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Working Paper 04/20

MARRIAGE AND HOUSEWORK

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Marriage and Housework

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Abstract

This paper provides insights into the gains of forming a couple by estimating how much of the difference in housework between single and married individuals is causal and how much is due to selection. Permanent unobserved heterogeneity explains about half of the observed differences in housework documented in the cross-sectional data. Further ancillary evidence suggests that individuals with a higher preference for marriage also have more traditional views on the division of household labour. There remains a genuine half-an-hour increase per week in housework time for each partner, with women specializing in routine and men in non-routine housework tasks.

Key Words: Marriage, Time use, Home production

JEL codes: D13, J12, J22

1. Introduction

Spouses' time constitutes an important input into the production of household goods. Across industrialized countries, men spend about 20 hours per week on home production, and women about 30 hours per week. This exceptional amount of time (which excludes the time devoted to child care) is mostly used for the production of household public goods, such as having a clean house, or cooking a home-made meal. The sharing of these household public goods and services, the so-called *commodities* (see Becker (1965)), forms the basis for arguably one of the most important efficiency gains associated to marriage. In fact, spouses' similar demands for the consumption of household public goods, rather than increased specialization, can explain the assortative matching along the wage distribution commonly observed in the marriage market (Lam, 1988). In this paper we document and explore the mechanisms behind the differences in housework between single and married individuals ('marrieds'). Specifically, we estimate how much of the substantial difference is causal and how much is due to selection into marriage.

This paper starts from our observations of a robust finding on housework and marriage.¹ We use cross-sectional time-diary data for eleven industrialized countries to document that, for all countries considered, married individuals do much more housework than comparable single individuals. Married women devote almost nine more hours per week to housework than single women from an average of 25 hours per week, although there is a great dispersion in the additional housework time across countries. This increase in housework upon marriage is concentrated in routine housework tasks such as cleaning, cooking, and ironing, which need to be performed on a regular basis. Married men do about an hour less of routine housework tasks per week than single men, but they do about one hour and a half more of non-routine housework (such as home repairs and managing finances) than singles. Taken together, a couple spends 15 per cent longer in housework-related tasks than two singles. These findings are not a result of specialization in the labour market, and are robust to controlling for hours of paid work and a wide set of covariates such as the number of children.

The differences in housework between singles and marrieds can be broadly attributed to either state dependence or selection. State dependence refers to effects that arise directly from being together compared to living separately, and captures any indirect effect through characteristics which change from before to after a marriage, such as number of children. Selection involves differences arising from non-random matching in the marriage market due to either permanent observed

¹ Throughout the paper we use the term marriage to refer to individuals who are either legally married or in a cohabiting relationship. We also present separate analyses when appropriate.

individual characteristics such as differences in education between singles and marrieds, or as a result from permanent unobserved heterogeneity in the propensity to marry that is correlated with preferences for home produced goods and services.

Current available data are not well suited for distinguishing the different explanations for state dependence. Instead we focus on how much of the effect observed in the cross-section data can be attributed to selection into being married due to unobserved time invariant heterogeneity. Thus, we use the term selection throughout the paper to refer to selection effects net of other permanent observed individual characteristics such as education. To that end, we exploit the longitudinal nature of three panel data sets to explore the selection hypothesis: the Panel Study of Income Dynamics (PSID), the harmonized British Household Panel Survey-United Kingdom Household Longitudinal Study (BHPS-UKHLS), and the Household, Income and Labour Dynamics in Australia (HILDA) Survey. For the latter we have information on both routine housework and non-routine housework, whereas for the PSID and BHPS-UKHLS we only have information on routine housework.

We show that unobserved time-invariant heterogeneity can go a long way in explaining the differences in routine housework upon marriage. Between about 50 and 70 per cent of the increase of routine housework upon marriage can be accounted for by permanent unobserved heterogeneity for women. Similarly, for men, the decrease in routine housework upon marriage observed in the cross-section virtually vanishes once unobserved time-invariant heterogeneity is taken into account. Further ancillary evidence suggests that individuals with a higher preference for marriage also have a more traditional view on the division of household labour, rather than individuals with a certain preference for housework being perceived as more desirable partners. We fail to find any role for unobserved time-invariant heterogeneity effects in the case of non-routine housework. After permanent unobserved heterogeneity is taken into account, there remains what seems to be a genuine increase of one hour and a half in routine housework upon marriage for women and in non-routine housework for men.

