ln(H_m/H_f) < 0$, and so, wife is displeased. In the opposite case, when husband does the most part of the housework, wife gets a positive utility. It should be noted, that in case of strong traditional family values the coefficient γ_{4f} is likely to be insignificant.

3.4 "Man chooses first"

Hypothesis 3: *Negative gender satisfaction gap is caused by the fact that one of the partners, namely, men, has a right of "choosing first", while female-partner is forced to adjust own behavior.*

Given the traditional view on intra-family decisions in the Russian society, and the subordinated role of the wife's earnings, let us suppose that spouses "play" a sequential Stackelberg game when choosing the number of hours of market work and housework. Male-partner (Stackelberg leader) makes his choice about the distribution of his time endowment, female partner observes this choice and then makes a decision for her own time-allocation problem.

The individual problems are defined as in (1) or (2). These time allocation problems are solved then using the backward induction method: firstly, wife's best response functions are derived from her optimization problem, then they are inserted into the husband's problem.

Husband's labor supply then depends positively on the ratio of wife's wage to his wage. In response to an increase in hours worked by the husband, the wife is less keen to work in the labor market. When the husband increases his contribution to the total household income, the wife contributes more to the production of the 'household good'.

We expect to find insignificant coefficients for the wife's time allocation choices in the husband's equation.

4 Data and estimation strategy

4.1 Data source, sample and variables

The dataset in consideration is a part of the second wave of the nationally representative Russian Longitudinal Monitoring Survey (RLMS) covering about 4000 households (about 10000 individuals) each round [13]. Nine rounds related to the period from 1994 to 2004 are considered (in 1997 and 1999 the survey was not conducted) in the present study. Although some preliminary descriptive statistics are estimated on the whole sample of individuals available, the prime age adults (25 – 54) living in partnership (officially, or de facto) are of the primary interest in this paper. We use further the terms wife/husband to indicate female and male-partner independently of the legal status of the partnership. Given that the time-use decisions in the context of interactions between spouses are of the main interest, we keep in our sample only couples where both partners report their status as "currently working". Those on maternity leave, on any type of paid or unpaid leave are not included in the sample.

Moreover, those included had reported the number of hours worked and wages received. Estimation is performed on the data pooled over 1994-1998 and 2000-2004[14] , and counting for about 2916 and 3528 couples respectively[15] . In time use questionnaires, information on 6661 individuals is available. The number of observations exploited in estimation is lower due to the missing values in explanatory variables.

Now let us discuss briefly the list of variables used in further analysis (more detailed description can be found in the Appendix A).

Satisfaction measure. Satisfaction with life in general coded from 0, "completely unsatisfied", to 4, "completely satisfied" (5-points Likert's scale).

Time use categories. A rich set of time use variables is available only for *1994 – 1998.*An absolute number of hours (per week) spent per housework/leisure time/working in the labor market can be recovered from the questionnaire. The following sets of variables are created to describe time-use within a week (total endowment of time per week of 168 hours).

- "$Work$" + "$Housework$" (without child care) + "$Leisure$" (includes child care) = 168 hours
- "$Work$" + "$Housework_{ch}$" (with child care) + "$Leisure_{ch}$" = 168 hours

Then "$Housework$" includes the following activities repeated nearly on a daily basis: cooking, washing the dishes, house cleaning, laundry, and purchas-

[13]Detailed information about the survey can be found on the following website. "Russia Longitudinal Monitoring Survey - UNC Carolina Population Center" http://www.cpc.unc.edu/rlms/

[14]Data are pooled over 1994-1998 and 2000-2004 time periods due to two reasons (firstly, different macroeconomic settings, secondly, due to availability of time-use questions only in 1994-1998). Some small number of observations was dropped due the data cleaning performed: inconsistent gender and year of birth of individuals.

[15]The survey was originally designed as a repeated cross-sectional study, individuals were not followed if moved out of the dwelling. New individuals are added each round to maintain the original sample size. While estimating, clustering within individual (repeated observations) is controlled for.

ing the food items. The "*Leisure*" category then includes all the other activities not cited above, in particular, time for sleeping and rest.

For *2000 – 2004* the "pure" leisure time enjoyed by each of the spouses cannot be evaluated due to absence of the time-use questionnaire. Full time available to an individual can be subdivided into "working hours" and "non-working hours" (as in the G. Becker approach). The former category is recoverable from the "last month before the interview hours worked" question (only prime job hours are taken into account here).

- "$Work_{week}$" + "$NonWork_{week}$" = 168 hours

Income related variables

- total expenditures of household (as a proxy of the household income)
- per hour wage (from the primary job)[16]

Socio-demographic and other controls. The following list of controls[17] is included: gender, age, age squared, indicator of health problems, household composition (children of the age 0-6 and 7-18, number of other adults); regional and time dummies.

Social opinion on gender roles. These variables could be used only on cross-section (set of questions changes from round to round, not presented in all the rounds). We discuss them as an assessment for all respondents' view of the gender roles.

4.2 Estimation strategy

Given the ordered nature of the dependent satisfaction variable, non-linear modeling strategy is to be used, taking into consideration the fact that the error terms of the husband's and wife's equations are likely to be correlated. Then the seemingly unrelated bivariate ordered probit is a reasonable model to estimate[18].

Analogously to the univariate case, let us assume the existence of two latent continuous variables U^*_m and U^*_f representing the unobserved utilities of male- and female-partner of a household, respectively.

$$\begin{aligned} U^*_{f,i} &= \beta_f X_{f,i} + \epsilon_{f,i} \\ U^*_{m,i} &= \beta_m X_{m,i} + \epsilon_{m,i} \end{aligned} \tag{5}$$

where the subscript f stands for $female$ and m for $male$, and $i = 1, ..., N$ represents a number of the couple an individual belongs to. The error terms $\epsilon_{f,i}$

[16]This category is rather artificial for Russia, where wages are usually set on a monthly basis. The reason to construct it is evaluation of the relative earning powers of the spouses.

[17]Initially, a set of educational dummies in terms of the "highest diploma received" was also included into the satisfaction equations. Due to insignificance of the coefficients and its interdependence with individual wage, it was dropped out of the analysis.

[18]In case of the uncorrelated error terms, estimation of two univariate ordered probit models would be an appropriate strategy. When correlation between two non-linear equations is significant, treating two equations separately will lead not only to a less efficient, but inconsistent coefficients estimates.

and $\epsilon_{m,i}$ are supposed to be orthogonal to the vectors of exogenous explanatory variables. $E(\epsilon_{f,i}|X_{f,i}, X_{m,i}) = E(\epsilon_{m,i}|X_{f,i}, X_{m,i}) = 0$, $var(\epsilon_{f,i}|X_{f,i}, X_{m,i}) = var(\epsilon_{f,i}|X_{f,i}, X_{m,i}) = 1$, $corr(\epsilon_{f,i}, \epsilon_{m,i}|X_{f,i}, X_{m,i}) = \rho$. $-1 < \rho < 1$, Residuals follow the bivariate standard normal distribution $F(\epsilon_{f,i}, \epsilon_{m,it}) = N_2\left((0,0),(1,1),\rho\right)$

The observable subjective life satisfaction (LS) measure is assumed to be ordinally comparable across individuals and has 5 discrete levels ($j = 0, 1, ..., 4$) for both women and men. The combinations of the satisfaction levels are determined by the threshold values dividing the bivariate normal density into the areas associated with the possible outcomes[19]. The thresholds are increasing $\gamma_{g,j} < \gamma_{g,j+1}$ for $g = f, m$, with $\gamma_{f,0} = \gamma_{m,0} = -\infty$, $\gamma_{f,5} = \gamma_{m,5} = \infty$.

Then, given the underlying latent utilities and thresholds, the following satisfaction levels are observed for each of the spouses:

$$LS_{f,i} = \begin{cases} 0, \text{ if } U^*_{f,i} \leq \gamma_{f,1} \\ 1, \text{ if } \gamma_{f,1} < U^*_{f,i} \leq \gamma_{f,2} \\ 2, \text{ if } \gamma_{f,2} < U^*_{f,i} \leq \gamma_{f,3} \\ 3, \text{ if } \gamma_{f,3} < U^*_{f,i} \leq \gamma_{f,4} \\ 4, \text{ if } \gamma_{f,4} < U^*_{f,i} \end{cases}$$

$$LS_{m,i} = \begin{cases} 0, \text{ if } U^*_{m,i} \leq \gamma_{m,1} \\ 1, \text{ if } \gamma_{m,1} < U^*_{m,i} \leq \gamma_{m,2} \\ 2, \text{ if } \gamma_{m,2} < U^*_{m,i} \leq \gamma_{m,3} \\ 3, \text{ if } \gamma_{m,3} < U^*_{m,i} \leq \gamma_{m,4} \\ 4, \text{ if } \gamma_{m,4} < U^*_{m,i} \end{cases}$$

The probability to observe for a particular couple i a combination of the satisfaction levels $\{j, k\}$ $(j, k = 0, 1...4)$ is given by

$$\begin{aligned} &Pr(LS_m = j, LS_f = k) = \\ &= Pr(\gamma_{m,j} \leq U^*_m \leq \gamma_{m,j+1}, \gamma_{f,k} \leq U^*_f \leq \gamma_{f,k+1}) = \\ &= Pr(U*_m < \gamma_{m,j+1}, U^*_f \leq \gamma_{f,k+1}) \\ &- Pr(U*_m < \gamma_{m,j}, U^*_f \leq \gamma_{f,k+1}) \\ &- Pr(U^*_m < \gamma_{m,j+1}, U^*_f \leq \gamma_{f,k}) \\ &+ Pr(U^*_m < \gamma_{m,j}, U^*_f \leq \gamma_{f,k}) \end{aligned} \tag{6}$$

Or, in terms of the standard normal bivariate cumulative density function $\Phi_2(.)$:

$$\begin{aligned} &Pr(LS_m = j, LS_f = k) = \\ &= \Phi_2(\gamma_{m,j+1} - X'_{1i}\beta_m, \gamma_{f,k+1} - X'_{1i}\beta_f, \rho) \\ &- \Phi_2(\gamma_{m,j} - X'_{1i}\beta_m, \gamma_{f,k+1} - X'_{1i}\beta_f, \rho) \\ &- \Phi_2(\gamma_{m,j+1} - X'_{1i}\beta_m, \gamma_{f,k} - X'_{1i}\beta_f, \rho) \\ &+ \Phi_2(\gamma_{m,j} - X'_{1i}\beta_m, \gamma_{f,k} - X'_{1i}\beta_f, \rho) \end{aligned}$$

Given the independent observations in the sample, the log likelihood function has the following form:

$$\ln L = \sum_{i=N}^{N} \sum_{j=0}^{4} \sum_{k=0}^{4} I(LS_m = j, LS_f = k) \ln Pr(LS_m = j, LS_f = k) \tag{7}$$

[19]Calhoun, 1989 notes, that this discrete distribution might accommodate any shape, even skewed or multi-modal, due to the fact that the thresholds are not fixed ex ante. This fact is important, as in the data modeled a happiness levels distribution is skewed to the right.

where $I(.,.)$ is in indicator function and N is the sample size. Then 8 threshold values, β's and the correlation coefficient ρ are to be estimated.

