Does Teleworking affect Housework Division and Improve the Well-Being of Couples?

Abstract

This study examines the relationship between teleworking, gender roles and happiness of couples using data from the British Household Panel Survey (BHPS) during the period 1991-2009. Various approaches are followed, including Probit-adapted fixed effects, multinomial Logit and Instrumental variables (IV). The results support that both men and women who are teleworkers spend more time on housework, while teleworking increases the probability that the household chores examined in this study, such as cooking, cleaning ironing and childcare, will be shared relatively to those who are non-teleworkers. In addition, women are happier when they or their spouse is teleworker, as well as, both men and women are happier when they state that the specific household chores are shared. Thus, women teleworkers may be happier for the reason that they are able to face the family demands and share the household chores with their spouse, increasing their fairness belief about the household division allocation and improving their well-being, expressed by happiness.

1. Introduction

Teleworking is defined as the working environment where employees work at home instead at offices or employer's premises (Lim et al., 1997). Teleworking has long been studied, but has been extensively examined since the beginning of 1990s. However, the circumstances have been changed since then, as well as, the economic and technological developments of the last years that took place lead to necessity for further research on this employment type. One factor that explains the birth of teleworking is the global economy which was characterised by the exchange of goods, while now is heavily dominated by information. Another major factor is the fast and impressive boost in improvement of microchips, telecommunications systems and computing among other elements of these technologies. These factors made possible for a person to work at a distant location away from the employer's premises (Nilles, 1975; 1999).

Work family issues and gender roles have become increasingly important trends in the last 30 years. Socio-economic trends as the increasing participation of women in the labour force, greater number of working single-parents and the increasing care of an aging population provide new responsibilities and challenges to both women and men to work-family balance and commitments (Lerner, 1994; Marks, 1996). An increasing number of women and men nowadays are involved in work and family arrangements, which were largely unknown for the parents' and the past generations (Barnett and Rivers, 1996; Hochschild, 1997). Along with these new challenges the traditional allocation of family and work is breaking down by gender (Willinger, 1993; Barnett and Rivers, 1996). So far the understanding of the work-family nexus remains limited, thus the research based on which policies and practises can be developed in order to help individuals through the new work family arrangements, remains also limited.

Based on previous researches specific domestic and household tasks are identified by masculinity and femininity (Coltrane, 1989; Warde and Hetherington, 1993). Thus, the introduction and allocation of production into home can have different consequences for male and female teleworkers. Nevertheless, very little is known how teleworking affects men and women and the ways that they reconcile the demands of work and household production and how teleworking is associated to well-being. Another fundamental point is both gender divisions and the diversity of household types within which gender relationships are embedded are essential. (Anderson et al., 1994; Benjamin and Sullivan, 1996). Nevertheless these studies do not explore the relationship between teleworking, housework division and couples' well-

being. Our research will contribute to this existing work using a comprehensive dataset which is the British Household Panel Survey (BHPS).

The aim of this study is to examine how teleworking affects the housework division of men and women and well-being. More specifically, this study aims to explore whether teleworking has positive effects on the balance of family-work time and obligations and household production allocation, as well as, improvement on well-being. If this can be achieved by applying teleworking then the benefits for both employees and employers, as well as, for families and society overall can be valuable. In addition, women's career path can be negatively influenced more than men by institutional barriers such as gender-pay gap, job loss during the pregnancy, insufficient maternity benefits for childrearing activities, insufficient public kinder-gardening (Becker, 1981; Hersch and Stratton, 1994; Waldfogel, 1998). Therefore, teleworking can be an option to provide conditions for women caring relationships with their children, as well as career goals at home and for men contributing to the housework. Increase flexibility will facilitate the management of work and family together. The housework production refers to activities, such as cooking, cleaning, ironing and shopping, while couples with children are considered additionally in order to explore the relationship between teleworking, happiness and childcare time allocation. From previous research studies it has been found that parents with young children tend to be more likely to work from home or to telework due to child needs and costs, as well as, because the parents wish to maximize their time spent with children (Han, 2004; Barnett and Gareis, 2007; Wight et al., 2008). Therefore, exploring the effects of teleworking on gender roles and well-being would give valuable insights for future policy implications related to work-family balance, distribution of household production allocation and well-being.

Using panel data the fixed effects regressions allow us to capture the individual effect which summarises the influence of unobserved variables that may have persistent effect on the dependent variable. More specifically, four main approaches are applied. The first is the conventional fixed effects models where the association between teleworking and housework hours is examined. The second method is the multinomial Logistic regression with fixed effects, where the relationship between gender roles and teleworking is explored. The third model refers to the Adapted-Probit method which allows the estimation of regression models with fixed effects when the dependent variable is ordered and refers to the happiness. Finally, an instrumental variable approach is employed in order to examine the effects of teleworking on housework hours and happiness.

The structure of the paper is the following: In section 2 short literature review is presented. In section 3 the methodology followed is discussed, while in section 4 the data sample used in the analysis is presented. In section 5 the empirical results are reported, while in the final section the concluding remarks are discussed.

2. Literature Review

In the literature review two main views have been analysed; the rational view and the gender role framework. Based on the rational view the more hours than a person spends on work and family the more conflict he/she will perceive (Keith and Schafer, 1984). Greenhaus et al. (1987) found that extensive time commitment to work is positively associated with work family conflict. Given that family work, house chores and childcare require many hours it is expected that the employed women have not enough time for family activities (Bryson et al., 1978). However, the question in this study is whether those who are teleworkers spend more time on family work or not. Previous research studies have found that women spend overall more hours than men on family and household chores (Denmark et al., 1985). On the other hand the gender role framework departs from the rational view. Even though most men and women report that the family is more valuable than work and even there have been many changes in the household production allocation the last 50 years, the traditional gender roles still persist. The study by Bauernschuster and Rainer (2010) explored and compare the gender roles attitudes between Eastern and Western Germany and it was found that these attitudes are less traditional in Eastern Germany due the different political systems suggesting that the gender roles might diverge in the western world.

In this study the hours of housework are explored, as well as, the perception of the respondents on whether the housework is their main responsibility or a shared process. More specifically, critics of exchange theory argue that, it is more practical and fruitful to examine couples' perceptions of fairness instead of focusing on the relationship between the division of household chores- domestic production and marital and life satisfaction (Thompson, 1991; Pina and Bengston, 1993). Pina and Bengston (1993) find that the way that wives perceive the amount of support and the help they receive from their husband is more important in determining the happiness than the actual division of labour expressed in hours of housework.

Thus, it is expected that even in the case where the share of household tasks is not equal in terms of housework hours, this does not imply that the women perceive it as unfair, as the findings in the empirical section show. Teleworking can be an alternative or a substitution tool to parental leave benefits, or a complementary policy which can allow the parents to allocate time on childcare and labour market with flexible working hours or part time allocation provided by this flexible employment type. A study by Ozdamar (2015a) for instance found a significant relationship between child health and parental leaves, suggesting that the traditional social policies might not be efficient. In a similar study the female political participation-representation and the allocation of public spending on family allowances differs (Ozdamar, 2015b). Therefore, by exploring teleworking as a distributional factor, following the collective approach, can allocate the bargaining process between the couples providing especially the women the option to be employed and at the same time to spend time on housework and childcare.