Our paper contributes to the existing literature on the welfare gains of forming a couple, which is crucial for the analysis of individual decisions regarding union formation and dissolution (Chiappori et al 2002, 2017, Bruze et al. 2015). The focus of this literature is on the division of labour within marriage, rather than on the changes in the time devoted to home labour upon marriage (Becker 1965, Gronau 1977, Grossbard-Shechtman 1984, Couprie 2007). Whereas selection into marriage has been previously suggested as a potential explanation for differences in housework time between marrieds and singles (Auspurg et al. 2014, Stratton 2015), this hypothesis has never been tested. Here we look at how and why the time devoted to home labour changes upon marriage. We are the first

paper providing robust evidence on the causal impact of marriage on time allocated to home production across different developed countries using longitudinal data spanning over two decades.

The paper is organized as follows. Section 2 documents the increase in unpaid labour upon marriage by providing harmonised cross-national evidence drawn from time-use surveys. Section 3 very briefly (and informally) uses economic theory to review the various effects of state dependence that may be operative and justifies our focus on identifying selection effects. Section 4 uses longitudinal data to look at the role of unobserved heterogeneity in explaining the cross-sectional results. Section 5 concludes.

2. Cross-sectional relationship between marriage and housework

2.1 24-Hour Diary Cross-Sectional Data

We use 24-hour time diary surveys from the harmonized Multinational Time Use Study Data set (MTUS) in 9 industrialized countries to document the increase in home labour upon marriage. Diary surveys collect information on a respondent's activities during a 24-hour period, and the diary is completed on a selected day, either on a weekday or on a weekend day or in both days (see Table A.1 in Appendix A for a description of these surveys). MTUS data have been harmonized to minimize differences in survey methodology, and the use of 24-hour diary surveys minimizes comparability issues across surveys in time use categories (see for example Guryan et al., 2008 for a discussion about the conceptualization and comparability of child care time using these surveys). The reliability and validity of MTUS diary data is well established in the literature, just as money expenditure diaries have become the gold standard for describing consumption behaviour (Aguiar and Hurst 2007, Gimenez-Nadal and Sevilla 2012, Ramey and Ramey, 2010).

We use a cross-sectional sample of working-age individuals from Austria (1992), Canada (1998), France (1998), Germany (2001), Italy (2003), Norway (2000), Spain (2001/02), the United Kingdom (2000/2001) and the USA (2003-11). We restrict the sample to respondents who are not living with their parents between 24 and 65 years, and perform several robustness checks with subsamples of individuals of different ages. Throughout the paper we compare the time spent in housework of *singles* (i.e., single individuals not living in the parental home) and *marrieds* (i.e., individuals who are in a partnership, either legally married or cohabiting).

The variable of interest is hours per week spent in housework time. We follow the literature and construct our housework variable from the diary, adding up the time spent in the following categories: cooking, household upkeep, shopping, domestic travel, maintenance, and gardening as in

Stratton and Stancanelli (2014) and Aguiar and Hurst (2007), see Table A.2 in Appendix A for a full description of these housework categories. We also distinguish between routine and non-routine housework. Routine housework activities such as cooking and doing the laundry are those that need to be done on a regular basis in a given week. Non-routine housework such as odd jobs around the house and car repairs have a lower frequency. As a result, compared to routine housework, non-routine housework can often be postponed and is easier to outsource (see Hersch 1991, Hersch and Stratton, 2002). This distinction is important for our purposes because whereas women tend to specialize in routine housework activities, men tend to specialize in non-routine housework.

2.2 Marriage and Housework: Cross-Sectional Results

The raw data in Table 1 compares the hours per week spent in housework for married men and women versus single men and women from the following OLS model:

$$H_i = \alpha + \beta_1 M_i + \varepsilon_i \quad (1)$$

where H_i denotes hours per week devoted to housework by individual i , and M_i is a dummy for living with a partner (cohabiting or being married). We use MTUS-proposed weights to ensure population, day of the week, and seasonal representativeness (Fisher et al., 2018). There are very few individuals reporting zero time in the diary because of the high degree of aggregation of housework activities into routine and non-routine housework (see Table A.3 in Appendix A with summary statistics for the dependent variables of housework and routine and non-routine housework). The lack of zeros justifies the use of OLS methods rather than other methods, such as Tobit (see Foster and Kalenkoski, 2013).