A user-written Stata program `-bioprobit-` by Zurab Sajaiaa allows the estimation of a two-equation ordered probit model by means of the general Full-Information Maximum Likelihood Estimates (FIML) algorithm.

5 Estimation results

5.1 Some preliminary data analysis

Satisfaction level. In both periods considered (economic decline and growth), an average level of life satisfaction reported by women stays inferior to that of men (for the age range 25-54: Fig. 1, and Table 1). This gender gap in satisfaction does not seem to be transitory, being always of the magnitude of about 10%. We note also that on average, people living in partnership are happier than singles. Among the latter no significant gender difference in the average satisfaction levels is found, while husbands are always significantly happier than wives regardless of the fact whether both or only one of the partners work. Further we analyze only couples composed of two working partners.

Satisfaction levels of two spouses are inter-related, with the correlation coefficient being in the range of 0.36-0.49 (Table 2). This fact gives us supportive evidence in favor of the simultaneous estimation of the spouses' equations.

Socio-demographic variables. The sample in consideration consists of the households of 3-4 members. Only a small percentage of families includes children under the school age of 7. Men are only slightly younger than females (average age of 36.5 against 37 y.o. respectively in 1994-1998, and 42 y.o. for both genders in 2000-2004), but seem to be in better health. One quarter of men and 37% of women reported the presence of health problems during the month preceding the interview. We should not forget here, that people with worse health are more likely to drop out of survey or to not respond. Women are less likely to drop out of survey. (See the descriptive statistics in the Table 3).

Time use. While men work longer hours in the labor market (about 45 hours per week against 40 hours per week for women in 1994-1998), women perform 85% of all the housekeeping activities in terms of the time spent. Total workload for women is about 20 hours per week greater in the first sub-period considered[20]. Table 4 contains information about all the activities available in time-use questionnaire for 1994 – 1998 by gender and year for working individuals living in partnership. One can notice again that average (and median) hours worked in the labor market by women are only slightly inferior to those of men. The situation changes completely when housekeeping activities are addressed. For example, women spend about twice more time than men taking care of children under 14 y.o., and nearly 10 times more hours on cooking and washing dishes. Women seem to be responsible for the major part of the 'indoor' activities.

[20]This finding resembles that of Hochschild and Machung, 1990 who noted that in comparison with their husbands, wives work an extra month (of 24-hour days) over a year, because of the 15 hours more of housework performed weekly by wives.

Social opinion on gender roles. A range of the RLMS Survey questions allows to assess the changes in the level of traditionalism over the period 1996-2004[21].

1. Equality at work. Equality of skills of the two genders allowing to be successful at work is recognized by a high proportion of population. Men are slightly less "sure" about the issue, but during 1996-1998 the percentage of those disagreeing decreased from 21.77% to 18.49% (while for women,from 11.42% to 8.99%). Some professions/occupations still remain gender labeled. For example, in 2003, 62.66% of men (20.09% "both yes and no") and 43.18% of women (20.51% "both yes and no") agreed that "it is more suitable for a man than for a woman to be a leader or manager".

In accordance with the traditional settings, men are perceived as having greater possibility to find good, highly paid work (in 2000 it was reported by 50.52% of men and 60.60% of women). The percentage of those certain or absolutely certain in finding job not worse than the present one (in case if fired) decreases up till 1998 and increases after both among men and women (34.51% men, 19.45% women (1994); 24.07% men and 14.41% women (1998); 40.49% men and 32.56% women (2004)).

2. Family life and gender roles. Even if the possibilities for women in the labor market are perceived as inferior with respect to men, 44.24% of men and 57.45% of women agreed in 2000 that "working wife is more respected than housewife". At the same time, more than one third of the population still thinks that it is "bad if wife works" (36.25% of women and 42.22% of men). The idea of the husband's main role in providing the household with means for living is still strongly supported even in 2003, but, interestingly, mostly by men (confirmed by 66.68% of men (20.87% "both yes and no") and by 55.74% of women (21.69% "both yes and no")). There are 28.58% of men (and only 14.32% of women) who think (strongly traditionally) that "the husband should be responsible for the family, the head of the family, and the wife should be obedient to her husband". The idea of equality of the rights and responsibilities for the spouses was supported by 70.00% of men and 83.68% of women.

5.2 Satisfaction level modeling

5.2.1 Basic set-ups and general comments

Let us recall that we consider a sample of 25-54 y.o. working individuals living in partnership. Data are pooled over 1994-1998 and 2000-2004 time periods. All the equations below are estimated with the help of the `-bioprobit-` Stata user-written program. Observations are clustered within individuals in order to correct for repeating observations. Robust option is chosen for the standard errors. The sets of the estimated utility thresholds in all the cases satisfy the requirements described in the modeling section. The Wald Chi2 test of two equations' independence always rejects the null-hypothesis of the spouses' equations independence. The estimated correlation coefficient of the respective error terms ρ is highly significant and reaches 0.48-0.53.

Correlation coefficient ρ. This correlation of the latent utility levels between spouses could have different origins. It might be a combined effect of the "dis-

[21]Further in this sections the percentages of respondents reported the particular answers are listed, including all the observations available for each round.

tinct factors, such as genes, nature, and shared general economic conditions of the family" (Winkelmann, 2005). Both, these common economic conditions and altruistic behavior lead to the inter-dependence of the satisfaction levels of the household members. Two partners decide on the economic resources and tasks distribution among them for meeting their household needs. Preferences of each of the spouses cannot be fully taken into account due to the budget and time constrains and a final decision balances personal and common goals. The magnitude of the correlation coefficient between the error terms of the spouses' equations reflects then the trade-off of the satisfaction levels of two spouses due to the changes of distribution of economic and time resources between them. As in our case the correlation coefficient is big and positive, it suggests that spouses do not have a tendency of being happier at the expense of each other. There is no "preference" on making only one partner happier, altruistic and caring behavior seems to take place.

Moreover, satisfaction levels of two spouses are likely to change in the same direction in response to an external shock affecting directly only one of the partners.

One more reason for the happiness levels' correlations is the relative nature of the subjective satisfaction levels reported. The husband might report his level of happiness comparing to his wife's perceived level, or based on the relative perceived efficiency of household in "household public good" production. This issue is unlikely to be true in our case due to the way the satisfaction question is asked.

Socio-demographic controls. The list of socio-demographic controls included in the analysis is rather standard for the happiness research, and the signs of the respective coefficients confirm the previous literature findings[22]. Age and age squared, when significant (mainly in men's equations), signalize that satisfaction is U-shaped in age. The insignificance of the coefficients in other cases seems to be due to the rather narrow age interval considered. Other standard observation is the significantly negative impact on satisfaction of some health problems during the month before the interview. Positive is the impact of the increasing expenditures of the household, and from the ownership of a dwelling a household lives in. The latter is nearly always significant for women, and only sometimes for men.

Other, than the couple itself, members of the household have a negative impact on individual satisfaction of the spouses. It may reflect the fact that the total income should be divided between a greater number of people. In case of the children's presence, it could be a sign of time consuming activity of raising children.

Further in this section, signs and significance of coefficients before time-use and wage/income categories are of primary interest (which are also less likely to be distorted due to a number of missing answers to the respected questions).

Market vs. "non-market" activity.

[22]One should interpret the coefficients with caution as the model is non-linear. They reflect an effect of the changes in the magnitude of the explanatory variables on the respective latent utility function U^*, but not directly on the observed levels LS.

Results, based on the basic set-up model (1) can be found in the Table (5). Two variables of interest in this case are the total household expenditures and hours of "non-market" activities. The former has always a positive and highly significant coefficient, indicating a beneficial role of the increasing income, and hence of consumption, on the probability to report the higher levels of life satisfaction. After the collapse of the Soviet Union, non-working citizens were not stigmatized any more. Therefore those women who could decrease their hours of work, possibly not giving them satisfaction, were happier in 1994-1998. This finding is also consistent with the traditional roles of two genders in family sphere, indicating the desire of women to work less hours, and possibly, even to drop out of the labor force.

In 2000-2004, the insignificance of the coefficients for the non-market activities time-use category may have a different reason. Firstly, as the growing economy is considered, it might be a sign of changing attitudes toward the gender roles in professional and family life. Women are slowly becoming surer in the relevance of their professional qualities to the labor market (which is also confirmed by the social opinion as noted in the previous section). Working women feel more appreciated at work and at home, and then change the priorities toward "making a career". On the other side, as "non-market" activity category is too vague and includes both pure leisure and housework, satisfaction from one of the activities could be just balanced by dissatisfaction from the other. More detailed time-use categories data analysis is needed.

