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An Empirical Analysis of the Time Allocation of Italian Couples: Are Italian Men Irresponsive?

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AN EMPIRICAL ANALYSIS OF THE TIME ALLOCATION OF ITALIAN COUPLES: ARE ITALIAN MEN IRRESPONSIVE? *

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Abstract

This paper analyzes the time allocation of Italian spouses to paid work, childcare and household work. The literature suggests that Italian husbands contribute the least to unpaid household work, relative to other European countries, while Italian women have the lowest market employment rates. We model the three different time uses simultaneously for the two spouses within each household, allowing for corner solutions and correlations in the unobservables across the system of six equations. To estimate the model we use data drawn from the 2002-03 Italian Time Use Survey, combined with earnings information taken from the 2002 Bank of Italy Survey. We conclude that Italian husbands' time allocation responds to their wife's attributes: in particular, husbands' housework time increases with the wage of their wife. On the contrary, the own wage effect is significantly negative for housework of women. Childcare time of fathers increases with own wage and with the presence of small children and this is true both for weekdays and weekends.

Keywords: Time allocation; work behaviour; household economics.

Classification JEL : D1, D13, J21

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1. Introduction

There is a scant, though growing, economic theory literature on the time allocation of spouses within the same household. The theoretical facts are set up by the pioneering work of Becker (1965) and Gronau (1976) that allow individuals to trade off domestic work, market work and leisure. A step further is taken by Kooreman and Kapteyn (1987) that allow for more disaggregation of domestic work into many non-market activities. More recently, Apps and Rees (1997, 2002) develop a household model that incorporates household production and childcare time. Apps (2003) shows that ignoring the time individuals allocate to non-market work will bias the conventional estimates of the labour supply elasticity. Chiappori (1997) allows for home production in the collective model of household behaviour. Empirical work that investigates the time allocation of spouses within the same household is also growing, although the bulk of the applied literature consists of descriptive studies that analyze the time allocation of (married) men and women disjoint from each other.

In this paper, we focus on the time allocation decision of Italian spouses. According to international comparisons, Italian men carry out less unpaid household work than men in most other OECD countries, being second only to Japanese men (OECD, 2001). Burda, Hamermesh and Weil (2006 and 2007) argue that men and women do the same amount of "total" work, defined as the sum of market and non-market work, in all European countries but Italy, where men are shown to work substantially less than women. In Table 1, we show the average time allocated to different activities by men and women in a number of European countries, according to the Harmonized European Time Use Survey (HETUS).[1] Italian men are indeed found to perform the lowest amount of domestic work among men in the countries considered, second to Spaniards. Instead, Italian women stand out as the least active in the labour market, close to German women.

Some specific characteristics of the labour market situation of Italian women are also worth mentioning: they enjoy one of the lower gender-wage differentials among OECD countries but their employment rates are also exceptionally low (see Table A.1 in the Appendix). Olivetti and Petrongolo (2008) argue that the gender wage gap should be adjusted for selection into

[1] The table is taken from the online information on HETUS provided at https://www.testh2.scb.se/tus/tus/. Each national statistical institute is responsible for the accuracy of data they have contributed to the database. Statistics Finland is responsible for setting up and harmonizing the database. Statistics Sweden has built and runs the table generating tool. The contributing National Statistical Institutes have approved the technique by which the estimates are calculated by the tool.

employment: without this adjustment for selection into employment the male-female gender-wage differential is underestimated. The low employment rates of Italian women are partly explained by institutional factors (Del Boca and Wetzel, 2007; Del Boca et al., 2007, 2008).

To our knowledge, there are surprisingly few studies of the time allocation of Italian spouses. Mencarini and Tanturri (2004) analyze the time allocation of Italian spouses in conjunction with the arrival of a new-born child, in different types of households, using data from a special time use survey carried out in 5 big towns located in the North, the Centre and the South of Italy (Florence, Messina, Padua, Pesaro and Udine). The authors concluded that market time of men increased following the birth of a child while their childcare time was almost unaffected. Anxo et al. (2007) carry out a comparative analysis of how individuals allocate their time to market work, non-market work (that includes childcare) and leisure over their life cycle in a number of countries, including Italy. In particular, they find that Italian women tend to specialize in household production more than women in other countries and that the time they allocate to housework increases dramatically with the birth of a new child and the presence of small children.

It is our aim to estimate the impact of economic incentives on Italian spouses' time allocation decisions. In particular, we focus in this study on wage effects. Wages can be affected by policies such as minimum wage laws, equal opportunity legislation, and income taxation. The expected effects of wages on market labour supply are known. The literature on the wage elasticity of unpaid household work is less well developed and there is no clear indication on the expected signs of the wage elasticities (see, Bloemen and Stancanelli, 2008, for a discussion).

In this paper, we model simultaneously the decision of spouses to allocate time between market work and non-market time, distinguishing three time uses: paid work, childcare and housework. This approach has the advantage of not aggregating child-caring time and housework, thus allowing these time allocations to be valued differently by spouses and to be affected differently by a number of factors, like the spouses' wage rates, their education, the presence and age of children. According to the theory, the impact of economic incentives on child-caring and housework may well differ (Apps and Rees, 2002; Connelly and Kimmel, 2007a, Bloemen and Stancanelli, 2008). To our knowledge, there are very few studies that modeled childcare and housework separately and most authors aggregate these two time uses. Hersh and Stratton (1994), for example, study the relation between housework and wages of American spouses. They conclude that housework contributes to lower women's wages, thus reinforcing their specialization into housework relative to

their husband. Kalenkoski, Ribar and Stratton (2008) analyze the influence of wages on childcare time and paid work of spouses in the United Kingdom, concluding that while women's time allocation to paid work and childcare responds to own and cross (spouse's) wage, that of men is not responsive to own wage. Kalenkoski, Ribar and Stratton (2005 and 2006) compare the amounts of childcare and market work performed by parents in different types of households, distinguishing between primary and secondary childcare. Connelly and Kimmel (2007b) investigate spousal leisure, home production and childcare and the impact of wages. All these studies allow wages to affect spousal time allocation by instrumenting or predicting wages -which is what we do also in this paper, due to data limitations (see later). A different approach is taken by Bloemen and Stancanelli (2008) that model simultaneously wage rates, employment, and time allocation of French spouses within each household, distinguishing three main time uses: paid work, childcare and household chores, and allowing for corner solutions and various correlations across the errors of the ten equations system. The authors find that husband's childcare and housework time responds to their wife's wage rate and that more educated parents spend more time with their children.

For our empirical analysis we use data drawn from the national time use survey 2002-03 *Indagine Multiscopo sulle Famiglie – Uso del Tempo,* carried out by the Italian National Statistical Office (ISTAT). The survey is representative of the Italian population. This survey contains socio-demographic information on individuals and households and collects individual diaries either for a week-day or for a weekend day. This has the advantage of enabling us to analyze separately spouses' time allocation during week-days and at weekends. At weekends, for example, husbands may be able to take over more of non-market work than they do during weekdays. The main disadvantage of this dataset is that no information was collected on earnings or income. Therefore, we have drawn information on individual earnings from the 2002 Survey of Household Income and Wealth (SHIW) carried out by the Bank of Italy to predict wages for individuals in the time-use survey sample.