Various studies explored the effects of teleworking and working at home on performance, employee's satisfaction and compensation rates. Bloom et al. (2015) exploited data from an experiment at Ctrip, which is a NASDAQ-listed Chinese travel agency with 16,000 employees. Call center employees who volunteered to the experiment, which is called "working from home" (WFH), randomly assigned either to work from home or at the office for a period of nine months. Bloom et al. (2015) found that working from home led to a 13 per cent performance increase, associated with fewer breaks and sick days, and resulted to an increase of calls per minute by 4 per cent. Similarly, Dutcher (2012) conducted a unique experiment derived from the student population at Florida State University and the participants were randomly assigned to participate in the XS/FS lab on campus or outside the lab. XS/FS lab consists of a diverse group of research scholars and various experiments are conducted. The subjects in both locations were given information about how to login to a website which was setup to conduct the experiment and the population consists of 125 participants; 63 in the lab and 62 outside the lab and the 52 per cent of the sample was male. Their results suggest that while the out of lab environment reduced productivity in the dull task by 6–10 percent, the creative task productivity has been increased by 11-20 per cent. Oettinger (2011) explored the home-based employment and the wage penalty associated with it. More specifically, it is assumed that home working is a job attribute requested more by workers with high opportunity costs spending away from home and in-person interaction with other colleagues and supervisors is not required. In the equilibrium the workers who value this attribute most will be matched with employers who can provide this at the lowest cost. Therefore, the wage penalty

will exist if working from home is valuable to the marginal home-based worker and at the same time it is costly for the marginal employer to provide this attribute. The empirical analysis relies on data derived from the 5 percent Public Use Microdata Samples (PUMS) of the U.S. Census of Population for the years 1980, 1990, and 2000. The main findings of the study is that the overall home-based employment share nearly doubled and the mean home-based wage penalty fell by about 30 percentage points over the period 1980-2000.

One study relevant to ours is the study by Dockery and Bawa (2014) who employed data from the Household, Income and Labour Dynamics in Australia Survey (HILDA) for 11 waves during the period 2001-2011. The authors found that there is a positive association between working from home and the employees' satisfaction with the flexibility to balance work and non-work commitments. This is related to our study, since the relationship between teleworking, household production allocation and happiness is explored. Nevertheless, this study goes one step further and explores the cross-effects of teleworking on housework division and couples' overall well-being. In addition, Dockery and Bawa (2014) provide evidence that employees working at home are more likely to receive a lower rate of compensation that the respective employees put in at the workplace. This rate is equal by about $1 per hour less than the return to hours spent in the office. Overall, Dockery and Bawa (2014) argue that working from home is considered by employees as a positive job attribute that provides flexibility to balance work and non-work commitments. The study by Li et al. (2014) provides a detailed survey of previous studies exploring the relationship between non-standard working schedules and child well-being. For instance the study by Rapoport and Bourdais (2008) has shown that working at home in general is associated with more time devoted to household chores for mothers and allows fathers to spend more time for social activities and family meals. Therefore, the study of the teleworking and working from home effects on household production allocation and child well-being can be considered for future research.

This paper adds to the previous literature by exploring the link between teleworking, household chores and well-being of couples. In addition, using panel data analysis it is possible to include the history of each individual into a regression model, providing more accurate inference of the model parameters, greater capacity of capturing the complexity of human behaviour than the cross-sectional data analysis. Moreover, panel data contain information on inter-temporal dynamics and they allow for controlling the effects of missing or unobserved variables.

3. Methodology
3.1 Theoretical framework

The model presented in this section is a utility discrete choice model based on the models proposed by Gronau (1977), Van Soest (1995) and the collective model developed by Chiappori (1988, 1992).

However, the majority of these studies is based on cross-sectional analysis which present the issues discussed previously, as well as, this study investigates the link between teleworking, gender roles and overall utility (happiness). Thus, the analysis is limited on the investigation of the above linkage, and no effort examining the labour supply decisions and behaviour takes place. Based on that, the analysis is limited to households with two adult members-couples. In the classical Gronau household production model, it is assumed that the household members share one common utility function, where they derive utility from leisure t^l_m for man and t^l_f for woman, from market goods X_M and commodities produced at home H, such as cooking, washing, shopping, taking care of children. In the Gronau model it is assumed that market goods and goods produced in the household are perfect substitutes. The utility function will be:

$$U = U(X_M + H, t^l_m, t^l_f) \tag{1}$$

U is assumed that it is twice continuously differentiable and strictly concave. The household production H is a function of the time spent or the share of the couple on housework defined as t^h_m for male and t^h_f for female and auxiliary inputs X_H. In that case two variables are used; the first is the time-hours per week- spent for housework, while the second variable examined refers on whether the couples share the household chores, such as cooking, shopping and taking caring care the children. The auxiliary inputs X_H refer on intermediate inputs as food for preparing meals, or using car or public transportation for shopping.

$$H = H(X_H, t^h_m, t^h_f) \tag{2}$$

The household budget constraint consists of the non-labour income I and the labour income expressed by the weekly wages w_m and w_f for male and female respectively, and market labour supply in hours per week defined as t^w_m for male and t^w_f for female. The household budget constraint will be:

$$I + w_m t_m^w + w_f t_f^w = X_M + X_H \tag{3}$$

Relation (3) entails the risk of selecting households that both spouses may have a relatively high productivity in the market and low productivity in household production and vice versa. However, this model is presented as introduction, where in the points followed teleworking will be included. The time constraint for each member will be:

$$T = t_i^w + t_i^h + t_i^l \ , \ for \ i = m, f \tag{4}$$

Including teleworking it will be:

$$U = U(X_M + H, t_m^l + tel_m(t_m^h), t_f^l + tel_f(t_f^h)) \tag{5}$$

The first order conditions of utility function (5) with respect to housework hours t_m^h and t_f^h are:

$$\frac{\partial U}{\partial H}\frac{\partial H}{\partial t_m^h} = \frac{\partial U}{\partial H}\frac{\partial H}{\partial X_H} w_m(1 - tel_m'(t_m^h)) + \lambda_m \tag{6}$$

$$\frac{\partial U}{\partial H}\frac{\partial H}{\partial t_f^h} = \frac{\partial U}{\partial H}\frac{\partial H}{\partial X_H} w_f(1 - tel_f'(t_f^h)) + \lambda_f \tag{7}$$

In (6)-(7) λm and λf denote shadow prices of the inequality constraints on labour time. If both partners participate in the labour force then it is $\lambda m = \lambda f = 0$, $w_m > 0$, $w_f > 0$ and the interior solution can be simplified into the following partial optimisation problem:

$$\max_{0 \le t_m^h, t_f^h \le T} H = H(t_m^h, t_f^h, X_H) + w_m tel_m(t_m^h) + w_f tel_f(t_f^h) - w_m t_m^h - w_f t_f^h - X_H \tag{8}$$