There are marked gender differences in terms of housework time, which are already visible in the single state. Single women tend to spend about 25 hours per week on housework (Column 1), whereas single men spend about 16 hours per week (Column 3). Gender differences are accentuated for married individuals. Married women do on average 8 hours and a half more of housework per week than single women (Column 2), whereas married men do about half an hour less of housework per week than single men (Column 4). Figure 1 shows that in countries where the marriage housework penalty for women is higher, the marriage housework bonus for men is lowest. The increase of housework upon marriage for women is higher than the decrease of housework upon marriage for men, resulting in housework time being higher upon marriage for a couple than for two comparable singles. In particular, Column 6 shows that a couple spends about 3 more hours (15 per cent longer) in housework-related tasks than two singles who spend about 21 hours each (Column 5). The increase in housework upon marriage for women, the decrease in housework upon marriage for men, and the

overall increase in a couple’s housework relative to two singles occur in most countries considered here, although we reject that the size of the marriage coefficient is the same across countries (see χ^2 -statistics in the last row of Columns 2, 4, and 6 in Table 1).

The results in Table 1 may well be driven by other factors unrelated to the marital status of the individual. For example, married individuals may devote more time to housework because there are more persons in the households (such as children or other adults), or because they work less in the labour market. Table 2 presents the results from an OLS regression of housework activities H_i for individual i on an indicator variable for being married or cohabiting M_i as in Equation (1), which also controls for individual and household-level characteristics as in Equation (2). These estimates can be interpreted in a descriptive way, as simple means of housework for each country for married and cohabiting individuals versus single individuals, keeping observable individual characteristics constant.

$$H_i = \alpha + \beta_1 M_i + \beta_2' X_i + \varepsilon_i \quad (2)$$

where H_i denotes hours per week devoted to housework by individual i as before, M_i is a dummy for living with a partner (cohabiting or being married) as in Equation (1), and X_i is a vector of covariates. We control for the opportunity cost of time by including age, age squared, and education level dummies as controls. We also include the number of children below the age of 18 living in the household, dummies for the age group of the youngest child in the household, the day of the week the diary referred to, and hours of paid work in the diary day. Diary surveys do not have information on wages, attitudes, and dwelling size or number of rooms in the house. We use MTUS-proposed weights to ensure population, day of the week, and seasonal representativeness (Fisher et al., 2018). Table A.4 in Appendix A describes how the variables are constructed from the original MTUS codes, and A.5 provides summary statistics for these variables separately by gender.

Table 2 shows results for the coefficient on a dummy for cohabiting or being married from estimating Equation (2) for total, routine, and non-routine housework. Table A.6 reports full estimation results. The first row of Table 2 shows that on average, once we control for socio-economic characteristics, marriage continues to have a bigger effect on housework for women than for men albeit smaller than in the unconditional results from Equation (1) presented in Table 1. Women increase the amount of housework upon marriage by about 5 hours (Column 1 in Table 2), instead of 8 hours (Column 2 in Table 1). The increase in housework is entirely driven by increases in routine housework. The first row in Table 2 shows that married women do more routine housework (Column

2), but less non-routine housework (Column 3), than single women. In contrast, married men do more non-routine housework (Column 6), but less routine housework (Column 5), than single men. When taken routine and non-routine housework together however, married women are relatively worse off than married men when compared to their single counterparts. The difference in total housework time between married and single women is almost 5 and a half hours per week (Column 1), whereas the difference in total housework between married men and single men is not statistically significant and amount to less than a quarter of an hour a week (Column 4). As in Table 1, this regularity is qualitatively true in all countries considered, although the χ^2 -statistics in the last row of Table 2 shows that we cannot reject that the marriage effect is quantitatively different across countries.