We find that market work of women responds significantly and positively to the own wage. Instead, the own wage effect of paid work of men is statistically insignificant. Interestingly, men are found to react positively to their wife's wage: the higher the wage of the woman, the more domestic work is performed by her husband. Instead, the cross wage effect is insignificant for women: the time she allocates to housework is not a function of her husband's wage. Women are found to spend significantly less time on performing domestic tasks, the higher their own wage. Childcare time of

fathers increases with the own wage and with the presence of small children and this is true both for weekdays and weekends.

The structure of the paper is as follows. In Section 2 the econometric model is presented, while in Section 3 the data and sample selection criteria are illustrated. In Section 4 descriptive analysis is presented and the results of estimation of the model are discussed in Section 5. Conclusions follow.

3. The model

We model simultaneously three different time uses -paid work, childcare and household work- for the two spouses within each household. We allow for corner solutions and correlations in unobservables across this system of six equations. Predicted wages are extrapolated from the 2002 Bank of Italy Household Survey, as the time use survey does not collect any information on earnings or income.

To set up the framework for the econometric model let us assume, that spouses ($k = m$ for husbands and $k = f$ for wives) in each household i maximize household welfare subject to a budget constraint and a time constraint. Individuals consume goods and services bought the market, $C_{ik}^{(M)}$, $k = m, f$, and home produced goods and services $C_i^{(H)}$. The market goods can be divided into private consumption goods C_{ik}^{p}, housework services C_i^{hm}, and child care services C_i^{cm}. Thus we have $C_{ik}^{(M)} = (C_{ik}^{p}, C_i^{hm}, C_i^{cm})$, with an associated vector of market prices p. Housework services and child care services can also be produced by the household members, and accordingly we denote $C_i^{(H)} = (C_i^{hh}, C_i^{ch})$ with C_i^{hh} home produced goods and housework services and C_i^{ch} child care provided by the parents. Thus, for instance, parents can buy child care at the market and can take care of their children themselves. Utility is derived from total consumption $C_{ik} = (C_{ik}^{(M)}, C_i^{(H)})$, including market goods and home production, leisure time (l_{ik}) and the time allocated to children (t_{i1k}) (see, for example, Bloemen and Stancanelli, 2008):

$$U_{ik} = U_{ik}(C_{ik}, l_{ik}, t_{i1k}) \qquad k = m, f \tag{1}$$

By including time spent with the children directly in the utility function, we make explicit that parents not only derive utility from the child care services but also enjoy the time spent with the children, comparable to leisure time. By including child care services in the utility function, we

express that the parents care about the 'quality' of the children. Child care services, though, can be both bought at the market and provided by the parents themselves.[2] We define household welfare as a Pareto weighted average of the individual utility functions (1) of husband and wife, with Pareto weight ρ:[3]

$$W(C_{im}, C_{if}, t_{i1m}, t_{i1f}, l_{im}, l_{if}) = \rho U_{im}(C_{im}, l_{im}, t_{i1m}) + (1-\rho) U_{if}(C_{if}, l_{if}, t_{i1f}) \tag{2}$$

The budget constraint is a function of the wage rates of the two spouses (w_{im} and w_{if}), the time allocated to market work by each spouse (t_{i2k}) and the total household non-labour income (μ_i). It balances the expenditures of goods bought at the market (superscript *M*) and the disposable household income:

$$pC_i^{(M)} = pC_{im}^{(M)} + pC_{if}^{(M)} = f(p, t_{i2m}, t_{i2f}, w_{im}, w_{if}, \mu_i) \tag{3}$$

where p indicates the vector of prices of market goods and services. The production of home produced goods and services C_i^{hh}, excluding child care services, can be described with a production function[4]

$$C_i^{hh} = g_h(t_{i3m}, t_{i3f}) \tag{4}$$

It describes the relation between housework time inputs t_{i3k} of each spouse and the produced output.[5] Like in Bloemen and Stancanelli (2008), we take as a reference a simplified theoretical framework, whereby it is assumed that spouses do not derive utility from spending time on housework (see Gronau, 1976, for example): housework time t_{i3k} , $k = m, f$, only enters the production function, and therefore it has a productive use only. Household members derive utility from the consumption of the home produced goods, but not from the time they spent on this activity. Alternatively, we assume that time spent with the children has both a consumptive use (it

[2] Although (some) child care services bought at the market and child care services provided by the parents may be close or even perfect substitutes, utility specification (1) is general enough to allow for different marginal utilities of market services and home produced services, thus allowing for a possible difference in 'quality' that the parents assign to them.

[3] In bargaining models of household behaviour, the weights may depend on the individual wage rates.

[4] We assume that the production function satisfies the usual regularity conditions, like positive and diminishing marginal productivity of input factors.

[5] We have ignored heterogeneity of home productivity that arises when housework is performed at different times of the day, when the prices of substitute goods vary and when some home production may not have market substitutes.

enters utility function (1)) and a productive use: households may produce childcare services C_i^{ch} using their time inputs t_{i1k} according to a production function

$$C_i^{ch} = g_c(t_{i1m}, t_{i1f}) \tag{5}$$

The time constraint, say $T = 24$ hours a day, reads as follows:

$$T = \sum_{j=1}^{3} t_{ijk} + l_{ik} \tag{6}$$

where t_{i3k} denotes house work time. Here we have denoted with t_{ijk} , the time spent on activity j, with $j = 1, 2, 3$ (time with children, time at work, and time for household work, respectively) by household member k, with $k = m, f$, in household i, with $i = 1,..., N$.

The model describes the various trade-offs that couples consider in allocating their time between market income generating, domestic production and consumption uses. Spouses derive utility from leisure and time with the children (equation 1). House work and childcare services can be produced by the household members themselves, using their time inputs, as described by the production functions. Alternatively, they can be bought at the market. Buying goods at the market is costly (budget constraint, equation 3), whereas spending more time on household production diminishes the amount of time available for market work or leisure (time constraint, equation 6). Market work is the most important source of income for most households (budget constraint, equation 3). Moreover, time inputs of spouses in the household production processes (4) and (5) may complement or substitute each other.

Solving the model for the time decisions of the spouses within each household, we get that the time spent on any given activity depends on the wage rates of the husband and wife w_{im} and w_{if}, and on household non-labour income and market prices.

The theoretical model does not unequivocally predict the signs of the wage parameters for all time uses. For the own wage effects this is because there are opposing income and substitution effects. The extent to which the time inputs of spouses are complements or substitutes in household production determines the signs of the cross wage effects (see Bloemen and Stancanelli 2008 for a discussion).