Then the first order conditions will be:

$$\frac{\partial H}{\partial t_m^h} = w_m(1 - tel_m'(t_m^h)) \tag{9}$$

$$\frac{\partial H}{\partial t_f^h} = w_f(1 - tel_f'(t_f^h))$$ (10)

In this case the inclusion of teleworking shows that the household members will choose the housework level where the marginal product of their housework equals their wage which is adjusted with this part of the housework activity through teleworking perceived as leisure or allocating time for housework (for instance the time spent for commuting at work can be invested for leisure and free time or the time earned can be invested on additional hours of household-domestic work). Teleworking may increase the time spend also on house chores, since the person is located at home and there is more available time since commuting either does not exist for the teleworker homeworkers or it is much less for those who spend some days only in the employer's premises. Otherwise the household may decide to purchase the household chores, which information is available as the data sample and it is described in more details in the next section. More specifically, according to the classical household production model the household production Z is an increasing function of the i's member work in household production h_i, and h_i increases at a decreasing rate. Then the member i will choose to increase the housework until a point for example $t^h_i{}^*$, where the marginal product in household production is equal to the wage and it is $\partial H/\partial t^h_i = w_i$. However, including the teleworking, which ranges between 0 (office-based workers) to 1 (teleworker homeworkers), the housework is more than the classical household production model would predict. For example in this case the hours of household production is $t^h_i{}^{**}$, and it is $t^h_i{}^{**} > t^h_i{}^*$, thus the difference between $t^h_i{}^{**}$ and $t^h_i{}^*$ can be interpreted as the effect of telework on housework production. Nevertheless, the association of teleworking, household domestic production-chores and well-being in the economics literature has not been explored. Teleworking can be a selection allowing the couples to cope with the household and family demands.

Concluding the impact of teleworking may depend on various circumstances. Firstly, it is assumed that men who are teleworkers, are more likely to share the housework with their partners, or at least to contribute more than men who are non-teleworkers and similarly for women. This assumption can be important and has various implications. Regarding men who are teleworkers and spend more time on housework, will allow women to devote more time on their career, share the household chores with their partners and increase their happiness. On the other hand, women who are teleworkers and they spend more time on housework may be less happy. On the contrary they can be happier since they will be able to cope with the family

demands and at the same will be able participate in the labour market facing less stress and more available time, substituting the time lost in commuting at work.

It should be noticed that the hours of housework are included into the analysis. However, an additional analysis on whether the respondent or the partner is contributing more, less or equally on specific house chores, such as shopping, ironing, cleaning, cooking and childcare, takes place. The reason is that some house chores in our sample can be main responsibility of women, while others can be the main responsibility of men. More specifically, although women continue to be responsible for the majority of housework, few may perceive it as unfair. As it has been mentioned in the literature review it can be more useful to examine couples' perceptions of fairness additionally to the housework hours.

3.2 Panel Regressions

In this section the panel regressions are described. More specifically, as it has been discussed in the previous parts, the first aim of this study is to explore the association between teleworking and housework hours and the estimated model will be:

$$HH_{i,j,t} = a_0 + a_1 tel_{i,j,t} + a_2 \log(y_{i,j,t}) + \alpha' z_{i,j,t} + \mu_i + \theta_t + l_j + l_j T + \varepsilon_{i,j,t} \tag{11}$$

HH is the housework hours for individual *i*, in location *j* and time *t*. *tel* indicates whether the individual *i* is teleworker or not, *log(y)* is the logarithm of the household income, *z* is a vector of personal and household characteristics, discussed in the data section. Set μ_i denotes the individual-fixed effects, l_j is a location-residence fixed effects, θ_t is a time-specific vector of indicators for the day and month the interview took place and the survey wave, while $l_j T$ is a set of area-specific linear time trend, which controls for unobservable, time-varying characteristics in the area, which can affect the propensity to telework, such as distance to employer's premises[1]. Model (11) is estimated using fixed effects. Next the regression model which examines the relationship between gender roles and teleworking is:

$$GR_{i,j,t} = a_0 + a_1 tel_{i,j,t} + a_2 \log(y_{i,j,t}) + \alpha' z_{i,j,t} + \mu_i + \theta_t + l_j + l_j T + \varepsilon_{i,j,t} \tag{12}$$

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[1] A Heckman selection model for propensity to telework has been estimated in order to explore the selection bias of teleworkers and non-teleworkers. The results show that there is no selection bias in the sample and are not reported here.

GR denotes the gender roles and the division of housework, and the possible answers are: *whether the individual does mainly the housework, whether his/her partner does mainly the housework, both share the housework, somebody else does the housework* and are discussed in more details in the data section. The remained variables are defined as in regression model (11). Regression (12) is estimated with multinomial Logistic method and fixed effects, which is a classification method that generalizes logistic regression to multiclass problems, (eg. with more than two possible discrete outcomes as is the gender roles). This will allows us to estimate whether teleworking increases the probability that the couples share the housework as well as to examine the hypothesis that spouses who are teleworkers may spend more time in house.

Finally, regression (12) is estimated using the happiness as dependent variable and it is the following:

$$HP_{i,j,t} = a_0 + a_1 tel_{i,j,t} + a_2 \log(y_{i,j,t}) + \alpha' z_{i,j,t} + \mu_i + \theta_t + l_j + l_j T + \varepsilon_{i,j,t} \tag{13}$$

HP denotes the happiness for individual *i*, in area *j* and time *t*, while the remained variables are the same with those defined in regressions (11)-(12). However, vector *z* includes additionally the gender roles, in order to explore the relationship between household production allocation and couples' well-being. Model (13) can be estimated by ordered Logit and Probit with random effects. However, a fixed effects framework is not feasible using these models into a panel data structure. The method followed in this study is the Probit OLS introduced by van Praag and Ferrer-i-Carbonell (2004) which rescales the categorical dependent variable and derives *Z*-values of the standard normal distribution that correspond to cumulative frequencies of the original categories (see Cornelissen, 2006, for an example).

4. Data

The dataset used in this study is the British Household Panel Survey (BHPS), which is a panel survey started since 1991 and completed in 2009 covering 18 waves. For the analysis followed in this study only the BHPS sample is of main interest as the individuals are followed for many years. BHPS is a classic example of household panel surveys designed to address and examine a wide range of research topics, including income, poverty, labour, well-being, health,

education, housing, household formation, fertility, social and political attitudes and values among others.

BHPS has the following statements on the housework division that are helpful to observe which gender is responsible at doing different house chores: *Who does the grocery, who does the cooking, who does the cleaning, who does the washing/ironing* and *who is responsible for the childcare*. The possible answers are *mainly myself, mainly the partner, shared/both* and *someone else,* which can be some other member from the household, a friend, a relative or someone by payment. Regarding the family "environment" the question is who contributes to the child care replying to the same answers as above. Finally, there is a quantitative variable *hours per work in housework,* which will be used as an additional dependent variable in the regression (11) discussed in the methodology section.