As a matter of curiosity, it could be added that the conclusions are even more supportive toward the traditional gender roles when all available households are considered[23]

Availability of a number of domestic appliances is likely to have an effect on the amount and difficulty of the housework to be performed. We reestimated the model including into each of the spouses' equation the dummies coding whether a household owns a washing machine and a fridge. The only change with respect to the results discussed above are in 10% level significant positive coefficient for the washing machine dummy for 1994-1998.

Market work vs. housework vs. leisure set-up.

The 1994-1998 data includes the time-use questionnaire and allows us to perform a more detailed analysis of the non-market time category. Estimation results provided in the Table 6 (based on the problem (2)) involve two different definitions for "Housework". The first one includes the indoor housekeeping activities only, while the second one ($Housework_{ch}$) has time spent on child care as one of the components.

1. Housekeeping activities. Own hours spent in housework seem to be neutral to the satisfaction reported for both genders, while as in some international

[23]We substituted with zeroes the missing working hours of unemployed/out of the labor force individuals. Then status of unemployed had negative impact on individual well-being for both genders ("out of labor force" is the base category). The fact of being "employment" is significantly positive for men in 2000-2004 only.

For 1994-1998 we find that both men and women consider an increase in husband's non-market hours as negatively influencing the probability of reporting the higher levels of life satisfaction. Both are likely to be more satisfied when wife works less.

In 2000-2004, wives are happier if husbands work more, and husbands are happier when wives working less in the market (the coefficients are significant on the 10% level).

studies, wives seem to appreciate the help of their partners ("supportive behavior"). Given the unfavorable economic conditions of the period in consideration, leisure time could be considered as waisted, i.e. not dedicated to the gaining of the economic resources for the family, especially for men. In fact, it is only the women's leisure time amount that has a positive effect on the satisfaction of two spouses. Higher level of earnings of the spouses would provide them with a possibility to purchase the substitutes for some household goods. In this case, husbands are less likely to be criticized by their wives as not performing their role of bread-winners for the family.

2. Housekeeping activities and child care. When child care is included into the housework, satisfaction with the leisure time for women nearly vanishes. This may be a sign that the women enjoy spending time with their children. At the same time, as the women in the sample are currently working, increasing hours of child care (possibly due to unavailability or non affordable price of the respective child care facilities) leave them a very small amount of time which is enough only for the life-maintenance activities (sleeping, eating etc) leaving no room for the pure leisure.

Analogously to the two time categories case, we can note an even stronger evidence of the traditional gender roles presence, when unworking/out of labor force spouses are also added to the sample. While women are neutral about the own hours of housework performed and enjoy leisure, they are critical about their husbands staying at home for enjoying the pure leisure. The latter opinion is also shared by men, possibly not only due to the decreasing economy settings. It might be that women criticize their husbands staying at home but not participating in housework. Thus men prefer to have less leisure time at home to avoid conflicts. Husbands are more likely to be happier if their wives have more leisure (and hence, complain less about the overload with work; or maybe, because of the possibility to enjoy this leisure time together).

With child care as a category of housework, we have nearly no difference with the case when both spouses working situation is addressed. Interestingly, not only the unemployment but the employment dummies for women are significantly negative.

In addition, we also tested in all the specifications above whether controlling for the ownership of some housekeeping facilities would change the attitude toward time-use categories. Inclusion of the washing machine and fridge ownership leads to an increase of the magnitude and significance of the negative coefficient before the women's hours in housework. The dummies themselves have positive significant coefficients for "washing machine" for men and "fridge" for women. Thus, absence of such facilities obviously makes housework more tiring. We have already noted above that men enjoy their wives having more leisure time. Owning a washing machine almost relieves wives of one of the most tiring and time consuming responsibilities. However, having a washing machine is usually related to a certain level of income, having obtained which the women take the washing machine for granted and could still complain about husband's not helping with washing clothes.

5.2.2 "Man is the bread-winner"

As two individuals working the same number of hours are not guaranteed to receive the same labor income due to a possible difference in per hour wage

rates, some researchers note that the latter could be even a more important indicator of economic power within a household, than (total) income received by each of the spouses. Let us include per hour wages, but not the time of work, in the specification considered above (see Table 7). Higher per hour wages, own and that of the partner, have positive influence on the probability to report a higher level of life satisfaction for both genders. There is a change in the significance of the "non market activities" category, which is still consistent with the findings from the previous section. Now greater amount of time available for women in "non market activities" becomes satisfaction-neutral for them, but significantly negative for men, again returning us to the idea of the time lost without earning some additional money for the family. Being out of the market when the partner's wage is too low (to sustain some desired consumption level) is a source of unhappiness (from non working time). And this is again true only for the 1994 – 1998. The effect nearly disappears when the partner's wage increases as a consequence of economic recovery (the respective coefficient is only 10% significant).

Now let us include the ratio of wages (own per hour wage divided by the partner's wage) into the specification discussed above (see Table (8)). The result is supportive, over all the period considered, for the presence of the traditional gender roles from the point of view of women. Wives are less likely to report higher levels of life satisfaction when they earn more than their husbands. The latter's bread-winner role is confirmed, in the eyes of women, only in case when their husbands have a greater earning power. Husbands, in their turn, support the increasing financial contribution of wives to the household budget. The latter fact can be either a post-socialist doctrine heritage (equality of genders at work and at home), or the sign of the men's approval of women's emancipation "at home".

One more variation of this specification was tested, including a dummy (equal to unity when wife's income is higher than the husband's) together with the ratio of personal incomes. Our conclusions do not change, with the dummy's effect always insignificant.

5.2.3 "Women perform most of the housework"

As noted above, women in our sample work just some hours less than men, and it is the amount of the household activities that is the main reason for the total overload of wives. Housework mainly includes such activities that an individual would like to delegate to somebody else or to buy their substitutes in the market. Such activities are usually "unpleasant" and performed on a daily basis (Gupta, 2007). Earlier we already noted that even if hours of housework seem to be neutral for women's satisfaction, the partner's help is appreciated. Possibly, it is not the absolute number of hours spent in the housekeeping activities that matters for wife's satisfaction, but the distribution of work amount among spouses. In case when the traditional gender roles are supported, hours of housekeeping would have a negative or a neutral influence on the wife's satisfaction, while an increase of the share of housework performed should confirm her gender role (and hence, to have a positive effect on wife's individual well-being).

Given the result in Table (9), one can conclude that subdivision into the market and non-market activities is not detailed enough for answering the question of whether the women feel (and enjoy) housework as their main responsibility.

In fact, non-market activity includes not only housework but also pure leisure, without indication of their distribution within the aggregated time-use category. Equality of the non-market time amount among spouses is found to be a concern neither of women, nor men.

Let us address the case of the three time use categories (see Table (10)). The conclusions are slightly different for two definitions of housework activities, but resemble the basic set-up model results. Women enjoy the increasing hours of leisure if childcare is not considered as housework. Taking care of children is very time consuming, without leaving much leisure time especially if children are small. Women bear the main responsibility for raising their children. Men, if helping, usually assist to some recreational activities. The share of the housework performed (in terms of time) is not relevant to the level of life satisfaction of the spouses.

Even if spouses find the exact shares of the housework performed irrelevant to their personal satisfaction, wives could be concerned just about the fact of bearing the main responsibility for the housekeeping activities. Instead of the shares themselves we include an indicator which is equal to one when such share is greater than a half (Table 11). In this case we find again supportive evidence of the traditional gender roles in the Russian households. Even if she is content when the husband helps at home (with some house-keeping or child care activities), equality of the housework shares is not considered as "fair". She is likely to be more satisfied when confirming her traditional role at home. Husband is not concerned about this issue as in the world-wide studies (e.g. Coltrane, 2000).

5.2.4 "Man chooses first"

Let us suppose now, that one of the partners chooses first how many hours to supply to the labor market (and how much time to spend on housework), without taking into consideration the choices of the other. Then the second spouse adjusts his/her behavior. In the traditional settings it would be the husband to decide first, and we would expect that he does not take into consideration the time-use choices of his wife, while his decisions would matter in the wife's ("follower") utility. We use a kind of "naive" approach, just restricting the relevant coefficients in husband's equation to zero and then re-evaluating the models described in the Basic set-up section. The results in Table 12 do not provide clear evidence for concluding that the spouses decide sequentially.

One observation can be made. Men, as it was previously noted, are more satisfied when their wives have more leisure. If wife is considered to be responsible for the housework, then increasing hours of her leisure would also mean the decreasing hours of work in the labor market. Then even if the decisions of wives about how many hours to work are independent of those made by the husbands, women still remain constrained by the hours of housework to do, when choosing how many hours to work for remuneration.

5.3 Note on the marginal effects

All the interpretations of the estimation results above were based on the sign and significance of the coefficient vectors β_m and β_f. Each of the components of these vectors, as Calhoun, 1989 notes, represents the change in the expected

value of the respective latent function (U^*), expressed in standard deviations, in response to a one-unit increment in respective variable x. (This is due to the normalization of the variances of the latent utility functions error terms.)

Christofides et al., 1997 and 2000 discusses the case of bivariate probit model and points out the possibility to evaluate the partial effects on different levels (based on joint, marginal and conditional event probabilities). There is still no conventional agreement on what exactly should be analyzed for retrieving the partial effects and Greene, 2008, apart of the joint probability (e.g. $Pr(LS_f = 1, LS_m = 1)$), indicate also the conditional mean function (e.g. $E(LS_f|LS_m = 1, X_{f,i}, X_{m,i})$).