In the empirical analysis, we disregard the price of market substitutes for home production, since they are not known. The empirical model allows for heterogeneity in unobservables and correlations across the unobservables of the time use equations of the two spouses. Unobservables may capture differences in productivity and in the price of substitutes for home production. We do not observe household non-labour income and wages in the data. However, we have predicted wages using the Bank of Italy household survey (see the data section). The time use equations that we estimate are thus the following, where $\hat{w}$ stands for predicted wages:[6]

$$
\begin{aligned}
& t^*_{ijk} = \alpha^m_{jk} \ln \hat{w}_{im} + \alpha^f_{jk} \ln \hat{w}_{if} + x_{ik}' \beta_{jk} + \varepsilon_{ijk} \qquad j = 1,\ 2,\ 3 \qquad \textit{and} \qquad i = 1,\ldots, N \\
& t_{ijk} = t^*_{ijk} \qquad \textit{if } t^*_{ijk} > 0 \\
& t_{ijk} = 0 \qquad \textit{otherwise}
\end{aligned}
\tag{4}
$$

where the x_{ik} are observed spouses' characteristics and $\varepsilon_{ik,}$ unobservables. Note that this system of equations allows zero time to be spent on a given activity. Individuals, in fact, may spend no time on market work, housework, or childcare. We allow the errors of the six time use equations (three for each spouse) to be correlated with each other and define:

$$
\omega_i = (\varepsilon'_{ijm} \quad \varepsilon'_{ijf})' \quad \text{with} \quad \omega_i \sim N(0, \Sigma) \tag{5}
$$

where Σ is the unrestricted variance-covariance matrix of dimension 6*6 of the errors of the six equations system. By letting the covariance matrix be unrestricted and estimating all of its elements, we allow for the simultaneity of spouses' time-allocation choices.

Correlation in unobservables between the errors of the six time-use equations may arise from unobserved household-specific correlations in preferences (i.e. unobserved positive assortative matching effects) or productivity (someone who is productive in the labour market may also be productive in housework, or the opposite, if labour market attachment prevents individuals from accumulating housework experience) and, following the theoretical model, household-specific heterogeneity in market prices for housework and child care services.

[6] With the Bank of Italy household survey we simultaneously estimated a (log)-wage equation with an employment equation with maximum likelihood, assuming that errors follow a multivariate normal distribution. Thus, the estimates of the wage equation have been corrected for selectivity. To predict wages for the Italian time use survey, we used the values of the covariates in the time use survey and the coefficients of the wage equation.

The complete model now consists therefore of the six time-use equations in (4) and the joint density of the errors in (5). We can then construct the likelihood contribution for each type of observation. To deal with the multidimensionality of the model, we employ simulated maximum-likelihood estimation, using the GHK algorithm (see, for instance, Börsch-Supan and Hajivassiliou, 1993).[7] Standard errors are corrected for the use of parameter estimates of the wage regression in the prediction of wages.

4. The data

We investigate the time allocation of Italian spouses using data drawn from the national time use survey 2002-03, "*Indagine Multiscopo sulle Famiglie – Uso del Tempo"*, carried out by the Italian National Statistical Office (ISTAT). The dataset covers 21,075 households, corresponding to 55,773 individuals, including children and other adults living in the household. An individual questionnaire containing socio-demographic information and a time diary were collected. In each municipality covered by the survey, households were allocated to three groups and each group was asked to fill in the daily diary at a different time: the first group on a week day different from Saturday or Sunday, the second group on a Saturday, and the third group on a Sunday. The over sampling of weekend diaries was a deliberate choice of the data collector (ISTAT).

This dataset has therefore the advantage of being a representative survey of the Italian population and the advantage that all household members were required to fill in a time diary, so that both the husband and the wife within each household in our sample have filled in a diary.

On the other hand, the main disadvantage of this dataset is that no information was collected on earnings or income. Therefore, we have drawn information on individual earnings from the 2002 Bank of Italy Survey on Household Income and Wealth (SHIW) to predict and impute wages for the individuals in our time-use survey sample (see Section 4.3)

[7] We use 60 replications in the simulation of the likelihood function.

4.1 Sample selection

For our empirical analysis we selected a sample of married couples, in which both spouses are older than 18 and younger than 61 years at the time of the interview and have at least one child younger than 19. We excluded couples in which one (or both) spouses is self-employed, in full-time education, retired, disable, or doing the military service. We also excluded couples for which the weekly diary was filled in on a "special" day, like, for example, a vacation day or a sickness day.

Childless couples were dropped as one of the focuses of the paper is distinguishing childcare time from household production tasks and paid work. Cohabiting couples were dropped as there were too few observations on them.[8] The final sample for the analysis consists of 2,929 couple households. We distinguish couples where both spouses answered the diary on a week day (1,049 couples), from those that filled the diary on weekend day (1,784 couples).

4.2 Variables used

The diary collects information on the time spent on a large number of tasks. Activities are coded by the respondent as main or secondary activities. For example, someone maybe cooking and watching television or cooking and watching the children. It is the respondent that chooses how to code activities into main or secondary ones. We distinguish here the following activities:

- market work;
- caring for children, which includes also playing with the children and transport time to take them somewhere;
- total time caring for children, including childcare activities as above reported also as secondary activity housework, including cleaning the house, shopping, cooking, doing the laundry, washing up dishes, doing paperwork.

We have computed the total time spent caring for children adding together the time reported under this heading as main activity and secondary activity. To fully grasp the total amount of time spent caring for children it is important to take into account also secondary activities.

As far as the other covariates go, we use intermediary education level, equivalent to 8 years of schooling (5 years of primary school and 3 years of intermediary schooling) as the reference group.

[8] For the sample that answered the diary at week days, there were only 33 unmarried couples.

A separate dummy variable captures the impact of lower than intermediary education (primary education or less). The other education levels that can be distinguished are lower 'secondary education' (for individuals with 2 years of secondary schooling); upper secondary education (5 years of secondary schooling); a short university degree (2 years); and a standard university degree (4 or more years). These last two categories are aggregated together in the estimation of the model as there are few observations with a short University degree. We also aggregate together all secondary schooling, i.e. lower and upper secondary schooling.

Next, we used binary indicator variables for the age of the youngest child in the household. We distinguish two categories: the youngest child is (i) younger than 3 years; (ii) 3 up to 5 years old. The availability of childcare facilities for children below the age of 3 is very limited in Italy, especially in the Southern regions of the country (Del Boca *et al.*, 2007 and 2008).

We finally include a dummy variable "North" that captures the effect of residing in the Northern part of Italy (rather than the fact of coming from the North). It may partially capture the effect of smaller unemployment rates.

4.3 Wage imputation

As already mentioned, information on wages was drawn from the 2002 Bank of Italy Survey of Household Income and Wealth (SHIW). The survey is done every two years. The 2002 SHIW survey used here covers 8,011 households, and 22,148 individuals. The SHIW contains information on annual earnings (collected after taxes) and household non-labour income. Hours usually worked per week and months worked in the year are collected, from which hourly wages were constructed.

For the estimation of the wage regressions, we selected a sample that includes individuals aged 18 to 60 years, not retired, self-employed or in full-time education. The resulting sample contains 4,853 women and 3,936 men. Among these, 2,266 women and 3,096 men report all information necessary to compute their wage rate.