Regarding well-being the survey includes a question about happiness, which is an ordinal variable measured on a 4-point scale and the specific phrasing of the question is the following "Have you recently been feeling reasonably happy, all things considered". In addition, life satisfaction could be considered, but it is measured only after the 6th wave, while happiness is available since the beginning of BHPS. The health status is an ordinal variable answering on whether the respondent's health is very poor/poor/fair/good/excellent.

The regressions control for both partners' characteristics. More specifically, partners' weekly working hours, age, education level, job status and health status, are included into the regressions. Other individual characteristics include the personal labour income and happiness, while the household characteristics is the household size and house tenure. The personal income may be an important factor as it can capture the bargaining power of partners. For instance, women with higher income may have a higher bargaining power regarding the household allocation. The number or the age of children could be examined too but the number of children is highly correlated with the household size. However, one assumption is that in some cases the women or both couples may choose to telework if they want to take care of the children. Nevertheless, this can be applied also to the elder members who are need of care.

Finally, the regressions control for the day of the week, the month of the year and the wave of the survey, as well as, for residence location which is expressed by the local authority district. The latter can capture unobserved characteristics associated with the area, such as traffic affecting the time needed to attend at work etc. Moreover, the day of the week is important, especially for those who telework at both home and employer's premises, which captures the effects of teleworkers who stay at home or commute at work.

In table 1 the summary statistics for gender roles, housework, personal and household income, teleworking and happiness are reported. The sample of analysis refers only to married and those who live as a couple. The percentage of teleworkers is 11.08, while the 3.71 is home-based only teleworkers. The teleworkers who work more than one place, meaning that they spend some days in employer's premises, is 7.37 per cent, where the 10.10 and 4.80 per cent consist by men and women respectively. It should be noticed that for gender roles paid help is applied, with the exception from the question of the childcare responsibility, where the answer is *someone else*, meaning that could be another member of the family, paid help or help from relatives.

In addition, as it can be seen in table 1, the gender roles are not homogenous. More specifically, the 41.42 of the non-teleworkers men answer that shopping role is shared while it is reduced at 37.75 per cent for the men teleworkers. This can be explained that shopping is an outdoor activity, thus it may be more likely that those who work in the employers premises will combine shopping with work, i.e. after completing the work the individual may go for shopping. On the other hand, a different situation is presented for cooking. The 13.50 of the teleworkers men states that is mainly responsible for cooking reducing the responsibility of the partners at 55.66 and increasing the shared responsibility at 29.60 per cent, while the 11.87 of the non-teleworking men sample is mainly responsible for cooking. The percentages for sharing the cooking are 27.24 and 29.60 for non-teleworkers and teleworkers respectively. A similar situation implies for women. Finally, childcare presents quite different results than the rest of the gender roles. More specifically, the proportion of men who are mainly responsible for childcare is significantly higher than the respective percentage of the remained gender roles, 30-35 per cent versus 5-15 per cent. The probability for women being mainly responsible for the childcare is decreased from 34.51 per cent for men non- teleworkers to 30.81 per cent for men who are teleworkers. Moreover, the shared proportion is increased from 22.60 for non-teleworking men to 25.50 for teleworking men. Also, the 1.06 of non-teleworking men are mainly responsible for the childcare, while the percentage is increased at 5.47 for teleworking men.

However, teleworking for women implies additional childcare responsibility, as the percentage for teleworking women who are mainly responsible for the child is 34.64, while the respective percentage for women non-teleworkers is 33.33; however the difference is insignificant. In addition, the shared housework is reduced from 20.74 for non-teleworking women to 19.06 for women who telework. Regarding the hours devoted in housework, in panel F of table 1, both men and women who are teleworkers on average spend two more hours for

housework than non-teleworking men and women. Overall, the summary statistics show that based on the theoretical model teleworking for both men and women implies additional housework for themselves. On the other hand, shared housework proportion is higher for men teleworkers, while is lower for women teleworkers. In addition, the average labour market hours of men teleworkers and non-teleworkers are 36.18 and 38.57, while the respective average weekly hours for women are 26 and 29.5. In panel F the monthly average personal and household income, as well as, the average happiness in a scale 1-4 are reported. Men who telework have on average a higher personal (labour-wage) income by 110 than non-teleworking men, while women teleworkers have a higher personal income by around 60 per month than non-teleworking women. Similarly, the household income of teleworking members is higher. The *t-statistic* for the difference of the personal income between men teleworkers and non-teleworkers is 2.9587 (p-value 0.0031) while the respective *t-statistic* for women teleworkers and non-teleworkers is 3.2248 (p-value 0.0338) rejecting the null hypothesis that the income between teleworkers and non-teleworkers is equal. The average happiness of both men and women who telework is higher than those who are non-teleworkers.

(Insert table 1)

In table 2 the correlation matrix of household chores, weekly housework hours, happiness and income is presented. It should be noticed that the household chores shopping, cooking, cleaning, ironing and childcare are binary variables taking value 1 whether the housework is shared and 0 otherwise. This is not the best representation as there is heterogeneity between teleworkers, as well as, between men and women. Nevertheless, the purpose is to see the association between the shared housework and the other variables. In table 2 the association between teleworking and housework hours is positive as it was expected. The association of teleworking and whether shopping is shared is negative, as it has been presented in table 1, which can be explained by the fact that shopping is an outdoor activity. This can be seen by the positive association between teleworking and whether sharing cooking, ironing and cleaning or not. The association between teleworking and whether childcare is shared or not is insignificant, while a positive correlation between teleworking and happiness and income is presented.

Regarding the housework hours, these are negatively associated with the probability that the housework is shared, which can be explained by the fact that people with higher income

are more likely to work more hours and thus to contribute less in the household production. In addition, happiness and shared household production are positively associated. This may indicate that people who share the household production are happier. Similarly, additional housework hours are negatively associated with happiness, which can be derived by the fact that sharing the housework implies less housework hours.

(Insert table 2)

5. Empirical Results

In this section the regression results are presented. In columns (1)-(2) in table 3 the housework hours fixed effects estimates are reported, while in columns (3)-(4) the instrumental variables (IV) estimates using Two Stage Least Squares (2SLS) are reported for men and women respectively. Following a similar approach to the studies by Pischke (2011) and Pischke and Schwandt (2012) who used industry codes as instruments for income, in this study teleworking is instrumented by the socio-economic class, as well as, the industry codes of the spouses' occupation. More specifically, the former is a categorical variable, which refers on whether the respondent is a high or low skilled professional, high or low professional, manager, trader, skilled or unskilled worker. The second variable refers to the industry code defined by the standard occupational classification (SOC) which is a list of classifying workers into occupational categories, such as agriculture, analysts, banking and finance, marketing education, tourism and others. It should be noticed that since both variables are categorical, the dummies indicating each category are obtained as instruments.