Let us address the model specification presented in the column (2) of Table 8. We use the approach discussed in Sajaia, b for retrieving an approximation of the partial effects of the explanatory variables on the joint probabilities.

The influence of two variables is of the main interest in this specification: per hour wage received and non-market hours of wife.

1. Increase in wife's wage.

Table 14 presents the joint probabilities of two particular satisfaction levels reported by two spouses, recalculated joint probabilities given a 10% increase in the wife's wage, and a percentage change in the respective cell probabilities. One could note, that given an increase in the wife's wage, it is the husband who is likely to shift to a higher level of satisfaction. Wife's salary growth by 10% induces a decrease of all the joint probabilities describing the situation when she is happier than he. This conclusion is also supported by the graphs presented in Figures 2 and 3.

2. Increase in non-market hours for wife. Table 15 describes an effect of the one hour increase in wife's non-market time. The effect is somehow opposite to the one described above. Now there is more likely an increase of the probability of such states, when the wife is happier than the husband, especially for the happiest group. Surprisingly, the probability for the husband to report the highest level of satisfaction also grows regardless of the happiness level reported by his wife.

6 Conclusions

The fact that women in Russia systematically feel less happy than men may be evidence of the fact that transition was particularly harmful to the female population. While the intuition behind would be that women may be less prone to face uncertainty and risk that are associated with market economy and moreover, that they are discriminated in the labor market, the source of such unhappiness could also lay in the modernization of the gender roles in a family. Investigating whether the drastic economic changes after the dissolution of the Soviet Union were accompanied by further emancipation of women not only at work but also at home, would give a hint about the success of implementation of a range of the economic and social policies, which have different effect depending on the level of traditionalism in the society.

This paper investigates whether the change in traditional society preferences over the time-use decisions and earning powers of spouses would be responsible for the "unusual" unhappiness of the Russian women. We have assumed that all the decisions are taken by the spouses in non-cooperative settings. Given the

fact, that a set of unobservable factors influence the decisions of both spouses, seemingly unrelated bivariate ordered probit model was used as a modeling strategy. In fact, in all the specifications tested, the hypothesis of the spouses equations independence was rejected.

For the period of 1994 – 1998 the sign of marginal satisfaction received by the spouses from the different time-use categories is mainly in line with the traditional gender role settings. Women are more likely to be happier if spending less time in the labor market, neutral about the hours of housework performed, and moreover, enjoying an increase in the leisure time available. Men are less likely to be happy when having more leisure time available. It is possibly due to the fact that in the declining economy conditions leisure cannot be enjoyed being the time not spent on market work, and hence, for providing the own family with the necessities. Moreover, it is often that the "leisure time enjoyment" is associated with some activity requiring money spending. Husband is considered as the bread-winner only by women. Men, in their turn, approve their wives' increasing earnings. Promoting further the perception of women as valuable professionals demanded in the labor market, changing the women's attitude toward their earnings from supplementary to being of the same "quality" as men's, and reducing social pressure prescribing to females only the role of mothers, seems to be able to contribute positively to the increase in women's satisfaction.

Wives are responsible for most of the housework, which has a significant negative impact on their personal satisfaction, especially, in the absence of housekeeping facilities. Help from the spouse is appreciated (supportive behavior). The latter might be both a post-socialist doctrine heritage, or the first sign of women's emancipation "at home". Promotion of the husband's supportive behavior at home would help a lot to increase the women's satisfaction level. When some part of housekeeping activities is already delegated to the husband, raising children still remains mainly the women's territory. The number of hours spent by women on taking care of their children reduces significantly the women's free time available. This can be named among the reasons of less life satisfaction of women with respect to men. Reinstating the number and affordability of the child care institutions to the level approaching that before transition would help make women's lives happier.

Unfortunately, the detailed time-use questionnaires are not available for the period of the economic stabilization of 2000-2004. The aggregate time-use categories analysis supports, together with the social opinion on gender roles, the tendency toward gradual emancipation of women. Women, even if still positively evaluating an increasing workload of their husbands, become neutral about their own non-working time available. Analogously, men are less approving to have their partners as housewives.

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A Variables description

Time use variables. The following aggregated categories are constructed using the detailed time-use questionnaires for 1994-1998:

- $Work$. Hours of work reported, last week (all values greater than 95 percentile, each round, are recoded to the 95th percentile value)
- *Homework*. Hours per week, household keeping activities including (purchasing of food items, cooking and washing dishes, cleaning, laundry and ironing) (all values greater than 95 percentile, each round, are recoded to the 95th percentile value)
- *Leisure*. Hours per week of "pure" leisure. $= 168 - Work - Homework$
- $Homework_{ch}$. Hours per week, household keeping activities including those is "homework" plus *taking care of children*
- $Leisure_{ch}$ Hours per week of "pure" leisure $= 168 - Work - Homework_{ch}$

The following less detailed time-use categories are available for both, 1994-1998 and 2000-2004:

- $Work_{week}$. Average hours worked a week during a month before interview. (Hours of work reported (last month) divided by 4). Zero-value is inserted for those who are out of labor force or unemployed.
- $NonWork_{week}$. Non-market activities, hours per week $(168 - Work_{week})$

When constructing the aggregated time-use categories, the following procedure was exploited (similarly to Gupta, 2007):

1. all the values higher than 95% of each of the variables are recoded to that percentile (estimated on all the variables available for each round, by genders) to exclude the possible outliers
2. to keep as more observations as possible for the analysis, missing values in the variables describing the housekeeping activities were substituted with zeros
3. activities are summed up to create an aggregated category
4. to insure that hours of housework are not zero, in the aggregated variables the hours of housework are substituted with 1 hour per week
5. included into estimated equations in log-form

Income related variables

- *Wage*. Per hour wage at primary job including in-kind payments (last month) in 1992 rubles. $= Wage_{last.month}/Work_{last.month}$[24]
- $Ln(totalexpend)$. Logarithm of total household expenditures in rubles of 1992. Used as a proxy for household income due to the World Bank recommendations.

Socio-demographical and family related controls

- *Gender*. Sex of the respondent (1 = men,2 = women). Some observations (ł10) are dropped after having merged all the rounds due to inconsistency of the variable.
- *Age*, *age squared*. Constructed using "the most probable year of birth" resulted after having merged the data.
- *Health problems*. Dummy. Reply to the survey question "Have you in the last 30 days had any health problems?" (1 = had health problems, 0 = otherwise)
- $Child0-6$, $child7-18$. Number of children younger than 6 y.o. (younger than school age), and of children from 7 to 18 y.o. in the household.
- $Othermalesw.a.$, $otherfemalesw.a.$, $Olderw.a.$. Number of other adults of working age in household, males and females, respectively, and number of household members older than working age.
- *Ownhouse*. House perceived as own (privatized or not) (1 = own house/apartment, 0 = otherwise)

Regions. The following eight Geographical Regions are suggested by the RLMS web-site documentation (being mainly in accordance with the administrative division of 1995 that divided territory of Russia into 12 economic regions).

1. Metropolitan areas: Moscow and St. Petersburg
2. Northern and North Western
3. Central and Central Black-Earth
4. Volga-Vaytski and Volga Basin
5. North Caucasian
6. Ural
7. Western Siberian
8. Eastern Siberian and Far Eastern

B Tables and figures

[24]Both variables previously recoded to the 95th percentile value if the value reported is higher

Table 1: Life satisfaction, prime-age adults (25-54)

year	couple	mean(m)[25]	obs(m)	mean(w)	obs(w)	t-statistic	prob(mean(m) ¡ mean(w)[26])
1994	single	1.14	276	1.07	425	1.00	0.16
	married	1.36	1287	1.23	1335	3.08	0.00
1995	single	1.07	246	1.06	416	0.03	0.49
	married	1.34	1205	1.22	1246	2.71	0.00
1996	single	1.04	254	0.96	424	1.02	0.15
	married	1.25	1193	1.07	1196	4.36	0.00
1998	single	0.90	238	0.91	429	-0.13	0.55
	married	1.15	1211	0.99	1216	3.95	0.00
2000	single	1.23	229	1.13	477	1.27	0.10
	married	1.40	1205	1.28	1202	2.74	0.00
2001	single	1.49	285	1.35	584	1.81	0.04
	married	1.61	1272	1.52	1298	2.12	0.02
2002	single	1.49	323	1.52	632	-0.36	0.64
	married	1.92	1288	1.77	1283	3.36	0.00
2003	single	1.55	308	1.44	644	1.43	0.08
	married	1.83	1270	1.69	1268	3.24	0.00
2004	single	1.60	317	1.60	698	0.07	0.47
	married	1.97	1232	1.82	1221	3.67	0.00

[25]Life-satisfaction is coded from 4="very satisfied" to 0="very unsatisfied"
[26]H0: prob(mean(m) = mean(w); Ha: prob(mean(m) ¡ mean(w)

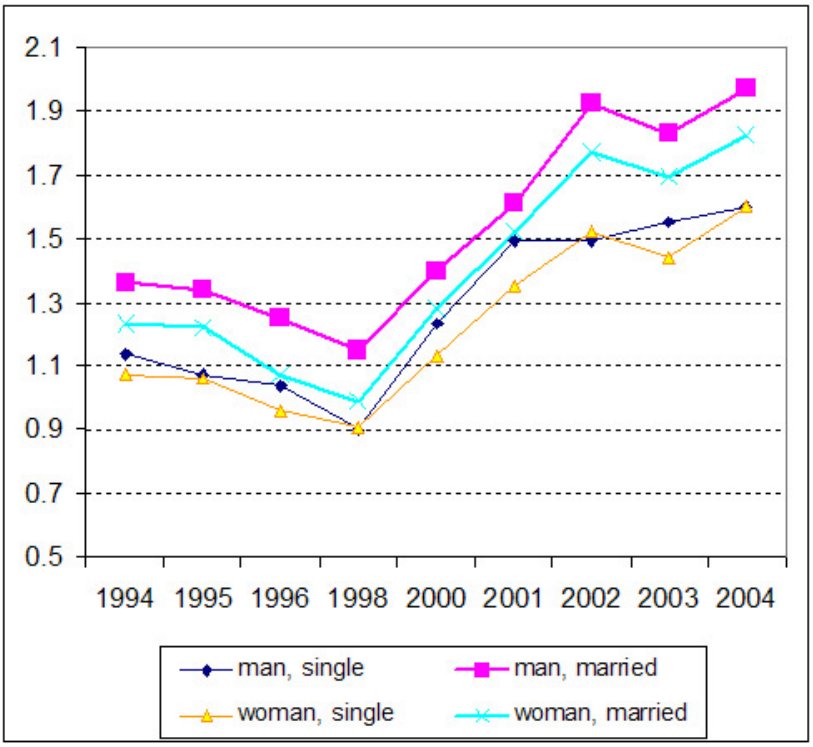

Figure 1: Mean satisfaction levels, adults 24-54 y.o.