Robustness Checks

The results from Table 3 show that the association between marriage and a couple's housework described in Tables 1 and 2 remains positive for alternative samples, selecting first, childless individuals, second, cohabiting vs. singles, and third, under 45 years-old individuals. The housework gap between marrieds and singles is higher when we restrict the sample to individuals without children (Columns 1 and 4 in Table 3). In particular, whereas routine housework increased by 5.86 hours a week when all the sample of women was considered (first row of Column 2 of Table 2), it increased by 6.56 hours a week when the sample of women without children is considered (first row of Column 1 in Table 3). Similarly, whereas non-routine housework increased for men by 1.49 hours per week (first row of Column 6 of Table 2), it increased by almost 2 hours per week when only the sample of men without children is considered (first row of Column 4 of Table 3). These results seem to suggest that the relationship between housework and marriage is not driven by the arrival of children. Columns 2 and 5 of Table 3 look at how housework changes between cohabiting and single individuals. An individual who is cohabiting is defined as an individual in a heterosexual relationship who is not legally married. Results show that whereas housework is higher for cohabiting individuals than single individuals in all of the countries, the difference in housework between cohabiting and single individuals is lower than the difference in housework between married and single individuals documented in Table 2. Columns 3 and 6 of Table 3 further show that results remain virtually unchanged when considering a younger sample of individuals between 25 and 44 years of age.

3. Interpreting the data in light of a Household Economic Model of Time Allocation

Very broadly there are two classes of explanation for the differences we see between singles and comparable marrieds: state dependence and selection. State dependence refers to effects that arise directly from being together compared to living separately. Selection involves differences arising because of non-random matching in the marriage market due to either permanent observed individual characteristics such as differences in education between singles and marrieds, or as a result from permanent unobserved heterogeneity in the propensity to marry that is correlated with preferences for home produced goods and services. In particular, suppose that there is time invariant unobserved heterogeneity in the propensity to do housework and in the propensity to marry. If these two propensities are positively correlated then the OLS results will over-estimate the causal effect of marriage on housework.

Under a simple household model where the spouses have separate utility functions over both public and private goods, and public goods are produced in the home using market goods and spouses' time, the sources of state dependence are myriad and the sign of the impact of marriage on housework is ambiguous (marriage could lead to an increase or a decrease in housework) (Becker 1965, 1981, 1985; Lam 1988, Browning et al 2013). First, there are economies of scale in time use, arising mainly from production complementarities within the household (Lundberg 2012, Crossley and Lu 2004). For instance, cooking a meal for two does not take twice as much time as cooking a meal for one (Vernon 2010, Stratton 2015). Another example is cleaning; because of setup costs it does not take twice as much time to clean a dwelling for two as one single dwelling (Vernon 2010, Stratton 2015). This effect would tend to reduce total housework for marrieds if other state dependence effects were not operative.

A second effect of state dependence arises because some commodities that were necessarily private when single now become public. Examples include a 'clean house' or managing finances. This changes the mix of goods that are optimal for co-habiting couples as compared to when they were single which in turn has an impact on time use within the household; see Lam (1988), Deaton and Paxson (1998), Crossley and Lee (2004), and Browning et al. (2014).

A third effect of state dependence arises if preferences change on living together (Michaud and Vermeulen 2011, Browning et al. 2013, and Cherchye et al. 2016). An example would be that eating at home is now relatively more attractive than eating in restaurants when single. If the change in preferences is towards commodities that are produced using housework, then this will increase time spent on housework (Stratton 2012, 2015). Finally, if we allow for net affect as suggested by Kahneman and Krueger (2006), doing housework together may be more or less onerous than doing

the same housework alone; see Sullivan (1996), Hamermesh (2002), Jenkins and Osberg (2003), and Kahneman et al. (2004).

It would be very desirable to have a model that allowed us to distinguish between these different state dependence effects; unfortunately the data requirements are far beyond what we have in household surveys that include time use information. For example, some of the effects discussed posit several private and public goods with differential home production inputs but we do not have such information on expenditures in this detail in any time use survey. In the rest of this paper we do not attempt to model the different state dependence effects but rather concentrate on how much of the differences between singles and comparable marrieds can be attributed to selection due to unobserved time invariant factors (i.e., net of other permanent observable factors such as education). To this end we turn to panel data.

4. Marriage and Housework: Evidence from Longitudinal Data

4.1 Longitudinal Survey Data

In order to isolate the potential bias in the cross-sectional estimates presented in Section 2, we use panel data from the 1992-2015 Panel Study of Income Dynamics (PSID), the 1991-2015 Harmonized British Household Panel Survey-United Kingdom Household Longitudinal Study data (BHPS-UKHLS), and the 2002-2016 Household, Income and Labour Dynamics in Australia (HILDA). The panel dimension allows us to control for time-invariant factors such as the predisposition towards housework as well as the propensity towards forming a joint household.