The 2002 SHIW sample used for the wage regressions and the time-use sample are fairly comparable (see Table A.2, in the Appendix), as reasonable since they are both drawn from representative national surveys. The parameters of a wage equation and an employment equation were estimated simultaneously by maximum likelihood (Heckman regression) to allow for

selectivity. We used the selectivity corrected parameter estimates of the wage equation to predict wages for observations in the time use sample. For the wage estimates we excluded individuals in the top and bottom 3% of the hourly wage distribution. The regressors of the wage equation included education dummies and a quadratic expression in potential work experience.[9] The employment equation included additionally the marital status dummy, the regional level of unemployment, a series of dummies for the age of the youngest child in the household[10] and a control for the number of children. We also included a dichotomous variable for the presence of other adults above 55 years old in the household, but it did not show up significant. Results of estimation of the Heckman's regressions for men and women, using the SHIW sample are given in Table A.3, in the Appendix. Table A.4, in the Appendix, compares actual and predicted hourly wages from the Bank of Italy Survey.

5. Descriptive analysis

Descriptive statistics of the sample used for the week-days diaries analysis are given in Table 2. The average age is 41 years for men and 38 for women. Around 40% of the sample has an intermediary education (8 years of schooling, corresponding to *scuola media*) while around 50% has a secondary education. Less than 10% has a University degree. Female potential hourly wage is much lower than male one. We also want to stress that while about 96% of the men are employed, only 48% of women work in the market. The average number of children is 1.6, knowing that we have selected only couples with children. In 22% of the households considered the youngest child is below 3 years of age, while in 17% the youngest child is between 3 and 5 years. The table also shows that men devote to market work an average number of minutes that is three times that of women. On the contrary, women devote on average eight times more time to housework than men and three times more to childcare.

Comparable statistics for spouses that answered the time diary on a Saturday or a Sunday are provided in Table 3. It is shown that the time husbands allocate to household production and children increases at weekend days relative to week-days, while the opposite is true for women.

[9] Potential experience was constructed, as usual, by subtracting schooling years from age, as the survey did not collect information on actual work experience. Work experience of women is bound to be overestimated because of higher inactivity and unemployment rates for women than men in Italy and possible career breaks related to childbearing.

[10] These dummy variables indicate if the youngest child is aged 0-2, 3-5, 6-13, 14-18.

Table 4 shows in more details the distribution of the time allocated by husband and wife to paid work, housework, and childcare, respectively, for week-days diaries; while Table 5 presents the share of the husband in the total time allocated to each activity by the couple. Italian men spend on average 41 minutes a day on housework and 39 minutes caring for their children. The median values are much lower, and equal to ten minutes each. More than a quarter of the men in the sample did not perform any housework or childcare during the day the diary was collected. Over 50% of the women did not perform any paid work. These findings are corroborated by the observation that men's share in paid work is 100% at the median (Table 5). Husbands' share in household work is less than 20%, while their share in childcare time is 23%. Looking at the descriptive statistics, it is difficult to say whether these results are explained by the low labour market participation rates of Italian women or by the low participation rate of Italian husband into non-market activities. The estimation of the econometric model will bring more insights into these issues, also allowing for the effect of own and cross-wages on spousal time allocation.

Tables 6 provide the median time spent on each activity by the two spouses as a function of each spouse's education level, for individuals that filled in the diary during a normal week-day. They suggest that highly educated women (with a University degree) spend more time on paid work and less time on domestic work than poorly educated women (with primary education or less). Childcare time increases, instead, with mothers' education level. Instead, men with an intermediary level of education (8 years or more but less than University), spend more time both on market work, and with their children. The higher the education level of their wife, the more time husbands allocate to domestic tasks and childcare; while the opposite is true for women, for which we observe that the higher the education of their husband, the lesser time they spend on domestic work and childcare. Time allocated to market work does not seem to vary much for men with different levels of education.

6. Results of estimation

Equations (4) and (5) present the results of estimation of the model described in Section 3. The model allows for the three different time uses -paid work, childcare and household work- for the two spouses within each household. It allows for corner solutions. Correlations in unobservables across the system of six equations (three for each spouse) are left unrestricted and are estimated simultaneously. Predicted wages are drawn from the 2002 Bank of Italy SHIW dataset (see Section

4 for details). The estimated standard errors from the six equations are corrected using the standard errors of the Heckman's regressions. As mentioned earlier on, economic theory does not unequivocally predict the signs of the wage elasticities of spousal non-market time.

We have estimated different variants of the model. First, we have estimated the model as presented in equation (4), including predicted wage rates, for the sample of couples that filled in week-diaries (Table 7). Next, we have estimated a model variant without the predicted wages (Table 8). Finally, we have estimated the model for the couples that answered the time diary on a weekend day (Table 9). It may be that spouses exhibit different behaviour during weekend days, for instance, because husbands do more house work or childcare during the weekend and women do less (see Table 3).

The results of estimation of the model for weekdays are shown in Table 7. We find that market work of women responds significantly and positively to own wage. The own wage effect of paid work of men is, on the contrary, statistically insignificant. Own market time does not depend on the wage of one's spouse: cross-wage effects on paid work are insignificant for both husbands and wives. Overall paid work of husbands is not a function of any of the variables considered, suggesting that whatever their characteristics men will opt for participating full-time in the labour market. The insignificance of the regressors of paid work of men may also be explained by the fact that part-time jobs are still quite uncommon in Italy: the average working hours for Italian men were over 7 hours a day (see Table 2). Market work of women falls significantly with the number of children and the presence in the household of small children younger than 3 years. It decreases significantly for low-educated women with less than intermediary education (less than eight years of education). Residing in the North increases significantly women's paid work time. This may reflect cultural effects, but also lower unemployment rates and more childcare services availability.

Next, let us look at the results of the equation for non-market time. Interestingly, men are found to react positively to their wife's wage: the higher the wage of the woman, the more domestic work is performed by her husband. This confirms the findings of Bloemen and Stancanelli (2008) for French couples. Instead, the cross wage effect is insignificant for women: the time allocated to house work is not a function of their husband's wage. Women are found to spend significantly less time on performing domestic tasks, the higher their own wage. The own wage effect is also negative, but statistically insignificant, for men. The house work of women increases significantly with the number of children, while this in not true for husbands. Men residing in the North of Italy spend significantly more time carrying out domestic tasks than men living in other parts of Italy,

while the opposite is true for their wives: living in the North reduces significantly the time women allocate to house work. Regional residence variation does not affect childcare time. Childcare time of fathers increases with the own wage and with the presence of small children, while childcare time of mothers is not sensitive to wage incentives, but it increases with both the number of children and the presence of small children.

The separate coefficients of age and age squared do have small t-values and do not show up significantly. We computed the likelihood ratio test statistic to test whether the parameters of age squared in all the six model equations are zero. For this purpose, we have estimated a model variant that excluded age squared. The null hypothesis could not be rejected (LR is 7.05 with 6 degrees of freedom). In the model variant without squared ages (not shown here) some of the age coefficients show up significantly. In particularly we find that the child care time of both spouses decreases with their age, while the housework time of the wife increases with age. The latter may represent a cohort effect. When re-estimating the model without wages (Table 8) we also find some significant age coefficients.

The estimates of the impact of education on time allocation become more precise when we drop wages from the model (see Table 8). In particular, we find that higher educated women perform significantly more market work and lower educated women significantly less, with respect to the reference category (intermediary level of education). Higher educated women perform significantly less domestic work while men with secondary education more. Older and lesser educated fathers are now found to spend significantly less time with their children, while men with secondary education allocate more time to childcare. The other results are qualitatively comparable.