Table 2: Life satisfaction, prime-age adults (25-54)

year	correlation coefficient[27]
1994	0.3681
1995	0.4908
1996	0.4708
1998	0.4954
2000	0.4469
2001	0.4314
2002	0.4604
2003	0.4603
2004	0.4895

[27] all the coefficients are significant at 1% sig. level

Table 3: Descriptives, prime-age married adults (25-54)

	1994-1998		1994-1998		2000-2004	
	Three time-use categories		Two time-use categories			
	All married	Both spouses	All married	Both spouses	All married	Both spouses
observations,time-use	6661	3972	6893	4260	8675	5316
variable	mean	sd	mean	sd	mean	sd
life satisfaction	1.25	1.05	1.24	1.04	1.75	1.08
Total household expenditures per capita, RUR	2800	2230	2810	2230	3140	2290
children 0-6	0.35	0.6	0.35	0.59	0.16	0.41
children 7-18	1.04	0.89	1.03	0.89	0.81	0.8
household size	3.7	1.28	3.7	1.27	3.43	1.31
own house	0.87	0.34	0.87	0.34	0.92	0.27
men						
life satisfaction	1.35	1.07	1.34	1.06	1.85	1.08
monthly wage, RUR	3093.14	5861.89	3225.33	6713.28	28.53	33.54
ratio of the own wage to that of the partner	2.05	3.39	2.24	4.59	2.22	3.84
worked, hrs per week	45.5	13.73	44.87	14.37	46.09	13.19
housework, hrs per week	4.45	5.69	n.a.	n.a.	n.a.	n.a.
workload, hrs per week	49.95	14.65	n.a.	n.a.	n.a.	n.a.
share of housework	0.13	0.15	n.a.	n.a.	n.a.	n.a.
share non-maket time			0.49	0.03	0.49	0.03
age	36.58	5.55	36.56	5.57	42.25	5.49
health problems,%	0.25	0.43	0.25	0.44	0.27	0.45
women						
life satisfaction	1.13	1.02	1.13	1.01	1.65	1.07
monthly wage, RUR	2198.62	3550.69	2280.98	3805.35	20.69	32.44
ratio of the own wage to that of the partner	1.4	2.52	1.46	2.8	1.33	3.48
worked, hrs per week	39.13	11.74	37.85	12.17	39.41	11.15
housework, hrs per week	27.59	13.14	n.a.	n.a.	n.a.	n.a.
workload, hrs per week	66.72	17.01	n.a.	n.a.	n.a.	n.a.
share of housework	0.85	0.17	n.a.	n.a.	n.a.	n.a.
share non-maket time			0.51	0.03	0.51	0.03
age	37.1	5.51	37.01	5.54	42.49	5.53
health problems,%	0.37	0.48	0.37	0.48	0.38	0.49

Table 4: Descriptive statistics. Time use categories

men	men				women			
timeuse category[28]	mean(m)	sd(m)	p50(m)	n(m)	mean(w)	sd(w)	p50(w)	n(w)
1994								
work	37.62	20.76	40.00	1159.00	29.13	19.27	36.00	1040.00
comm	4.56	4.13	3.00	1159.00	3.28	3.38	2.00	1040.00
gard	0.20	0.47	0.00	1159.00	0.13	0.38	0.00	1040.00
purch	1.66	2.96	0.00	1159.00	4.72	4.32	4.00	1040.00
cook	1.95	3.41	0.00	1159.00	16.07	8.61	14.00	1040.00
clean	2.63	4.46	0.67	1159.00	6.71	5.02	6.00	1040.00
laundr	0.33	1.14	0.00	1159.00	5.15	3.96	4.00	1040.00
14child	8.54	11.08	5.00	1159.00	19.17	22.42	14.00	1040.00
ochild	0.31	2.20	0.00	1159.00	0.79	4.25	0.00	1040.00
50care	0.58	2.76	0.00	1159.00	0.80	3.12	0.00	1040.00
sleep	50.54	8.70	49.00	1159.00	50.27	8.61	49.00	1040.00
1995								
work	37.54	21.30	40.00	1093.00	31.25	19.21	36.00	993.00
comm	4.11	3.99	3.00	1093.00	3.41	3.60	2.00	993.00
gard	0.36	0.57	0.00	1093.00	0.32	0.53	0.00	993.00
purch	1.11	2.15	0.00	1093.00	4.08	3.86	3.00	993.00
cook	1.46	3.01	0.00	1093.00	14.94	8.46	14.00	993.00
clean	0.86	2.12	0.00	1093.00	6.26	5.10	5.00	993.00
laundr	0.23	0.86	0.00	1093.00	4.40	3.59	4.00	993.00
14child	6.77	8.95	3.00	1093.00	15.71	20.57	7.00	993.00
ochild	0.21	1.55	0.00	1093.00	0.87	4.96	0.00	993.00
50care	0.34	1.58	0.00	1093.00	0.65	2.73	0.00	993.00
sleep	50.36	10.28	50.00	1093.00	50.17	9.13	49.00	993.00
1996								
work	38.15	21.99	40.00	1011.00	31.82	18.81	40.00	905.00
comm	3.91	3.78	2.83	1011.00	3.35	3.32	2.33	905.00
gard	0.35	0.55	0.00	1011.00	0.27	0.51	0.00	905.00
purch	0.88	1.71	0.00	1011.00	3.28	3.06	3.00	905.00
cook	1.37	2.86	0.00	1011.00	13.73	7.94	14.00	905.00
clean	0.69	1.67	0.00	1011.00	5.42	4.52	4.00	905.00
laundr	0.24	0.83	0.00	1011.00	3.90	3.17	3.00	905.00
14child	6.78	9.41	2.00	1011.00	14.62	19.62	7.00	905.00
ochild	0.11	1.04	0.00	1011.00	0.68	4.17	0.00	905.00
50care	0.45	1.93	0.00	1011.00	0.73	3.44	0.00	905.00
sleep	49.29	11.89	50.00	1011.00	49.41	10.69	49.00	905.00
1998								
work	34.10	22.05	40.00	887.00	31.31	18.42	37.00	829.00
comm	3.72	3.63	2.50	887.00	3.39	3.29	2.50	829.00
e gard	0.19	0.46	0.00	887.00	0.14	0.39	0.00	829.00
purch	0.99	1.99	0.00	887.00	3.18	3.03	2.50	829.00

[28]The following abbreviations are used: "work" - hrs in makter activities, "comm" - hrs commuting, "gard" - hrs gardening, "purch" - hrs purchasing food items, "cook" - hrs cooking/washing dishes, "clean" - hrs cleaning house, "laundr" - hrs doing laundry/ironing, "14child" - hrs taking care of children under 14 y.o., "ochild" - hrs taking care of other children, "50care" - hrs taking care of relatives older 50 y.o., "sleep" - hrs sleeping.

Table 4: Descriptive statistics. Time use categories

cook	1.52	2.89	0.00	887.00	13.81	7.77	14.00	829.00
clean	0.62	1.35	0.00	887.00	4.83	4.07	4.00	829.00
laundr	0.20	0.69	0.00	887.00	3.51	2.58	3.00	829.00
14child	6.47	10.52	0.08	887.00	12.47	18.76	3.00	829.00
ochild	0.30	2.28	0.00	887.00	0.97	5.14	0.00	829.00
50care	0.32	1.63	0.00	887.00	0.60	2.62	0.00	829.00
sleep	49.98	12.05	50.00	887.00	50.55	9.55	50.00	829.00

Table 5: Basic set-up. Two time-use activities. Married prime-age adults. Currently working