Existing 24-hour diary surveys are generally cross-sectional, and not fit for purpose for the type of longitudinal analysis we aim for in this section. The above panel data surveys use stylized-type questions to elicit housework information of the sort of “how much time do you usually spend on activity X in a given week”. In particular, In the PSID the respondent answers for both partners: "About how much time does the head (wife) spend on housework in an average week? I mean time spent cooking, cleaning, and doing other work around the house?". This information was collected each wave, except from 2005 onwards that is collected every two waves. The BHPS-UKHLS asks a similar question of each adult in the household every wave. In particular, the BHPS-UKHLS asks “About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?”. HILDA asks “About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?” from each individual over 14 years-old every wave. Table B.1. in Appendix B presents the results from a validation exercise that compares the marriage coefficient from Equation (1) on cross-sections from

PSID and BHPS-UKHLS, and similar cross-sections from the corresponding MTUS. The marriage coefficients are remarkably similar when using the stylized questions about housework and when using the time diary to measure housework, indicating that eliciting housework from the diaries or from stylized-type questions is equally reliable for our purposes. Appendix Tables C.1 and C.2 describe how the variables are constructed as well as the main summary statistics.

As in our cross-sectional analysis in Section 1, we restrict the main sample to women between 24 and 65 years of age and consider individuals not living in the parental home. The final sample includes observations for which we have information for all the variables.² Table 4 shows how housework changes by marital status in the raw data. Column (1) in Table 4 shows that there are 3106 (3073, 3959) women who are always married and 286 (260 or 410) women who are always single during the sample period in the PSID (BHPS-UKHLS, HILDA). About 4 per cent of the women transit to the marriage state during the sample period, 153 in the PSID, 146 in the BHPS-UKHLS, and 225 in HILDA. The transiting numbers are very similar for men (see Column (4) in Table 4).

Columns (2) and (3) in Table 4 show the average time spent in routine housework for women who are always single, who transit into marriage, and who are always married during the sample period. For women marrying during the sample period, the difference due to marriage is 4.10 hours of routine housework per week in the PSID, and 2.78 hours of routine housework per week in the BHPS-UKHLS, which is close to the cross-section value calculated with MTUS data for the US and the UK in Table 3. Australian longitudinal data reveals a similar pattern to those in the US and the UK. In particular, Australian women marrying during the sample period do 3.02 hours more of routine housework per week. Women who are always married during the sample period have 9.54 (7.26, 7.86) hours more than the always single in the PSID (BHPS-UKHLS, HILDA). Additionally, women who marry during the sample period have a lower value of housework when they marry (between 12 and 13 hours per week) than the always married (about 18 hours per week).

Similar comparisons for men from Columns (5), and (6) in Table 4 reveal a mixed picture for changes in routine housework time for men marrying during the sample period across the three

² Out of the 87,768 female observations in the PSID initial sample, we select 63,984 from years 1992-2015. We further select 49,796 aged 25 to 64. The sample is then reduced to 32,363 by dropping those ever divorced or widowed and to 31,608 because of missing observations and finally to 30,950 so that all women included in the sample were observed at least twice, as those marrying. For the BHPS-UKHLS, out of the 140,022 female observations we select 87,501 from 1992 onwards of the original BHPS sample; we further select 57,995 aged 25 to 64. The sample is then reduced to 39,788 by dropping those ever divorced or widowed, to 38,215 by dropping those still living in the parental home, and to 37,519 because of missing observations and finally to 36,896 so that all women included in the sample were observed at least twice. For HILDA, out of the 162,873 female observations in the sample, we select 136,913 in the original sample from 2002 onwards; we further select 70,619 aged 25 to 64. The sample is then reduced to 49,740 by dropping those ever divorced or widowed, to 47,572 by dropping those still living in parental home, and to 39,633 because of missing observations and finally to 38,630 so that all women included in the sample were observed at least twice, as those marrying.

countries. Taken together, the evidence from men transiting into the married state, and comparisons between the always married and always single, seem to suggest lower housework time in the married state. However, as with the cross-sectional evidence on routine housework shown in Table 3, the mean estimates are less precise. Compared to women, men who marry during the sample period tend to have higher levels of housework (between 6 and 8 hours per week) than men who are always married during the sample (between 5 and 7 hours per week).