The argument of using the socio-economic class as an instrument for teleworking is that higher skilled workers or managers are able to work from home some days of the week using technological tools, such as internet, online storage systems, programming and data analysis tools. The argument of using the second variable, SOC, is that some industries are more likely to offer teleworking schemes, such as banking, finance, education and marketing relative to other industries, including farming, agriculture and mining. It is assumed that these variables are correlated to teleworking, but they do not affect directly the household production allocation or happiness. The IV estimates are slightly higher than the ones derived by the OLS. When men are teleworkers are more likely to spend on average 1.1-1.3 more hours per week than their respective non-teleworkers counterparts. Similarly, according to the estimates in

table 3, when women telework, spend less hours; however the coefficient is insignificant in both OLS and IV estimates. Regarding the women, their housework time is increased when they telework and they spend on average 1.5 and 1.7 hours more than the women who do not telework. Women are more likely to spend less in household chores, when their spouse is teleworker by 0.3-0.5 hours on average than the women whose partner does not telework. According to the weak instrument test and its associated p-value the null hypothesis is rejected, concluding that the socio-economic class and the industry codes of the spouses' occupation can be a proper instrument. Moreover, according to the Sargan statistic the exogeneity of the instrumental variables is confirmed.

(Insert table 3)

In table 4 the results for cooking derived from the multinomial fixed effect Logit model are reported. The base outcome is *mostly partner*, while the *paid only* role is not presented as it is not the main point of interest and in the most cases is insignificant. For men and women the association between teleworking and being mainly responsible is insignificant. Men are more likely to state that cooking is shared when either they or their partner is teleworker. On the other hand, the teleworking coefficients are insignificant for women, with the exception the case that women are less likely to state that cooking is a shared household process when they telework. Thus so far the estimates confirm the theoretical model, that both spouses are more likely to spend more time on household production. More specifically, the probability for men to state that the cooking is a shared process is higher by 0.024 and 0.13 when they and their spouse is teleworker. Regarding women who telework are less likely to state that the cooking is a shred process than the women who do not telework, indicating that teleworking can be associated with additional hours on household production process.

Increases in the labour income and number of market hours of men decreases the probability that they will be mainly responsible for cooking. This can be explained by the additional hours spend on work leaving them with less available time for this gender role. On the other hand, increases on the income may be associated with additional bargaining power. However, a higher wage is usually associated with additional working hours. On the contrary increases on the respective factors of women increases the probability that men will be mainly responsible for cooking for the same reasons mentioned before. The same findings hold for the other gender roles in table 5; however, these characteristics, as the remained factors are not presented because the conclusions remain the same.

Age has significant effects with similar interpretation, while both men's and women's employment status and house tenure coefficients are insignificant. However, employment status can be insignificant as the regressions condition on other factors, including income and education. Another important finding from table 4 is that those with first degree or no education are less likely to state that cooking is shared, while women with no qualification are more likely to believe that they are mainly responsible, while men do not. This can be explained by the fact that education, as labour income, is an important factor determining the bargaining power of each member into the household as it happens in society too. More specifically, low educated women may believe that couples should not contribute the same, that men is the main breadwinner and that women should be involved more in housework, as it is observed in families with traditional gender roles. Finally, health status is an important factor that determines the household production allocation. More specifically, for the men sample when their spouse reports a very poor level of health status are more likely to share the cooking or to be the main providers. Similarly the women who state that their general health status is very poor are less likely to state that are mainly responsible for cooking and more likely to state that cooking is a shared production process. This shows that teleworking can have a very important implication on family matters, since they can participate at the labour market and at the same time they can allocate more time on household chores providing support to the unhealthy and/or disabled members of the household.

In table 5 the estimates for the remained household chores are reported. Nevertheless, only the coefficients of teleworking are presented, as the remained factors present a similar sign as in the case of cooking in table 4, leading to the same concluding remarks. Regarding the men sample when they or their partner are teleworkers are more likely to state that shopping is not shared. This can be explained by the fact when they or their partner are teleworkers they spend more time in indoor housework activities. More specifically, keeping all the other variables in the model constant, the probability that men will state that shopping is a shared process is less by 0.1221 and 0.1923 respectively for men and women teleworkers and relative to the base reference which is *mostly my partner*. Similarly, the respective probabilities for women are 0.2264 and 0.1899 for men and women teleworkers respectively.

When the woman is teleworker, man is less likely to state that he is mainly responsible for cleaning by 0.2413 relatively to *mostly my partner* indicating that women spend more time on cleaning. On the other hand when man is teleworker the probability to state that cleaning is shared is higher by 0.0274 than non-teleworkers relatively to the base category *mostly my partner*. The same belief holds for women when man is teleworker, while when woman is

teleworker, she is more likely to be the main responsible person for cleaning by 0.4265 than her partner, confirming the theoretical assumptions of the model. The same holds for the woman's sample and the gender roles of ironing and childcare. Regarding men when they are teleworkers are more likely to be mainly responsible for childcare and ironing by 0.2375 and 0.1269 respectively than the men non-teleworkers relatively to the base reference that the chores are mainly responsibility of their partners. The respective coefficients for women are 0.1552 and 0.1620, while when they telework are less likely to state that ironing is shared by 0.11 than their respective non-teleworkers counterparts and relatively to the statement that mainly their partner is involved in the specific gender role. Finally, regarding childcare, it is observed that the cross effects of teleworking on men's statement are insignificant. In other words, whether women are teleworkers or not has not significant impact on their partner's statement on whether childcare is shared or it is their main responsibility. On the opposite based on the own effects, when women teleworks has no significant different impact on their statement about the allocation of childcare. Men's statement on whether are responsible for the childcare is significant and positive when they telework and are more likely to state that they are the main responsible by 1.07 than the men non-teleworkers relatively to the base category that their partner is the main responsible person for this gender role. Similarly the coefficient of men teleworking on whether childcare is share is 0.14 indicating that are more likely to state that it is a shared process than men who don not telework. This confirms the theoretical assumptions of the model, that teleworking is associated with additional hours spent on household division. Similarly women whose partners is teleworking state that they are mainly respondent less by 0.17 than the women whose partner is not teleworker, indicating that it is more likely that men will be involved in this gender role. On the other hand, when men are teleworkers, women are more likely to state that childcare is a shared process by 0.24.

(Insert tables 4-5)

In table 6 the happiness regressions for men and women are reported. The regressions in table 6 include the gender roles and the base outcome chosen is whether the respondent replies that he/she is mainly responsible for the specific household chore. In addition, the housework hours are included. It should be noticed that the gender roles may be correlated; however the results remain robust when each gender role is examined separately. In columns (1)-(2) the happiness regressions for the couples having children are reported, while the respective

regressions for couples without children are reported in columns (3)-(4). Regarding men the results show that being teleworkers or not is insignificantly related to happiness. On the other hand, when their spouse is teleworker are more likely to report higher levels of happiness. More specifically, men whose partner is teleworker report a higher level of happiness on average by 0.070-0.078 based on the columns (1) and (3) of table 6.

Regarding the gender roles the results are insignificant with the exception of shopping, ironing and childcare, where men who stated that the housework chores are shared are more likely to be happier. All the other outcomes are insignificant, with the exception of ironing, where men who answered that this role is main responsibility of their spouse are more likely to report higher levels of happiness. In addition, in column (3) the men with children are more likely to be happier when they state that the cooking is a shared process.