	1994 -1998		2000 - 2004		1994 -1998		2000 - 2004	
	woman	man	woman	man	woman	man	woman	man
Ln(hours in non market activities), own	0.46*	-0.18	-0.1	0.02	0.63**	-0.25	-0.03	0.07
	[0.25]	[0.19]	[0.26]	[0.21]	[0.27]	[0.21]	[0.30]	[0.24]
Ln(hours in non market activities), partn					-0.11	0.39	0.17	0.22
					[0.22]	[0.28]	[0.23]	[0.30]
Ln(total exp)	0.43***	0.36***	0.38***	0.39***	0.43***	0.37***	0.39***	0.40***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Age (own)	-0.01	-0.07	0.01	-0.04	-0.01	-0.07	0.01	-0.04
	[0.06]	[0.07]	[0.07]	[0.08]	[0.06]	[0.07]	[0.07]	[0.08]
Age squated (own)	0	0	0	0	0	0	0	0
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Health problems (own)	-0.14***	-0.08	-0.11**	-0.15***	-0.14***	-0.08	-0.11**	-0.15***
	[0.05]	[0.05]	[0.04]	[0.05]	[0.05]	[0.05]	[0.04]	[0.05]
Child0-6	-0.12**	-0.08	0	-0.17**	-0.12**	-0.08	0	-0.17**
	[0.06]	[0.06]	[0.08]	[0.08]	[0.06]	[0.06]	[0.08]	[0.08]
Child7-18	-0.10***	-0.07*	-0.09**	-0.15***	-0.10***	-0.07*	-0.09**	-0.15***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Other males	-0.17**	-0.11	-0.13**	-0.14***	-0.17**	-0.1	-0.13**	-0.14***
	[0.08]	[0.07]	[0.06]	[0.05]	[0.08]	[0.07]	[0.06]	[0.05]
Other females	-0.16*	-0.12	-0.08	-0.08	-0.16*	-0.11	-0.08	-0.08
	[0.08]	[0.08]	[0.06]	[0.05]	[0.08]	[0.08]	[0.06]	[0.05]
Own house	0.22***	0	0.21**	0.18**	0.22***	0	0.21**	0.18**
	[0.08]	[0.08]	[0.08]	[0.09]	[0.08]	[0.08]	[0.08]	[0.09]
Reginal dummies	yes	yes	yes	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
atrho	0.51***		0.49***		0.51***		0.49***	
	[0.03]		[0.03]		[0.03]		[0.03]	
cut1	1.8	-2.51	-1.45	-2.08	2.16	-0.94	-0.31	-0.75
	[1.79]	[1.60]	[1.91]	[2.00]	[2.08]	[2.06]	[2.26]	[2.47]
cut2	2.88	-1.41	-0.22	-0.92	3.24	0.17	0.91	0.4
	[1.79]	[1.60]	[1.91]	[2.00]	[2.08]	[2.05]	[2.26]	[2.47]
cut3	3.66**	-0.66	0.49	-0.18	4.01*	0.92	1.63	1.15
	[1.79]	[1.60]	[1.91]	[2.00]	[2.08]	[2.05]	[2.26]	[2.46]
cut4	4.59**	0.16	1.73	1.08	4.94**	1.73	2.86	2.41
	[1.79]	[1.60]	[1.91]	[2.00]	[2.08]	[2.06]	[2.26]	[2.47]
Observations	2080	2080	2608	2608	2080	2080	2608	2608
N clusters	1080		1050		1080		1050	
Log-likelihood	-5327		-6896		-5326		-6895	
Log-likelihood(0)	-5516		-7130		-5515		-7129	
chi2	211.8		310.7		213.3		311	

Table 6: Basic set-up. Three time-use activity. Married prime-age adults. Currently working

	(1)		(2)		(3)		(4)	
	woman	man	woman	man	woman	man	woman	man
Ln(hrs housework), own	-0.03	0.03	0	0.02				
	[0.06]	[0.03]	[0.06]	[0.03]				
Ln(hrs housework), partner	0.05**	0	0.05*	0.07				
	[0.03]	[0.05]	[0.03]	[0.06]				
Ln(hrs leisure), own	0.41**	-0.14	0.59***	-0.25				
	[0.17]	[0.19]	[0.20]	[0.21]				
Ln(hrs leisure), partner			-0.16	0.41**				
			[0.22]	[0.20]				
Ln(hrs housework, ch), own					-0.13**	0.03	-0.1	0.03
					[0.06]	[0.02]	[0.06]	[0.02]
Ln(hrs housework, ch), partner					0.05**	-0.04	0.05*	0.04
					[0.02]	[0.05]	[0.03]	[0.06]
Ln(hrs leisure, ch), own					0.13	-0.1	0.26*	-0.24
					[0.11]	[0.16]	[0.13]	[0.18]
Ln(hrs leisure, ch), partner							-0.19	0.27**
							[0.19]	[0.11]
Ln(total expend)	0.43***	0.34***	0.43***	0.35***	0.43***	0.34***	0.43***	0.35***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Socio-dem. controls	yes	yes	yes	yes	yes	yes	yes	yes
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
atrho	0.52***		0.52***		0.52***		0.52***	
	[0.03]		[0.03]		[0.03]		[0.03]	
cut1	0.98	-1.47	1.16	0.17	-0.5	-1.33	-0.71	-0.47
	[1.50]	[1.65]	[1.81]	[1.95]	[1.33]	[1.56]	[1.61]	[1.68]
cut2	2.07	-0.38	2.25	1.26	0.59	-0.24	0.38	0.62
	[1.50]	[1.65]	[1.81]	[1.95]	[1.33]	[1.56]	[1.61]	[1.68]
cut3	2.82*	0.4	3.00*	2.04	1.35	0.54	1.14	1.4
	[1.50]	[1.65]	[1.81]	[1.95]	[1.33]	[1.56]	[1.61]	[1.68]
cut4	3.76**	1.19	3.94**	2.83	2.28*	1.33	2.07	2.19
	[1.50]	[1.65]	[1.80]	[1.96]	[1.32]	[1.56]	[1.60]	[1.69]
Observations	1977	1977	1977	1977	1975	1975	1975	1975
N clusters	1057		1057		1056		1056	
Log-likelihood	-5059		-5056		-5048		-5044	
Log-likelihood(0)	-5245		-5242		-5235		-5232	
Wald chi2(22)	218.6		222.4		226.4		230.3	
Wald chi2(1) (independent equat)	271.5		272.1		276		276.8	

Table 7: Two time-use categories and wages. Married prime age adults.
Currently working

	1994-1998		2000-2004		1994-1998		2000-2004	
	women	men	women	men	women	men	women	men
	(1)		(2)		(3)		(4)	
Ln(per hr wage, 1992), own	0.16***	0.21***	0.19***	0.20***	0.19***	0.22***	0.23***	0.21***
	[0.04]	[0.04]	[0.03]	[0.03]	[0.05]	[0.04]	[0.04]	[0.04]
Ln(per hr wage, 1992), partners					0.11***	0.12***	0.08**	0.14***
					[0.04]	[0.05]	[0.05]	[0.04]
Ln(hours in non market activities), own	-0.2	-0.85***	-0.52	-0.48*	0.09	-1.02***	-0.37	-0.49*
	[0.38]	[0.29]	[0.33]	[0.26]	[0.42]	[0.31]	[0.38]	[0.29]
Ln(hours in non market activities), partn					-0.31	0.50	-0.02	0.22
					[0.33]	[0.41]	[0.28]	[0.37]
Ln(total exp)	0.38***	0.21***	0.27***	0.26***	0.31***	0.16***	0.21***	0.19***
	[0.06]	[0.06]	[0.05]	[0.05]	[0.06]	[0.06]	[0.06]	[0.05]
Socio-dem. controls	yes	yes	yes	yes	yes	yes	yes	yes
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes
atrho	0.51***		0.48***		0.51***		0.48***	
	[0.04]		[0.03]		[0.04]		[0.03]	
cut1	-0.89	-7.21***	-3.24	-4.22*	-0.56	-5.13*	-2.24	-2.8
cut2	0.21	-6.06***	-1.97	-3	0.54	-3.96	-0.97	-1.57
cut3	1.02	-5.28***	-1.24	-2.25	1.36	-3.18	0.24	-0.82
cut4	2.03	-4.38***	0.05	-0.9	2.37	-2.27	1.05	0.54
Observations	1201	1201	2003	2003	1201	1201	2003	2003
N clusters	774		903		774		903	
log-likelihood	-3111		-5220		-3099		-5206	
log-likelihood(0)	-3221		-5392		-3210		-5379	
Wald chi2 (24)	127.0		215.7		137.9		237.8	
Wald chi2 (1) (indep. equat)	157.7		263.5		159		227.6	

Table 8: Two time-use categories and rates of wages. Married prime age adults. Currently working

	1994-1998 (1)		2000-2004 (2)		1994-1998 (3)		2000-2004 (4)	
	women	men	women	men	women	men	women	men
Ln(per hr wage, 1992), own	0.29***	0.36***	0.30***	0.35***	0.30***	0.35***	0.30***	0.34***
	[0.05]	[0.05]	[0.04]	[0.05]	[0.06]	[0.05]	[0.04]	[0.05]
Ln(hours in non market activities), own	-0.15	-0.85***	-0.46	-0.47*	0.09	-1.02***	-0.37	-0.49*
	[0.38]	[0.29]	[0.33]	[0.26]	[0.42]	[0.31]	[0.38]	[0.29]
Ln(hours in non market activities), partn					-0.31	0.5	-0.02	0.22
					[0.33]	[0.41]	[0.28]	[0.37]
Ln(wife's wage/ husbands wage)	-0.10**	0.15***	-0.07**	0.15***	-0.11**	0.12***	-0.08**	0.14***
	[0.04]	[0.04]	[0.03]	[0.04]	[0.04]	[0.05]	[0.04]	[0.04]
Ln(total exp)	0.32***	0.15***	0.21***	0.19***	0.31***	0.16***	0.21***	0.19***
	[0.06]	[0.06]	[0.05]	[0.05]	[0.06]	[0.06]	[0.05]	[0.05]
Socio-dem. controls	yes	yes	yes	yes	yes	yes	yes	yes
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
atrho	0.51***		0.48***		0.51***		0.48***	
	[0.04]		[0.03]		[0.04]		[0.03]	
cut1	-0.28	-6.79***	-2.23	-3.77	-0.56	-5.13*	-1.89	-2.8
	[2.50]	[2.16]	[2.28]	[2.32]	[3.05]	[2.91]	[2.68]	[2.78]
cut2	0.82	-5.62***	-0.95	-2.54	0.54	-3.96	-0.62	-1.57
	[2.50]	[2.16]	[2.28]	[2.31]	[3.04]	[2.91]	[2.68]	[2.78]
cut3	1.64	-4.84**	-0.23	-1.79	1.36	-3.18	0.11	-0.82
	[2.50]	[2.16]	[2.28]	[2.31]	[3.05]	[2.91]	[2.68]	[2.78]
cut4	2.64	-3.93*	1.07	-0.43	2.37	-2.27	1.4	0.54
	[2.50]	[2.16]	[2.28]	[2.32]	[3.05]	[2.91]	[2.68]	[2.78]
Observations	1201	1201	2003	2003	1201	1201	2003	2003
N clusters	774		906		774		906	
Log-likelihood	-3100		-5206		-3099		-5206	
Log-likelihood(0)	-3211		-5380		-3210		-5379	
Wald chi2(22)	138.5		240.2		137.9		237.8	
Wald chi2(1) (independent equat)	159.3		227.6		159		227.6	

Table 9: Two time-use categories, "equality" of "non-market" time available. Married prime age adults. Currently working.