4.2 Transitions into Marriage and Routine Housework

Table 5 presents the main results from regressing hours of housework per week on marital status first using a simple OLS regression framework with and without socio-economic controls, and then controlling for individual fixed effects, using the model in Equation 3:

$$H_{it} = \alpha + \beta_1 M_{it} + \beta_2' X_{it} + \varepsilon_{it} \quad (3)$$

where H_{it} denotes hours per week devoted to housework by individual i in period t . X_{it} is a vector of covariates. We include a quadratic on age, education at age 25 in years, an interaction term of age and years of education. We also control for other observed characteristics which can also affect the distribution of housework between men and women. In particular, we control for the number of children (constructed as a logarithm in the number of children plus one). We also control for hours of paid work as men (women) usually increase (decrease) their labour market supply after marriage (Knowles 2013), so that we can rule out that changes in housework cannot be explained by the marriage wage premium (penalty) which leads men (women) to increase (decrease) their labour market supply and decrease (increase) their housework after marriage. We also control for wages, as the literature has shown that there is a marriage wage premium (penalty) for men (women) (Eckstein et al 2019). Additionally, we control for the number of rooms in the house because married couples tend to live in bigger houses than single individuals (Stevenson, 2007), and living in a bigger space may be correlated with more housework.³

³ Table C.1 in Appendix C describes how the variables are constructed from the original PSID, UKHLS, and HILDA codes, and Table C.2 provides summary statistics for these variables separately by gender. Predicted wages are generated by estimating standard Heckman selection corrected wage models separately by gender, as a function of a quadratic in age, education at age 25 in years, and an interaction term of age and years of education, using a sample of all adults aged 24 to 65 years who provide personal data on age, education, and employment status. Following Stancanelli [about using group 2 variables we concentrate on these below](#)Sev and Stratton (2014) this sample is not restricted based on the availability of housework data or marital status. With the exception of PSID wage equations, given that most men missing wage information are self-employed we use information on whether the individual's father was self-employed when the respondent was 14 years old as an exclusion restriction for the male wage equations. Similarly, given that most women missing wage information are not employed, we use information on whether the individual's mother was employed when the respondent was 14 years old as exclusion restriction for the female wage equations. Table C.3 in Appendix C details estimation results for the wage equations.

The results from Table 5 show the marriage coefficient from estimating Equation 3 in a model with no controls, how it changes once controls are introduced to account for observed time-varying variables that are well known to change after marriage, and the change in the coefficients once permanent unobserved heterogeneity is additionally accounted for in the FE specification. Column (1) shows the results for the women's sample. The marriage coefficient drops from 9.56 hours per week in an OLS model with no controls to 4.66 hours per week in an OLS model with controls in the PSID sample, from 7.24 to 3.87 hours per week in the BHPS-UKHLS sample, and from 7.73 to 3.49 hours per week in HILDA sample. Thus the observed control variables account for 51% of the increase in housework upon marriage in the PSID sample, 47% of the increase in housework upon marriage in the UKHLS sample, and 55% of the increase in housework upon marriage in the HILDA sample.

Comparing the coefficients from the OLS model with controls and the coefficients from the FE specification tells us about the part of the housework increase that is due to unobserved time invariant characteristics. The marriage coefficient drops significantly from 4.66 hours per week under in the OLS model with controls to 1.55 hours of housework per week under a FE model in the PSID sample, from 3.87 to 1.83 hours per week in the UKHLS sample, and from 3.49 to 1.05 hours per week in HILDA.⁴ These coefficients translate into a fixed effect that can further explain 67% of the increase in housework upon marriage in the PSID sample, 53% of the increase in housework upon marriage in the BHPS-UKHLS sample, and 70% of the increase in housework upon marriage in the HILDA sample. Using data from two waves of the US National Survey of Families and Households and controlling for unobserved heterogeneity, Gupta (1999) also finds that women increase the time they spend in routine housework by about four hours when they form couple households.

Column (2) shows results for men. Controlling for observable socio-economic characteristics increases differences in housework between single and married men. According to the OLS results with no controls married men do 0.41 hours per week more of housework in the PSID sample, 1.56 hours per week less of housework in the UKHLS sample, and 0.64 hours per week less of housework in the HILDA sample. Yet, once observed heterogeneity is controlled for in the OLS model with controls, the marriage coefficient becomes either negative (as in the case of the PSID sample) or more negative (as in the case of the UKHLS and HILDA samples). Thus, if single men had the same observable characteristics as married men, we would observe even greater decreases in housework time upon marriage.