On the other hand, when both are teleworkers, women are happier, where housework hours have a negative and significant impact on happiness. In that case women are happier by 0.043 when their spouse is teleworkers. Women teleworkers are more likely to report higher levels of well-being on average by 0.0108 than the women non-teleworkers, while the respective average effect for women without children is 0.0119. Regarding cooking and ironing women are happier when the housework on these roles is mainly responsibility of their partners. Regarding all the gender roles, women who stated that housework is shared are more likely be happier. The other outcomes are insignificant. It should be noted that the results remain similar when the household size is included.

Regarding the housework hours, increases on household production are associated with lower levels of happiness; however, is not clear whether these increases of fairness beliefs are result of sharing the housework with their spouse or not. The question in this case is whether teleworkers are more likely to share the household, especially men, while women teleworkers may contribute more into the household production affecting their utility. Nevertheless, women teleworkers, or even men, may choose to telework because they prefer to spend more time on household chores and activities, as well as, on leisure activities. Since teleworking allows for flexibility in working time schedule, people may spend time on their favourite activities, such as sharing the housework with their spouse, spending more time on childcare and other activities.

In table 7 the adapted Probit-IV estimates for the happiness functions are reported, where teleworking is instrumented with the socio-economic class and the industry codes of the partners' occupation, as in table 3. The IV estimates are similar with those derived by the adapted Probit-OLS in table 6, where the teleworking has slightly stronger effects on couples'

happiness, when the IV approach is considered. According to the weak test it is concluded that the null hypothesis of the weak instruments is rejected, while according to the p-values of the Sargan statistic, the null hypothesis of no endogeneity is accepted.

(Insert tables 6-7)

6. Conclusions

The results showed that teleworkers spend more time on household production, while women whose partner is teleworker are more likely to state that household chores are shared increasing their overall well-being. Teleworking can have various policy implications and benefits for couples, employees, employers and society. Teleworking can be a solution to problems of balancing work and family. Increasing work flexibility will facilitate the management of work and family together. Since one of the main aims of policy makers and society is the improvement of the well-being of the citizens, teleworking may be another option which leads to work-family life balance and thus in higher levels of happiness and life satisfaction with overall impact on other life events and conditions, including health improvement, increase in leisure time. Teleworking and housework allocation can have further benefits on job satisfaction and productivity for couples. Improvement on happiness and job satisfaction will have further benefits to firms and organizations because job satisfaction can lead to higher productivity and thus higher firm performance considering teleworking. In addition, the results show that the members that report lower levels of health status are more likely to get support on household chores. This shows that teleworking can be a useful tool and alternative policy for supporting ill and disabled family members, which has not been explored in the literature. Another aspect can be the teleworking relationship to fertility. However, these issues and questions have not been explored in this study; but they are suggested for future empirical research.

Finally, the effects of teleworking into an intra-household allocation collective model are suggested for future application. More specifically, its effects on labour supply of couples including the household domestic production and considering teleworking can be examined. The majority of the previous research has considered the non-market time as pure leisure

(Chiappori, 1988, 1992); however, this may give misleading estimates of the labour supply and household allocation and thus the policies can be also inefficient. Considering teleworking as well as the time use on household domestic production a new theoretical framework can be developed suggesting new policies, including also people with health problems and disability.

Acknowledgements

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Table 1. Summary Statistics

	Panel A: Teleworkers				
	Both teleworkers and non-teleworkers	**Total teleworkers**	**Home-based only teleworkers**	**Teleworkers (more than one place)**	**Non-teleworkers**
Total sample		11.08	3.71	7.37	89.92
Men	48.64	14.77	3.47	10.10	86.31
Women	51.36	8.06	3.94	4.80	92.95

	Panel B: Gender Roles for Men Non-Teleworkers				
	Who does the grocery shopping?	Who does the cooking?	Who does the cleaning?	Who does the ironing?	Who is responsible for childcare?
Mostly self	10.22	11.87	5.54	5.34	1.06
Mostly partner	47.19	59.64	64.89	71.82	34.51
Shared	41.42	27.24	25.41	20.62	22.60
Paid Help Only or else	1.17	1.25	4.16	2.21	41.84

	Panel C: Gender Roles for Women Non-Teleworkers				
	Who does the grocery shopping?	Who does the cooking?	Who does the cleaning?	Who does the ironing?	Who is responsible for childcare?
Mostly self	53.99	61.64	64.87	78.44	33.33
Mostly partner	8.90	11.37	6.30	3.53	3.40
Shared	36.03	25.87	23.47	17.13	20.74
Paid Help Only or else	1.08	1.12	5.36	3.08	42.53

	Panel D: Gender Roles for Men Teleworkers				
	Who does the grocery shopping?	Who does the cooking?	Who does the cleaning?	Who does the ironing?	Who is responsible for childcare?
Mostly self	9.78	13.50	6.59	5.30	5.47
	(0.5331)	(0.5534)	(0.9074)	(0.6406)	(0.0000)
Mostly partner	51.20	55.66	59.81	70.78	30.81
	(0.0000)	(0.0606)	(0.0174)	(0.1666)	(0.0447)
Shared	37.75	29.60	28.58	21.80	25.50
	(0.0000)	(0.0737)	(0.0242)	(0.0739)	(0.0757)
Paid Help Only or else	1.27	1.24	5.02	2.12	38.23
	(0.4258)	(0.3871)	(0.0873)	(0.9731)	(0.2377)

	Panel E: Gender Roles for Women Teleworkers				
	Who does the grocery shopping?	Who does the cooking?	Who does the cleaning?	Who does the ironing?	Who is responsible for childcare?
Mostly self	58.98	64.84	68.38	76.36	34.64
	(0.0000)	(0.0001)	(0.0039)	(0.3542)	(0.4704)
Mostly partner	9.54	10.41	4.77	3.97	2.86
	(0.2395)	(0.1126)	(0.0141)	(0.1059)	(0.2289)
Shared	30.92	24.12	21.00	14.95	19.06
	(0.0000)	(0.0461)	(0.0004)	(0.0352)	(0.0322)
Paid Help Only or else	0.56	0.63	5.85	2.54	43.42
	(0.0910)	(0.0834)	(0.6956)	(0.1367)	(0.1355)