Results of estimation of the model for couples that answered the diary on a Saturday or a Sunday (see Table 9) should be interpreted keeping in mind that people are less likely to perform market work on a weekend day. Interestingly, lower educated men spend significantly more time on domestic tasks at weekend days. The number of children increases the market hours worked by men in the weekend. For couples residing in the North of Italy, husbands are less likely to do any market work at weekends, while wives are slightly more likely. The cross-wage effect on housework of men is significantly positive: the higher the wage of their wife, the more domestic work is performed by men at the weekend. This corroborates the finding of a significantly positive cross-wage effect for household production of men during weekdays. Like for week-days diaries parental childcare increases with the number of children and the presence of small children. Instead,

the presence of young children affects negatively mothers' housework time, suggesting that young children increase mothers' childcare time at the expenses of domestic tasks.
The correlations in the unobservables of the six time use equations are generally statistically significant for all the specifications considered (see Tables A.5, A.6, A.7 in the Appendix). Instead, the correlation across the unobservables of the wife's childcare and the unobservables of her domestic work is not significant. We also find an insignificant correlation across the unobservables of the housework equation of men and the paid work and childcare equations of women, for the case of weekend diaries (Table A.7). Interestingly, the unobservables of housework of husband and wife are significantly and negatively correlated during week days but positively correlated over the weekend, which seems very reasonable. The correlation in the errors of the childcare equations of the two spouses is significantly positive for any of the specifications considered. The same holds true for the paid work of the two spouses. The unobservables of own paid work time and own housework time are negatively correlated for either spouse, and for each of the three specifications. This indicates that individuals that perform more market work will perform less domestic work. The same holds true for the correlation between the errors of own market time and own childcare time which is also significantly negative for either spouse and for all specifications.

Table 10 illustrates the wage elasticities for the main model of Table 7. The elasticities were computed by increasing wages by one per cent and calculating the responses of own and cross time allocations at the mean values of the explanatory variables. We have also computed the wage elasticity of the total time spent by husband and wife to, respectively, paid work, domestic tasks and childcare.

We conclude that market time of wives would increase by 3.8% in response to a 1% increase in own wage. The opportunity cost of Italian women's time may be particularly high due the lack of services that help women to reconcile work and family responsibilities. Housework of men would increase, at the mean, by less than one per cent (0.8%) if their wife's wage increased by 1%. Housework of women would fall by 1.3% in response to an own wage increase of 1%. It follows indeed that total housework performed by either husband or wife within each couple would on average fall by 1% in response to an increase of 1% in the wage of the wife. Interestingly, childcare time of men would increase, at the mean, by 2.4% if their own wage increased by 1%. This would result in an increase of almost one per cent (0.9%) in the total childcare carried out at the household level.

6. Conclusions

This paper is focused on the time allocation decision of Italian spouses. According to international comparisons, Italian men carry out, on average, less unpaid household work than men in most other OECD countries, being second only to Japanese men. According to the Harmonized European Time Use Survey (HETUS), Italian men perform the lowest amount of domestic work among men in the countries considered, while Italian women stand out as the least active in the labour market.

We have investigated the impact of economic incentives on Italian spouses' time allocation decisions. We have modelled simultaneously the decision of spouses to allocate time between market work and non-market time, distinguishing three time uses: paid work, childcare and house work. This approach has the advantage of not aggregating child-care time and house work, thus allowing these time allocation decisions to be valued differently by the spouses. We have allowed for corner solutions, and correlations in unobservables across the system of six equations. This has enabled us to estimate the impact of spousal and household characteristics on time allocation decisions made by husbands and wives and their interactions. The model was estimated using data drawn from the national time use survey 2002-03, carried out by the Italian National Statistical Office (ISTAT). We have drawn information on individual earnings from the 2002 Bank of Italy Household Survey, to predict wages for individuals in the time-use survey sample.

We have concluded that market work of women responds significantly and positively to own wage. Instead, the own wage effect of paid work of men is statistically insignificant. Cross-wage effects on paid work are insignificant for both husbands and wives. Interestingly, men are found to react positively to their wife's wage: the higher the wage of the woman, the more domestic work is performed by her husband. Instead, the cross wage effect is insignificant for women: the time she allocates to housework is not a function of her husband's wage. Women are found to spend significantly less time on performing domestic tasks, the higher their own wage. The own wage effect of housework is also negative but statistically insignificant for men. The housework of women increases significantly with the number of children, while this variable has no impact for husbands. Lower educated men spend significantly more time on domestic tasks at weekend days than higher educated men do. Childcare time of fathers increases with own wage and with the presence of small children and this is true both for weekdays and weekends. Childcare time of

mothers is not sensitive to wage incentives, but it increases with both the number of children and the presence of small children.

The results suggest that the balance of time allocation of Italian spouses may become less unequal if the wages of women increased: the amount of house work performed by the husband would go up while that carried out by their wife would fall. Market work of mothers would also increase. However, figures of female to male wage ratios (See Table A.1), not corrected for employment rate differentials, show that wage differentials between men and women in Italy are low, relatively to other countries, especially for prime-age women. Therefore, the key policy issue may rather be to increase the provision of childcare services and the access to part-time work, which would lower the opportunity costs of market work for women.

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Table 1

Paid work, domestic work and leisure of Europeans

	Mean minutes per day – activity					
	Paid work Men	*Domestic work Men*	*Leisure time Men*	*Paid work Women*	*Domestic work Women*	*Leisure time Women*
Belgium	187	148	358	113	250	306
Bulgaria	212	157	286	154	301	227
Estonia	267	153	302	185	293	258
Finland	228	136	356	153	236	317
France	228	144	284	137	274	245
Germany	207	142	342	116	254	315
Italy	***255***	***95***	***305***	***112***	***320***	***246***
Latvia	300	110	285	209	236	248
Lithuania	285	129	287	211	269	225
Norway	244	141	352	158	227	340
Poland	241	142	320	135	285	272
Slovenia	233	158	331	162	296	267
Spain	261	97	316	126	295	266
Sweden	251	149	318	174	222	297
United Kingdom	250	138	322	144	255	295

Source: Harmonized European Time Use survey (HETUS): persons aged 20-74 years. The years covered vary country by country. Domestic work includes childcare time and excludes traveling time. Paid work excludes travel time to work. The Italian data are drawn from the same time use survey that we use for the analysis in this paper.