	1994-1998		2000-2004		1994-1998		2000-2004	
	women	men	women	men	women	men	women	men
Ln(hours in non market activities), own	0.5	0.09	0.13	0.2	0.46	-0.19	0.07	0.07
	[0.33]	[0.33]	[0.37]	[0.38]	[0.35]	[0.27]	[0.36]	[0.28]
Ln(hours in non market activities), partn					0.04	0.29	0.09	0.2
					[0.28]	[0.34]	[0.27]	[0.36]
Ln(share non mark activities)	0.28	-0.7	-0.38	-0.28				
	[0.47]	[0.54]	[0.48]	[0.58]				
I(own non market activities share ¿0.5)					0.06	-0.03	-0.04	0
					[0.07]	[0.07]	[0.06]	[0.06]
Ln(total expend)	0.44***	0.37***	0.38***	0.39***	0.44***	0.37***	0.38***	0.39***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Socio-dem. controls	yes	yes	yes	yes	yes	yes	yes	yes
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
atrho	0.51***		0.49***		0.51***		0.49***	
	[0.03]		[0.03]		[0.03]		[0.03]	
cut1	1.78	-0.61	-0.16	-0.67	2	-1.1	-0.24	-0.59
	[2.24]	[2.30]	[2.45]	[2.72]	[2.09]	[2.07]	[2.30]	[2.50]
cut2	2.85	0.5	1.07	0.48	3.07	0.01	0.99	0.57
	[2.24]	[2.30]	[2.44]	[2.72]	[2.09]	[2.07]	[2.30]	[2.50]
cut3	3.63	1.26	1.78	1.23	3.85*	0.76	1.69	1.31
	[2.25]	[2.30]	[2.44]	[2.72]	[2.09]	[2.07]	[2.30]	[2.50]
cut4	4.55**	2.08	3.02	2.48	4.77**	1.58	2.93	2.56
	[2.24]	[2.31]	[2.44]	[2.72]	[2.09]	[2.08]	[2.29]	[2.51]
Observations	2079	2079	2603	2603	2079	2079	2603	2603
N clusters	1083		1053		1083		1053	
Log-likelihood	-5323		-6886		-5322		-6886	
Log-likelihood(0)	-5510		-7119		-5510		-7118	
Wald chi2(21)	221.8		310.8		224.8		311.1	
Wald chi2(1) (independent equat)	268.7		293.7		268.8		293.9	

Table 10: Three time-use categories, "equality" of the housework division. Married prime age adults. Currently working

	(1)		(2)		(3)		(4)	
	woman	man	woman	man	woman	man	woman	man
Ln(hrs housework), own	-0.03	0	-0.02	0.02				
	[0.06]	[0.02]	[0.06]	[0.03]				
Ln(hrs leisure), own	0.40**	-0.15	0.41**	-0.16				
	[0.17]	[0.19]	[0.17]	[0.19]				
Ln(share housework)	-0.02		0	0.09				
	[0.13]		[0.14]	[0.15]				
Ln(hrs housework, ch), own					-0.10*	0	-0.11*	-0.02
					[0.06]	[0.02]	[0.06]	[0.03]
Ln(hrs leisure, ch), own					0.12	-0.09	0.12	-0.07
					[0.11]	[0.17]	[0.11]	[0.17]
Ln(share housework, ch)					0		-0.02	-0.12
					[0.14]		[0.15]	[0.20]
Ln(total expend)	0.44***	0.34***	0.44***	0.34***	0.44***	0.35***	0.44***	0.35***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Socio-dem. controls	yes	yes	yes	yes	yes	yes	yes	yes
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
atrho	0.52***		0.52***		0.53***		0.53***	
	[0.03]		[0.03]		[0.03]		[0.03]	
cut1	0.95	-1.55	0.98	-1.61	-0.34	-1.45	-0.37	-1.36
	[1.51]	[1.64]	[1.51]	[1.64]	[1.35]	[1.59]	[1.35]	[1.60]
cut2	2.03	-0.46	2.06	-0.52	0.74	-0.35	0.72	-0.27
	[1.51]	[1.64]	[1.51]	[1.64]	[1.35]	[1.59]	[1.35]	[1.60]
cut3	2.79*	0.33	2.82*	0.26	1.49	0.42	1.46	0.51
	[1.51]	[1.64]	[1.51]	[1.64]	[1.35]	[1.59]	[1.35]	[1.60]
cut4	3.71**	1.11	3.74**	1.05	2.42*	1.21	2.40*	1.3
	[1.50]	[1.64]	[1.50]	[1.64]	[1.34]	[1.60]	[1.34]	[1.60]
Observations	1982	1982	1982	1982	1926	1926	1926	1926
N clusters	1060		1060		1031		1031	
Log-likelihood	-5075		-5074		-4925		-4925	
Log-likelihood(0)	-5261		-5260		-5113		-5113	
Wald chi2(22)	214.6		212.7		216.4		214.6	
Wald chi2(1) (independent equat)	271.7		269.7		276.5		275.9	

Table 11: Three time-use categories, "fairness" of the housework division. Married prime age adults. Currently working

	1		2		3		4	
	women	men	women	men	women	men	women	men
Ln(hrs housework), own	-0.09	0.02	0.07***	0.03				
	[0.06]	[0.03]	[0.03]	[0.03]				
Ln(hrs housework), partners	0.07**	0	-0.09	-0.01				
	[0.03]	[0.05]	[0.06]	[0.05]				
Ln(hrs leisure), own	0.36**	-0.13	0.36**	-0.14				
	[0.17]	[0.19]	[0.17]	[0.19]				
I(own housework share ¿0.5)	0.28*		0.32*	0.1				
	[0.15]		[0.16]	[0.15]				
Ln(hrs housework, ch), own					-0.19***	0.03	-0.19***	0.02
					[0.06]	[0.02]	[0.06]	[0.03]
Ln(hrs housework, ch), partners					0.07***	-0.03	0.07***	-0.03
					[0.02]	[0.05]	[0.02]	[0.06]
Ln(hrs leisure, ch), own					0.11	-0.08	0.11	-0.07
					[0.11]	[0.16]	[0.11]	[0.17]
I(own housework share, ch ¿0.5)					0.39***		0.37**	-0.06
					[0.15]		[0.16]	[0.14]
Ln(total expend)	0.43***	0.34***	0.43***	0.34***	0.43***	0.34***	0.43***	0.34***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Socio-dem. controls	yes	yes	yes	yes	yes	yes	yes	yes
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
atrho	0.52***		0.52***		0.52***		0.52***	
	[0.03]		[0.03]		[0.03]		[0.03]	
cut1	0.82	-1.44	0.84	-1.46	-0.45	-1.23	-0.46	-1.22
	[1.50]	[1.65]	[1.50]	[1.65]	[1.32]	[1.55]	[1.32]	[1.55]
cut2	1.91	-0.35	1.92	-0.37	0.64	-0.14	0.63	-0.13
	[1.50]	[1.65]	[1.50]	[1.65]	[1.32]	[1.55]	[1.32]	[1.55]
cut3	2.66*	0.43	2.68*	0.42	1.4	0.64	1.39	0.66
	[1.50]	[1.65]	[1.50]	[1.65]	[1.32]	[1.55]	[1.32]	[1.55]
cut4	3.59**	1.21	3.61**	1.2	2.32*	1.42	2.31*	1.44
	[1.50]	[1.65]	[1.50]	[1.65]	[1.32]	[1.55]	[1.32]	[1.55]
Observations	1982	1982	1982	1982	1980	1980	1980	1980
N clusters	1060		1060		1059		1059	
Log-likelihood	-5070		-5070		-5057		-5057	
Log-likelihood(0)	-5256		-5256		-5246		-5246	
Wald chi2(23)	222.1		224		239.3		238.5	
Wald chi2(1) (independent equat)	271.9		271.9		280.1		280	

Table 12: Husband chooses and wife follows?. Married prime age adults.
Currently working