	Panel F: Weekly Housework hours, Labour Market Hours, Income and Happiness			
	Men Teleworkers	Women Teleworkers	Men Non-Teleworkers	Women Non-Teleworkers
Average Weekly Housework hours	7.070	16.803	5.027	15.262
Average Weekly Market Labour hours	36.187	26.082	38.574	29.550
Monthly Personal Income	2,137.324	1,225.17	2,027.146	1,168.262
Monthly Household Income	3,357.823	3,368.338	3,256.206	3179.008
Happiness	3.060	2.987	3.028	2.979

p-values within brackets

Table 2. Correlation Matrix

	Teleworking	Housework hours	Shopping	Cooking	Cleaning	Ironing	Childcare	Happiness	Personal Income
Housework hours	0.0390*** (0.000)								
Shopping	-0.0200*** (0.000)	-0.0406*** (0.000)							
Cooking	0.0081** (0.0265)	-0.0508*** (0.000)	0.2353*** (0.000)						
Cleaning	0.0076*** (0.0374)	-0.0437*** (0.000)	0.2051*** (0.000)	0.2450*** (0.000)					
Ironing	0.0022* (0.0012)	-0.0639*** (0.000)	0.1453*** (0.000)	0.2190*** (0.000)	0.3276*** (0.000)				
Childcare	-0.0050 (0.1750)	-0.0209*** (0.000)	0.0395*** (0.000)	0.1054*** (0.000)	0.0736*** (0.000)	0.0745*** (0.000)			
Happiness	0.0041** (0.0019)	-0.0413*** (0.000)	0.0270*** (0.000)	0.0111*** (0.000)	0.0188*** (0.000)	0.0198*** (0.000)	0.0139** (0.0062)		
Personal Income	0.0614*** (0.000)	-0.3072*** (0.000)	-0.0412*** (0.000)	0.0401*** (0.000)	-0.0062*** (0.000)	0.0629*** (0.000)	0.0706*** (0.000)	0.0351*** (0.000)	
Household Income	0.0236*** (0.000)	-0.0900*** (0.000)	-0.0792*** (0.000)	0.0324*** (0.000)	-0.0361*** (0.000)	0.0642*** (0.000)	0.0689*** (0.000)	0.0282*** (0.000)	0.6750*** (0.000)

p-values within brackets, ***, ** and * indicate significance at 1%, 5% and 10% level.

Table 3. Teleworking and Housework Hours Fixed Effects Estimates

	Fixed Effects		IV-Fixed Effects	
	Men	**Women**	**Men**	**Women**
Teleworker (Man)	1.1255**	-0.3676*	1.2955**	-0.5037**
	(0.5086)	(0.2074)	(0.5876)	(0.2448)
Teleworker (Woman)	-0.0426	1.4742**	-0.0244	1.7277**
	(0.0493)	(0.6632)	(0.0309)	(0.8542)
No. observations	20,295	20,295	19,435	19,425
R Square	0.1531	0.1869	0.1172	0.1593
Weak Instrument Test			49.022	39.428
			[0.000]	[0.0001]
Sargan exogeneity test			12.509	15.097
			[0.3266]	[0.2440]

Robust standard errors within brackets, p-values within square brackets, ** and * indicate significance at 5% and 10% level

Table 4. Teleworking and Cooking Multinomial Logit Fixed Effects Estimates

	Panel A: Men		Panel B: Women	
	Outcome: Mostly Self	Outcome: Shared	Outcome: Mostly Self	Outcome: Shared
Teleworker (Man)	0.0074	0.0239*	0.0547	0.1117**
	(0.0768)	(0.0125)	(0.0858)	(0.0511)
Teleworker (Woman)	0.0402	0.1299*	0.0384	-0.2045**
	(0.1134)	(0.0698)	(0.1164)	(0.0944)
Labour Income (Man)	-0.2806***	-0.3098***	0.2906***	-0.3436***
	(0.0588)	(0.0427)	(0.0616)	(0.0435)
Labour Income (Woman)	0.4847***	0.3944***	-0.5162***	0.2969***
	(0.0611)	(0.0415)	(0.0618)	(0.0422)
Number of Market Hours (Man)	-0.0124***	-0.0045**	0.0179***	-0.0065***
	(0.0029)	(0.0022)	(0.0031)	(0.0021)
Number of Market Hours (Woman)	0.0284***	0.0232***	-0.0238***	0.0216***
	(0.0030)	(0.0024)	(0.0032)	(0.0022)
Age (Man)	0.0045	0.0032	-0.0034	0.0054
	(0.0039)	(0.0035)	(0.0051)	(0.0035)
Age (Woman)	-0.0360***	-0.0268***	-0.0396***	-0.0263***
	(0.0050)	(0.0036)	(0.0053)	(0.0047)
Marital Status (Reference=married)				
Marital Status (Living as a couple)	0.2340***	0.2585***	0.2632***	0.0871*
	(0.0621)	(0.0464)	(0.0622)	(0.0459)
Job Status Man (Reference=Self-Employed)				
Job Status Man (Employee)	0.3421	0.1295	0.3571	0.3759
	(0.4140)	(0.2587)	(0.4435)	(0.2863)
Job Status Man (Unemployed)	0.2867	-0.2724	0.2872	0.5532
	(0.6617)	(0.4531)	(0.7288)	(0.5125)
Job Status Man (Retired)	1.3984	0.6572	1.812*	0.1094
	(1.5442)	(0.9243)	(0.9456)	(0.2365)
Job Status Woman (Reference=Self-Employed)				
Job Status Woman (Employee)	0.4086	-0.1682	-1.0336**	0.1645
	(0.7271)	(0.4224)	(0.4382)	(0.4589)
Job Status Woman (Unemployed)	0.2162	-0.1384	0.2833	0.1054
	(0.8976)	(0.5042)	(0.7421)	(0.0854)
Job Status Woman (Retired)	-0.3276	-0.2573	1.0355	-0.6735
	(0.8453)	(0.4429)	(0.7452)	(0.5331)
Education Level Man (Reference=Higher Degree)				
Education Level Man (1st Degree)	-0.4879***	-0.1145	-0.3547**	0.0841
	(0.1143)	(0.0877)	(0.1377)	(0.0876)
Education Level Man (None)	-0.6196***	-0.1912**	0.2752**	-0.2652***
	(0.1309)	(0.0924)	(0.1196)	(0.0987)

Table 4. **(cont.)** Teleworking and Cooking Multinomial Fixed Effects Estimates

	Panel A: Men		Panel B: Women	
	Outcome: Mostly Self	Outcome: Shared	Outcome: Mostly Self	Outcome: Shared
Education Level Woman (Reference=Higher Degree)				
Education Level Woman (1st Degree)	-0.2215*	-0.1507	-0.2357	-0.0788
	(0.1327)	(0.0943)	(0.1644)	(0.0973)
Education Level Woman (None)	0.0154	-0.6844***	0.2713*	0.2006*
	(0.1572)	(0.1099)	(0.1515)	(0.1103)
Health Status Man (Reference=Very Good)				
Health Status man (Very Bad)	-0.3936	0.2097	0.2549	-0.3672***
	(0.2945)	(0.2544)	(0.3527)	(0.1404)
Health Status Woman (Reference=Very Good)				
Health Status Woman (Very Bad)	0.6628**	0.4357**	-0.7111***	0.5384**
	(0.2939)	(0.2016)	(0.2543)	(0.2157)
Household Size	-0.1024***	-0.0302*	0.0745***	-0.6532***
	(0.0234)	(0.0163)	(0.0256)	(0.0175)
House Tenure (Reference=Owned Outright)				
House Tenure (Owned with Mortgage)	0.1503	0.0279	0.1981**	0.0633
	(0.1227)	(0.0543)	(0.0994)	(0.0625)
No. observations	20,271		20,285	
LR chi square	2,987.11		2,966.91	
	[0.000]		[0.000]	