Table 2

Sample descriptive statistics (week days) - Italian Time Use Survey (ITU), 2002-03 (st. dev. in brackets)

	Husbands	Wives
Age	41.5 (6.96)	37.9 (6.62)
Primary education	0.08 (0.28)	0.08 (0.27)
Intermediary education (excluded)	0.43 (0.49)	0.42 (0.49)
Secondary education	0.51 (0.50)	0.51 (0.50)
University degree	0.08 (0.27)	0.08 (0.26)
Employed	0.96 (0.20)	0.48 (0.50)
Potential work experience	25.13 (7.70)	21.54 (7.34)
Hourly wage, Euros	7.59 (1.19)	6.55 (1.08)
Paid work time (minutes)	422.4 (187.9)	145.7 (197.7)
House work (minutes)	40.7 (60.6)	320.9 (151.0)
Childcare time (minutes)	38.8 (60.0)	112.1 (114.6)
Childcare time total, including secondary (minutes)	49.6 (70.1)	139.9 (132.4)
	Household characteristics	
Children Number	1.61 (0.68)	
Youngest child aged 0-2	0.22 (0.42)	
Youngest child aged 3-5	0.17 (0.38)	
North	0.40 (0.49)	
Regional unemployment rate	10.3 (7.27)	
N. obs.	1,049	

Note: See data section for more information on the variables in this table

Table 3 **Sample descriptive statistics (weekend days) - Italian Time Use Survey (ITU), 2002-03 (st. dev. in brackets)**

	Husbands	Wives
Age	41.6 (6.77)	38.1 (6.48)
Primary education	0.09 (0.29)	0.07 (0.26)
Intermediary education (excluded)	0.42 (0.49)	0.42 (0.49)
Secondary education	0.51 (0.50)	0.51 (0.50)
University degree	0.08 (0.27)	0.08 (0.26)
Employed	0.96 (0.20)	0.48 (0.50)
Potential work experience	25.24 (7.45)	21.63 (7.25)
Hourly wage, Euros	7.61 (1.21)	6.60 (1.09)
Paid work time (minutes)	122.5 (199.3)	37.7 (115.5)
House work (minutes)	71.6 (87.1)	324.1 (158.2)
Childcare time (minutes)	48.3 (77.6)	81.3 (100.7)
Childcare time total, including secondary (minutes)	63.5 (92.2)	106.9 (118.1)
	Household characteristics	
Children Number	1.64 (0.67)	
Youngest child aged 0-2	0.21 (0.41)	
Youngest child aged 3-5	0.19 (0.39)	
North	0.40 (0.49)	
Regional unemployment rate	10.4 (7.34)	
N. obs.	1,784	

Note: See data section for more information on the variables in this table

Table 4

Distribution of time allocation of husbands and wives (minutes) – Married couples, weekdays (N. obs. 1049)

	PERCETILE				
	10%	***25%***	***MEDIAN***	***75%***	***90%***
			Wives		
Minutes of paid work	0	0	0	340	470
Minutes of domestic work	120	200	320	430	520
Minutes with children as primary activity	0	10	80	180	280
Minutes with children as primary AND secondary activity rate	0	30	110	220	320
			Husbands		
Minutes of paid work	0	370	480	530	590
Minutes of domestic work	0	0	10	60	120
Minutes with children as primary activity	0	0	10	60	110
Minutes with children as primary AND secondary activity	0	0	20	75	130

Table 5

Shares and distribution of shares of husbands time on total couple's time in the activity - Married couples, weekdays (N. obs. 1049)

	Share of husband's time on total couple time in the activity	***Distribution of share of husband's time on total couple time in the activity***				
		Percetile				
	Mean (St. err.)	*10%*	*25%*	*Median*	*75%*	*90%*
Minutes of paid work	0.798 (0.008)	0.490	0.569	1	1	1
Minutes of domestic work	0.119 (0.005)	0	0	0.044	0.185	0.364
Minutes with children as primary activity	0.234 (0.009)	0	0	0.143	0.375	0.650
Minutes with children as primary AND secondary activity	0.242 (0.008)	0	0	0.178	0.381	0.625

Table 6

Time allocation of couples by educational level (median values) – weekdays (obs. 1049)

	Own time allocation				***Spouse's time allocation***			
	Minutes of paid work	*Minutes of domestic work (large definition)*	*Minutes of domestic work (narrow definition)*	*Minutes with children as primary activity*	*Minutes of paid work*	*Minutes of domestic work (large definition)*	*Minutes of domestic work (narrow definition)*	*Minutes with children as primary activity*
Highly educated women	245	215	205	115	470	35	30	20
Middle educated women	0	270	270	90	480	20	20	20
Poorly educated women	0	390	380	70	480	10	10	0
Highly educated men	455	30	20	10	250	255	250	100
Middle educated men	480	30	20	20	0	300	295	90
Poorly educated men	480	10	0	0	0	370	360	70

Table 7

Results of estimation, week days

	Husbands		***Wives***	
	Coefficient	(St. Error)	Coefficient	(St. Error)
Paid work time				
Own wage	0.06	(0.50)	2.55**	(1.13)
Spouse wage	0.21	(0.15)	0.02	(0.25)
Constant	5.13	(3.44)	-16.50**	(6.49)
Age	0.02	(0.21)	0.07	(0.44)
Age squared	-0.07	(0.23)	-0.22	(0.55)
Primary education or less	0.27	(0.50)	-2.46*	(1.28)
Secondary education	0.32	(0.57)	-0.21	(1.11)
University degree	-0.10	(1.83)	-3.60	(2.77)
Number of children	-0.03	(0.17)	-0.65*	(0.36)
Youngest child 0-2 years	0.25	(0.37)	-1.48**	(0.71)
Youngest child 3-5 years	0.21	(0.38)	0.00	(0.67)
North	0.30	(0.25)	1.76**	(0.50)
House work time				
Own wage	-0.07	(0.21)	-1.04**	(0.36)
Spouse wage	0.15**	(0.07)	0.01	(0.09)
Constant	-1.92	(1.68)	9.37**	(2.30)
Age	0.06	(0.10)	0.03	(0.15)
Age squared	-0.05	(0.11)	0.12	(0.19)
Primary education or less	-0.36	(0.27)	-0.45	(0.48)
Secondary education	0.34	(0.25)	0.12	(0.39)
University degree	0.26	(0.81)	0.98	(0.96)
Number of children	-0.04	(0.08)	0.28**	(0.13)
Youngest child 0-2 years	0.14	(0.16)	-0.43	(0.25)
Youngest child 3-5 years	0.06	(0.17)	-0.20	(0.26)
North	0.25**	(0.11)	-0.89**	(0.16)
Childcare time				
Own wage	0.41*	(0.24)	-0.16	(0.25)
Spouse wage	0.05	(0.07)	0.11	(0.07)
Constant	-4.32**	(1.92)	0.76	(1.50)
Age	0.08	(0.10)	0.04	(0.09)
Age squared	-0.18	(0.12)	-0.15	(0.12)
Primary education or less	-0.42	(0.33)	-0.03	(0.31)
Secondary education	-0.20	(0.28)	0.45	(0.28)
University degree	-1.11	(0.86)	1.22*	(0.71)
Number of children	0.12	(0.09)	0.41**	(0.09)
Youngest child 0-2 years	1.29**	(0.16)	2.35**	(0.18)
Youngest child 3-5 years	0.92**	(0.17)	1.25**	(0.19)
North	0.18	(0.12)	0.05	(0.13)

The model is estimated for married couples excluding couples that answered the time diary on a weekend day.