	1994-1998		2000-2004				1994-1998	
	woman	man	woman	man	woman	man	woman	man
Ln(hrs non-market), own	0.47*	-0.23	-0.11	0.07				
	[0.25]	[0.21]	[0.26]	[0.24]				
Ln(hrs non-market), partners	-0.1		0.18					
	[0.22]		[0.23]					
Ln(hrs housework), own					-0.03	0.02		
					[0.05]	[0.03]		
Ln(hrs housework), partners					0.05*			
					[0.03]			
Ln(hrs leisure), own					0.43**	-0.2		
					[0.17]	[0.21]		
Ln(hrs leisure), partners					-0.14			
					[0.21]			
Ln(hrs housework, ch), own							-0.11**	0.02
							[0.05]	[0.02]
Ln(hrs housework, ch), partners							0.05*	
							[0.03]	
Ln(hrs leisure, ch), own							0.16	-0.17
							[0.11]	[0.18]
Ln(hrs leisure, ch), partners							-0.17	
							[0.19]	
Ln(total expend)	0.44***	0.37***	0.39***	0.39***	0.43***	0.34***	0.43***	0.34***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Socio-dem. controls	yes	yes	yes	yes	yes	yes	yes	yes
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
atrho	0.51***		0.49***		0.52***		0.52***	
	[0.03]		[0.03]		[0.03]		[0.03]	
cut1	1.38	-2.68	-0.6	-1.77	0.48	-1.74	-1.05	-1.52
	[2.02]	[1.68]	[2.18]	[2.08]	[1.74]	[1.73]	[1.58]	[1.63]
cut2	2.46	-1.58	0.62	-0.61	1.57	-0.65	0.04	
	[2.02]	[1.68]	[2.17]	[2.08]	[1.74]	[1.73]	[1.57]	
cut3	3.23	-0.83	1.33	0.13	2.32	0.12	0.8	
	[2.02]	[1.68]	[2.17]	[2.07]	[1.74]	[1.74]	[1.58]	
cut4	4.15**	-0.01	2.57	1.38	3.25*	0.91	1.72	
	[2.02]	[1.68]	[2.17]	[2.08]	[1.74]	[1.74]	[1.57]	
Observations	2071	2071	2594	2594	1974	1974	1972	1972
N clusters	1078		1047		1055		1054	
Log-likelihood	-5304		-6862		-5053		-5042	
Log-likelihood(0)	-5491		-7095		-5238		-5228	
Wald chi2(23)	219		311.7		220.1		228.1	
Wald chi2(1) (independent equat)	267.2		293.5		270.9		275.3	

Table 13: Joint distribution of satisfaction levels, 2000-2004

(A) Actually observed frequences

wife's satisfaction	husband's satisfaction 0	1	2	3	4	
0	0.0384	0.0379	0.0205	0.0075	0.0030	0.1073
1	0.0344	0.1712	0.0969	0.0614	0.0085	0.3724
2	0.0100	0.0679	0.1008	0.0659	0.0065	0.2511
3	0.0025	0.0354	0.0414	0.1388	0.0165	0.2346
4	0.0010	0.0030	0.0055	0.0150	0.0100	0.0344
Total	0.0864	0.3155	0.2651	0.2886	0.0444	1.0000

(B) Predicted probabilities from the model 5.2.2

wife's satisfaction	husband's satisfaction 0	1	2	3	4	Total
0	0.0321	0.0406	0.0101	0.0031	0.0001	0.0858
1	0.0512	0.1520	0.0725	0.0381	0.0018	0.3156
2	0.0181	0.1025	0.0787	0.0627	0.0054	0.2675
3	0.0069	0.0694	0.0836	0.1071	0.0181	0.2851
4	0.0002	0.0043	0.0093	0.0230	0.0091	0.0459
Total	0.1084	0.3687	0.2543	0.2340	0.0345	1.0000

Table 14: Approximations of the partial effects on joint predicted probability, Model 3, 2000-2004

(A) Predicted probabilities

wife's satisfaction	husband's satisfaction 0	1	2	3	4	Total
0	0.0321	0.0406	0.0101	0.0031	0.0001	0.0858
1	0.0512	0.1520	0.0725	0.0381	0.0018	0.3156
2	0.0181	0.1025	0.0787	0.0627	0.0054	0.2675
3	0.0069	0.0694	0.0836	0.1071	0.0181	0.2851
4	0.0002	0.0043	0.0093	0.0230	0.0091	0.0459
Total	0.1084	0.3687	0.2543	0.2340	0.0345	1.0000

(B) Predicted probabilities after a 10% increase in wife's wage ratio

wife's satisfaction	husband's satisfaction 0	1	2	3	4	Total
0	0.0305	0.0501	0.0181	0.0070	0.0002	0.1059
1	0.0388	0.1491	0.1026	0.0709	0.0045	0.3658
2	0.0096	0.0713	0.0789	0.0856	0.0098	0.2552
3	0.0030	0.0375	0.0629	0.1098	0.0243	0.2375
4	0.0001	0.0018	0.0054	0.0186	0.0097	0.0356
Total	0.0820	0.3097	0.2680	0.2919	0.0485	1.0000

(C) Percentage change in the predicted probability

wife's satisfaction	husband's satisfaction 0	1	2	3	4
0	-4.79%	23.40%	80.04%	127.82%	183.67%
1	-24.21%	-1.91%	41.52%	86.18%	142.65%
2	-46.80%	-30.49%	0.21%	36.43%	82.28%
3	-57.10%	-46.02%	-24.78%	2.54%	34.24%
4	-64.47%	-57.29%	-42.00%	-19.16%	5.94%

These predictions are calculated basing on the estimation results presented in Table 8, column (2).

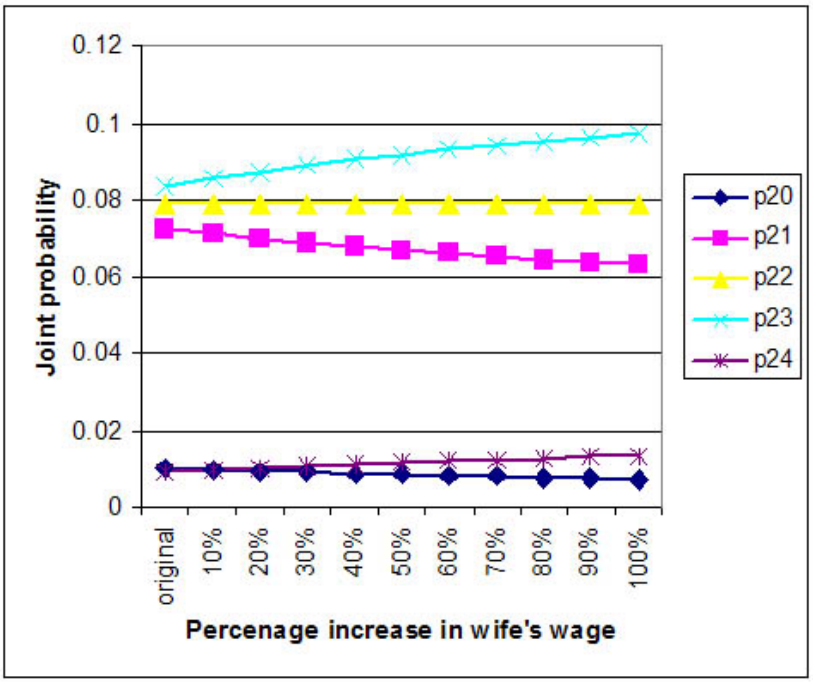

Figure 2: Changes in predicted probability when wive's wage increases, adults 24-54 y.o.

Legend: predicted joint probabilities $Pr(LS_f = k, LS_m = j)$ for $k, j = 0, ..., 4$ are plotted

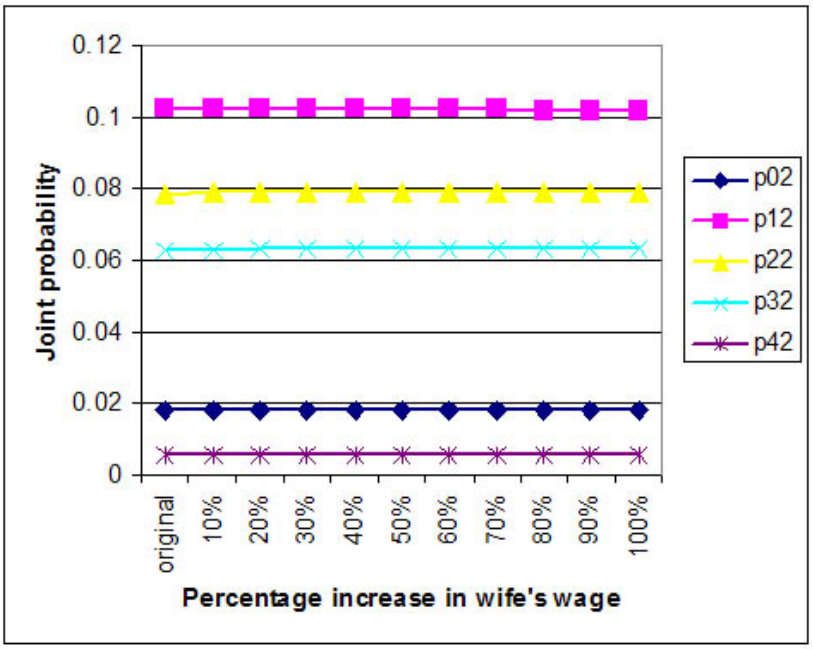

Figure 3: Changes in predicted probability when wive's wage increases, adults 24-54 y.o.

Legend: predicted joint probabilities $Pr(LS_f = k, LS_m = j)$ for $k, j = 0, ..., 4$ are plotted

Table 15: Approximations of the partial effects on joint predicted probability, Model 3, 2000-2004

(A) Predicted probabilities after the one-hour increase in wife's non-market time

wife's satisfaction	husband's satisfaction 0	1	2	3	4	Total
0	0.0053	0.0079	0.0031	0.0019	0.0017	0.0199
1	0.0243	0.0714	0.0431	0.0293	0.0034	0.1716
2	0.0166	0.0805	0.0698	0.0642	0.0074	0.2385
3	0.0119	0.0945	0.1210	0.1687	0.0316	0.4278
4	0.0009	0.0137	0.0288	0.0710	0.0278	0.1422
Total	0.0589	0.2681	0.2658	0.3353	0.0719	1.0000

(B) Percentage change in the predicted probability

wife's satisfaction	husband's satisfaction 0	1	2	3	4
0	-83.60%	-80.41%7	-69.38%	-38.67%	2504.68%
1	-52.40%	-52.99%	-40.57%	-22.89%	83.78%
2	-8.66%	-21.52%	-11.34%	2.42%	38.53%
3	72.38%	36.23%	44.73%	57.53%	74.34%
4	390.29%	222.09%	209.18%	208.32%	203.62%

These predictions are calculated basing on the estimation results presented in Table 8, column (2).