Robust standard Errors within brackets, p-values within square brackets, ***, ** and * indicate significance at 1%, 5% and 1% level

Table 5. Teleworking and rest of Gender Roles Multinomial Fixed Effects Estimates

	Panel A: Men		Panel B: Women	
	Outcome: Mostly Self	Outcome: Shared	Outcome: Mostly Self	Outcome: Shared
		Shopping		
Teleworker (Man)	-0.0725	-0.1221**	0.1756**	-0.2264***
	(0.0817)	(0.0520)	(0.0807)	(0.0473)
Teleworker (Woman)	-0.1132	-0.1923**	-0.1280*	-0.1899**
	(0.1350)	(0.0846)	(0.0627)	(0.0871)
No. Observations	20,271		20,285	
LR chi square	3,701.90		3,786.22	
	[0.000]		[0.000]	
		Cleaning		
Teleworker (Man)	0.0729	0.0274**	-0.1002	0.0315**
	(0.0884)	(0.0135)	(0.1065)	(0.0158)
Teleworker (Woman)	-0.2413*	-0.0878	0.4265**	0.0329
	(0.1349)	(0.0912)	(0.1697)	(0.0444)
No. Observations	20,271		20,285	
LR chi square	4,411.07		4,677.73	
	[0.000]		[0.000]	
		Ironing		
Teleworker (Man)	0.2375**	-0.0468	0.0820	0.1620**
	(0.1023)	(0.0545)	(0.1221)	(0.0775)
Teleworker (Woman)	0.0850	0.1269*	0.1552*	-0.1102*
	(0.1343)	(0.0755)	(0.0834)	(0.0572)
No. Observations	20,271		20,285	
LR chi square	3,910.13		3,868.29	
	[0.000]		[0.000]	
		Childcare		
Teleworker (Man)	1.0707***	0.1388**	-0.1722**	0.2459**
	(0.1493)	(0.0588)	(0.0629)	(0.1133)
Teleworker (Woman)	0.3469	0.0089	-0.0652	0.0479
	(0.2119)	(0.0110)	(0.0922)	(0.0980)
No. Observations	15,302		15,343	
LR chi square	8,015.94		8,618.55	
	[0.000]		[0.000]	

Robust standard Errors within brackets, p-values within square brackets, ***, ** and * indicate significance at 1%, 5% and 10% level

Table 6. Probit-OLS Fixed Effects Happiness Function Estimates

	Couples with Children		Couples without Children	
	DV: Men Happiness	DV: Women Happiness	DV: Men Happiness	DV: Women Happiness
Teleworker (Man)	0.0413	0.0430**	0.0410	0.0424**
	(0.0442)	(0.0211)	(0.0441)	(0.0195)
Teleworker (Woman)	0.0786**	0.0108*	0.0740**	0.0119**
	(0.0368)	(0.0057)	(0.0359)	(0.0055)
Housework Hours	-0.0031**	-0.0021*	-0.0028**	-0.0014
	(0.0015)	(0.0011)	(0.0012)	(0.0008)
Shopping Respondent (Base Outcome=mainly myself)				
Shopping Respondent (Mainly my partner)	0.0237	0.1302***	0.0247	0.1303***
	(0.0360)	(0.0354)	(0.0354)	(0.0354)
Shopping Respondent (Shared)	0.0261**	0.0269**	0.0288**	0.0275**
	(0.0124)	(0.0133)	(0.0135)	(0.0134)
Shopping Respondent (Paid Only)	-0.0151	-0.1002	-0.0166	-0.1052
	(0.1664)	(0.1455)	(0.1446)	(0.1479)
Cooking Respondent (Base Outcome=mainly myself)				
Cooking Respondent (Mainly my partner)	0.0406	0.0202*	0.0480	0.0378
	(0.0321)	(0.0110)	(0.0540)	(0.0248)
Cooking Respondent (Shared)	0.0280	0.0103**	0.0336*	0.0123**
	(0.0323)	(0.0051)	(0.0170)	(0.0057)
Cooking Respondent (Paid Only)	0.0738	0.0784	0.0480	0.0682
	(0.1319)	(0.1377)	(0.1401)	(0.1284)
Cleaning Respondent (Base Outcome=mainly myself)				
Cleaning Respondent (Mainly my partner)	-0.0313	-0.0102	-0.0115	-0.0071
	(0.0408)	(0.0142)	(0.0408)	(0.0102)
Cleaning Respondent (Shared)	0.0060	0.0092**	0.0069	0.0086**
	(0.0391)	(0.0037)	(0.0389)	(0.0041)
Cleaning Respondent (Paid Only)	-0.0322	-0.1183	-0.0225	-0.0513
	(0.0623)	(0.0785)	(0.0549)	(0.0472)
Ironing Respondent (Base Outcome=mainly myself)				
Ironing Respondent (Mainly my partner)	0.0231**	0.0815*	0.0171*	0.0800*
	(0.0110)	(0.0419)	(0.0093)	(0.0403)
Ironing Respondent (Shared)	0.0351*	0.0213*	0.0386*	0.0251*
	(0.0192)	(0.0110)	(0.0199)	(0.0132)
Ironing Respondent (Paid Only)	-0.0688	0.0718	-0.0775	0.0794
	(0.0726)	(0.0789)	(0.0845)	(0.0708)
Childcare Respondent (Base Outcome=mainly myself)				
Childcare Respondent (Mainly my partner)	0.0506	-0.0795		
	(0.0888)	(0.0855)		
Childcare Respondent (Shared)	0.0121**	0.0219**		
	(0.0055)	(0.0102)		
Childcare Respondent (Someone Else)	0.0055	0.1415		
	(0.0103)	(0.1025)		
No. Observations	20,419	20,460	24,391	24,455
R Square	0.1183	0.1219	0.1087	0.1217

Robust Standard Errors within brackets, p***, ** and * indicate significance at 1%, 5% and 10% level

Table 7. Probit-IV Fixed Effects Happiness Function Estimates

	Couples with Children		Couples without Children	
	DV: Men Happiness	**DV: Women Happiness**	**DV: Men Happiness**	**DV: Women Happiness**
Teleworker (Man)	0.0584	0.0482**	0.0525	0.0596*
	(0.0560)	(0.0237)	(0.1096)	(0.0302)
Teleworker (Woman)	0.0885**	0.0143*	0.0653**	0.0135**
	(0.0437)	(0.0072)	(0.0312)	(0.0062)
No. Observations	19,577	19,407	23,265	23,483
R Square	0.1014	0.1052	0.1083	0.1079
Weak Instrument Test	45.819	35.146	44.922	32.142
	[0.000]	[0.0004]	[0.000]	[0.0006]
Sargan exogeneity test	8.616	7.048	8.553	6.994
	[0.6573]	[0.7951]	[0.6631]	[0.7996]

Robust Standard Errors within brackets, p-values within square brackets, ***, ** and * indicate significance at 1%, 5% and 10% level