* = significance at the 10% statistical significance level;

** = significance at the 5% level.

Table 8

Results of estimation, week days, without wages

	Husbands		***Wives***	
	Coefficient	(St. Error)	Coefficient	(St. Error)
Paid work time				
Constant	5.65*	(3,39)	-12,12*	(6,28)
Age	0.07	(0,16)	0,47	(0,33)
Age squared	-0.11	(0,19)	-0,47	(0,42)
Primary ed. or less	0.13	(0,37)	-4,41**	(1,02)
Secondary educ	0.47*	(0,26)	2,38**	(0,51)
University degree	0.33	(0,53)	3,48**	(0,96)
Number of children	-0.04	(0,17)	-0,60*	(0,36)
Youngest child 0-2 years	0.24	(0,36)	-1,56**	(0,66)
Youngest child 3-5 years	0.19	(0,38)	-0,03	(0,67)
North	0.31	(0,24)	1,60**	(0,46)
House work time				
Constant	-1.68	(1,67)	7,73**	(2,23)
Age	0.06	(0,08)	-0,13	(0,12)
Age squared	-0.06	(0,09)	0,22	(0,15)
Primary ed. or less	-0.40**	(0,20)	0,35	(0,32)
Secondary educ	0.36**	(0,11)	-0,97**	(0,17)
University degree	0.28	(0,22)	-2,02**	(0,29)
Number of children	-0.05	(0,08)	0,26**	(0,13)
Youngest child 0-2 years	0.14	(0,16)	-0,40	(0,25)
Youngest child 3-5 years	0.05	(0,17)	-0,18	(0,26)
North	0.25**	(0,11)	-0,82**	(0,15)
Childcare time				
Constant	-3.46*	(1,79)	0,81	(1,44)
Age	0.17*	(0,09)	0,04	(0,08)
Age squared	-0.24**	(0,10)	-0,15	(0,10)
Primary ed. or less	-0.69**	(0,25)	0,06	(0,23)
Secondary educ	0.23**	(0,11)	0,33**	(0,13)
University degree	0.31	(0,20)	0,88**	(0,21)
Number of children	0.12	(0,09)	0,41**	(0,09)
Youngest child 0-2 years	1.27**	(0,16)	2,34**	(0,18)
Youngest child 3-5 years	0.91**	(0,17)	1,25**	(0,19)
North	0.16	(0,12)	0,06	(0,12)

The model is estimated for married couples excluding couples that answered the time diary on a weekend day.
* = significance at the 10% statistical significance level;
** = significance at the 5% level.

Table 9

Results of estimation, weekend days

	Husbands		***Wives***	
	Coefficient	(St. Error)	Coefficient	(St. Error)
Paid work time				
Own wage	-1.21	(0.84)	1.86	(1.28)
Spouse wage	-0.31	(0.30)	-0.61	(0.41)
Constant	14.94**	(7.46)	-2.48	(11.5)
Age	-0.41	(0.43)	-0.70	(0.66)
Age squared	0.61	(0.49)	0.82	(0.78)
Primary education or less	-2.73**	(0.92)	-0.83	(1.95)
Secondary education	-0.13	(0.98)	0.18	(1.45)
University degree	4.37	(3.01)	-1.23	(4.03)
Number of children	0.59*	(0.35)	-0.98	(0.63)
Youngest child 0-2 years	-0.70	(0.74)	-3.07**	(1.37)
Youngest child 3-5 years	-0.03	(0.67)	-1.51	(1.10)
North	-2.10**	(0.53)	1.49*	(0.77)
House work time				
Own wage	0.17	(0.18)	0.01	(0.22)
Spouse wage	0.13**	(0.06)	-0.08	(0.07)
Constant	-2.05	(1.80)	6.63**	(1.75)
Age	0.01	(0.10)	-0.11	(0.10)
Age squared	-0.02	(0.11)	0.20	(0.12)
Primary education or less	0.50**	(0.20)	0.43	(0.27)
Secondary education	0.12	(0.22)	-0.43	(0.26)
University degree	-0.28	(0.65)	-1.11	(0.68)
Number of children	0.04	(0.08)	0.57**	(0.10)
Youngest child 0-2 years	0.35**	(0.17)	-0.62**	(0.21)
Youngest child 3-5 years	-0.03	(0.15)	-0.44**	(0.19)
North	0.61**	(0.10)	-0.62**	(0.13)
Childcare time				
Own wage	0.38*	(0.23)	0.11	(0.18)
Spouse wage	0.11	(0.08)	0.01	(0.05)
Constant	-4.66**	(1.90)	-0.81	(1.29)
Age	0.07	(0.10)	0.04	(0.08)
Age squared	-0.19*	(0.11)	-0.15	(0.09)
Primary education or less	-0.15	(0.27)	-0.23	(0.25)
Secondary education	-0.02	(0.26)	0.13	(0.21)
University degree	-0.43	(0.84)	0.41	(0.53)
Number of children	0.24**	(0.09)	0.32**	(0.07)
Youngest child 0-2 years	1.70**	(0.16)	2.52**	(0.13)
Youngest child 3-5 years	1.02**	(0.16)	1.31**	(0.13)
North	0.36	(0.11)	0.10	(0.09)

The model is estimated for married couples excluding couples that answered the time diary on a week day.

* = significance at the 10% statistical significance level;

** = significance at the 5% level.

Table 10

Own and cross wage elasticity of time allocation (model of Table 7)

	Husband wage elasticity	(St. Err.)	Wife wage elasticity	(St. Err.)
paid work husband	0.06	(0.56)	0.20	(0.15)
paid work wife	0.03	(0.41)	3.78**	(1.41)
total in household	0.06	(0.44)	1.06**	(0.41)
housework husband	-0.44	(1.31)	0.80**	(0.36)
housework wife	0.02	(0.12)	-1.30**	(0.48)
total in household	-0.04	(0.18)	-1.06**	(0.41)
childtime husband	2.42*	(1.41)	0.27	(0.36)
childtime wife	0.35	(0.23)	-0.44	(0.67)
total in household	0.88**	(0.40)	-0.26	(0.52)

Appendix

Table A.1: Country specific Gender wage ratios and employment rates of mothers

Selected OECD countries	***Gender Wage ratio,*** cohort 30-44, all education levels, *2004*	***Gender Wage ratio,*** cohort 30-44, University degree, *2004*	***Employment Rates****, 2001,* mothers of children < 6	***Employment Rates****, 2005,* mothers of children < 16, relative to OECD average (61.5%)
Australia	62	64	45	=
Belgium	75	77	66.2	-
Canada	63	63	n.a.	+
Czech Republic	69	62	32.5	-
Denmark	71	65	74.3	+
Finland	71	66	n.a.	+
France	74	68	58.6	-
Germany	57	61	52.8	-
Hungary	87	67	32.9	-
Ireland	63	61	n.a.	-
Italy	**73**	**71**	**46.9**	**-**
Netherlands	62	n.a.	66.4	+
Norway	66	65	n.a	n.a
Poland	81	66	n.a.	-
Spain	75	76	43.3	-
Sweden	72	66	n.a.	+
United Kingdom	57	64	55.5	-
United States	63	60	61.2	+

Source : Education at Glance, 2006 : the gender wage ratio is equal to the percentage of female annual earnings in male earnings, measured in 2004 or most recent available year.

OECD 2002 Society at Glance, Social Indicators. OECD Labor Force Statistics and OECD Family Database. For example, in Australia the maternal employment rate in 2005 is equal to the OECD average.

n.a. stands for not available.

Table A.2

Descriptive statistics of samples used for wage predictions –
Survey of Household Income and Wealth (SHIW) and Italian Time Use (ITU)
(mean values, str. dev. in brackets)

	SHIW	***ITU***
	Women	
Hourly Wages	7.62 (5.78)	n.a.
Children Number	1.43 (1.01)	1.43 (0.97)
Youngest child aged 0-2	0.07 (0.25)	0.08 (0.27)
Youngest child aged 3-5	0.06 (0.24)	0.07 (0.25)
Youngest child aged 6-13	0.17 (0.37)	0.17 (0.37)
Youngest child aged 14-18	0.13 (0.34)	0.13 (0.33)
Youngest child aged >18	0.37 (0.48)	0.38 (0.48)
Presence in the household of other adults older than 55	0.61 (0.24)	0.03 (0.17)
Unemployment rate	9.83 (7.20)	9.57 (7.09)
Primary education or less	0.18 (0.38)	0.14 (0.35)
Intermediary education	0.33 (0.47)	0.32 (0.47)
Lower secondary school	0.07 (0.25)	0.08 (0.27)
Upper secondary	0.32 (0.47)	0.36 (0.48)
University short degree	0.01 (0.10)	0.01 (0.11)
University standard degree	0.09 (0.29)	0.08 (0.27)
Potential work experience (age minus years of education)	24.70 (12.57)	22.58 (13.56)
Married	0.69 (0.46)	0.62 (0.48)
N. obs.	4,853 (*)	14,481
	Men	
Hourly Wages	7.99 (5.06)	n.a.
Children Number	1.51 (1.03)	1.42 (0.97)
Youngest child aged 0-2	0.07 (0.25)	0.07 (0.26)
Youngest child aged 3-5	0.06 (0.23)	0.62 (0.24)
Youngest child aged 6-13	0.17 (0.37)	0.16 (0.37)
Youngest child aged 14-18	0.13 (0.34)	0.13 (0.33)
Youngest child aged >18	0.39 (0.49)	0.39 (0.49)
Presence in the household of other adults older than 55	0.06 (0.23)	0.03 (0.18)
Unemployment rate	9.92 (7.27)	9.33 (6.97)
Primary education or less	0.11 (0.31)	0.11 (0.31)
Intermediary education	0.37 (0.48)	0.36 (0.48)
Lower secondary school	0.08 (0.28)	0.08 (0.28)
Upper secondary	0.33 (0.47)	0.35 (0.48)
University short degree	0. 01 (0.09)	0.01 (0.09)
University standard degree	0.09 (0.28)	0.08 (0.27)
Potential work experience (age minus years of education)	22.20 (12.06)	22.13 (13.3)
Married	0.57 (0.49)	0.56 (0.50)
N. obs.	3,936 (*)	11,820

Notice that the sample includes childless couples and couples with children of any age, as well as single people. (*) Wages are observed only for 2,412 women and for 3,294 men.

Table A.3

Estimates of the wage equation and employment equation
Survey of Household Income and Wealth (SHIW)

	Men		***Women***	
Wage equation	Coefficient	(St. Error)	Coefficient	(St. Error)
Intercept	1.38**	(0.03)	1.21**	(0.05)
Potential work experience	0.027**	(0.002)	0.026**	(0.002)
Potential work experience squared/100	-0.034**	(0.004)	-0.031**	(0.005)
Intermediary education	0.09**	(0.02)	0.14**	(0.03)
Lower secondary school	0.19**	(0.02)	0.26**	(0.04)
Upper secondary	0.29**	(0.02)	0.38**	(0.03)
University short degree	0.42**	(0.05)	0.56**	(0.06)
University standard degree	0.60**	(0.03)	0.67**	(0.04)
Standard deviation wage distribution	0.28**	(0.00)	0.30**	(0.00)
Employment equation	Coefficient	(St. Error)	Coefficient	(St. Error)
Intercept	0.12	(0.16)	-0.10	(0.12)
Potential work experience	0.10**	(0.01)	0.09**	(0.01)
Potential work experience squared/100	-0.18**	(0.02)	-0.18**	(0.02)
Intermediary education	0.30**	(0.10)	0.22**	(0.07)
Lower secondary school	0.55**	(0.14)	0.79**	(0.11)
Upper secondary	0.65**	(0.11)	0.91**	(0.08)
University short degree	1.19**	(0.39)	1.04**	(0.22)
University standard degree	0.52**	(0.14)	1.32**	(0.11)
Married	0.90**	(0.10)	-0.71**	(0.06)
Children Number	-0.05	(0.04)	-0.13**	(0.03)
Youngest child aged 0-2	0.13	(0.19)	-0.14	(0.11)
Youngest child aged 3-5	0.22	(0.20)	-0.08	(0.12)
Youngest child aged 6-13	0.07	(0.15)	-0.08	(0.10)
Youngest child aged 14-18	0.03	(0.14)	0.03	(0.10)
Youngest child aged >18	-0.05	(0.11)	-0.12	(0.08)
Presence other adults older than 55	-0.13	(0.12)	-0.13	(0.09)
Unemployment rate	-0.07	(0.00)**	-0.06	(0.00)**
ρ (correlation errors wage-employment)	-0.39**	(0.06)	-0.12*	(0.07)

Table A.4

Mean values of observed and predicted hourly wages
in SHIW dataset (st. dev. in brackets)

	Women		*Men*	
Observed	7.62	(5.78)	7.99	(5.06)
Predicted	7.25	(1.47)	7.69	(1.48)

Table A.5

Covariance matrix errors for the model including only week days (Model Table 7 in the text): standard deviations on main diagonal, correlation coefficients off-diagonal

	Paid work husband	*House work husband*	*Child time husband*	*Paid work wife*	*House work wife*	*Child time wife*
Paid work husband	3.50**					
House work husband	-0.41**	1.47**				
Child time husband	-0.25**	0.20**	1.47**			
Paid work wife	0.13**	0.17**	0.08*	5.96**		
House work wife	0.06*	-0.13**	-0.09**	-0.74**	2.32**	
Child time wife	0.10**	-0.07*	0.26**	-0.26**	0.05	1.70**

Table A.6

Covariance matrix errors for the model including only week days and excluding wages (Model Table 8 in the text): standard deviations on main diagonal, correlation coefficients off-diagonal

	Paid work husband	*House work husband*	*Child time husband*	*Paid work wife*	*House work wife*	*Child time wife*
Paid work husband	3.50**					
House work husband	-0.40**	1.47**				
Child time husband	-0.24**	0.20**	1.47**			
Paid work wife	0.13**	0.17**	0.08*	5.99**		
House work wife	0.06*	-0.13**	-0.09**	-0.74**	2.33**	
Child time wife	0.10**	-0.07*	0.26**	-0.25**	0.05	1.70**

Table A.7

Covariance matrix errors for the model including only weekend days (Model Table 9 in the text): standard deviations on main diagonal, correlation coefficients off-diagonal

	Paid work husband	*House work husband*	*Child time husband*	*Paid work wife*	*House work wife*	*Child time wife*
Paid work husband	7.84**					
House work husband	-0.29**	1.87**				
Child time husband	-0.18**	0.17**	1.97**			
Paid work wife	0.31**	0.06	0.08*	8.92**		
House work wife	0.20**	0.18**	0.02	-0.35**	2.42**	
Child time wife	0.16**	-0.01	0.31**	-0.13**	-0.01	1.68**