⁴ A χ^2 -test rejects the null that the OLS and the FE coefficients are the same.

We further control for permanent unobserved heterogeneity in the FE model, and the marriage coefficient goes down in absolute value, i.e., either becomes positive (as in the PSID sample), less negative (as in the UKHLS sample) or is no longer significant (as in the HILDA sample).⁵ This result suggests that the decreases upon marriage observed in the cross-sectional results derived from the OLS model with controls are actually due in part to a permanent unobserved heterogeneity, of men who are less prone to do housework when marrying. The role played by permanent unobservable characteristics goes in opposite directions for women and men. Compared to women, who are more likely to marry when they have an ex-ante higher preference for routine housework, men with a lower taste for routine housework are more likely to live in a couple.

Taken together, between around 70 per cent (in the PSID and HILDA) and around 50 per cent (in the BHPS-UKHLS) of the increase of routine housework upon marriage for women can be accounted for by time invariant unobserved heterogeneity. However, although the inclusion of fixed effects can explain a significant part of the cross-section variation in housework, there remains what seems to be a genuine increase in routine housework upon marriage of about two hours for women in all three countries. Compared to women, the decrease in routine housework upon marriage observed in the cross-section for men virtually vanishes once a fixed effect is taken into account in the PSID and HILDA samples, and 50 per cent of the decrease in housework observed in the cross section is explained by permanent unobserved heterogeneity in the BHPS-UKHLS men sample.

The Role of Gender Role Attitudes

A concern with our previous estimates is that there still may be some unobserved heterogeneity that may be biasing our marriage coefficient even after controlling for permanent unobserved heterogeneity as in Equation 3. There is some evidence that egalitarian gender role attitudes decrease after marriage and the birth of children (Corrigall and Konrad 2007, Vespa 2009). To the extent that gender role attitudes are correlated with housework (Burda et al. 2013), our marriage coefficient in Table 5 may be capturing the effect of gender role attitudes rather than the effect on housework from getting married. To address this concern, we further control for gender role attitudes in Equation (3).

Gender role attitudes are not observed in every wave or in every data set. The British Household Panel Survey (BHPS-UKHLS) asks gender role attitudinal questions in waves 3, 5, 7, 9, 11, 13, and 15, and HILDA in waves 5, 8, 11, and 15. In the PSID gender role attitudes were only asked for a selected sample of parents in the 1997, 2002, 2007 and 2014 Child Development

⁵ A χ^2 -test rejects the null that the OLS and the FE coefficients are the same.

Supplement (CDS). This CDS sample has only 7 women (0.5 % of the sample) and 1 man (0.07% of the sample) who transit to the marriage state during the sampling period. We thus perform the analysis in this section for the BHPS-UKHLS and HILDA samples, as we do not have enough variability in the PSID sample to conduct the analysis.

In waves 3, 5, 7, 9, 11, 13, and 15 in the British Household Panel Survey (BHPS-UKHLS) respondents are presented with a list of eight “questions about family life” and are asked to rate them in 5 categories from strongly agree to strongly disagree (1 to 5). The questions include sentences such as “A pre-school child is likely to suffer if his or her mother works” or “Both the husband and wife should contribute to the household income”. In waves 5, 8, 11, and 15 in HILDA respondents are presented with a similar set of 17 statements about their “attitudes towards parenting and work” and are asked to rate them in 7 categories from strongly disagree to strongly agree (1 to 7). The questions include sentences such as “Children do just as well if the mother earns the money and the father cares for the home and the children” or “It is not good for a relationship if the woman earns more than the man”. Descriptive statistics are provided in Table C.4 in Appendix C.

As in our main analysis of Table 5, we restrict the main sample to women between 24 and 65 years of age and consider individuals not living in the parental home, for which we have information for all the variables, including gender role attitudes. Total samples shrink by approximately 26% in the BHPS-UKHLS and 48% in HILDA.

In order to measure gender role attitudes we construct an individual’s egalitarian index as the first principal component of the eight (seventeen) questions in BHPS-UKHLS (HILDA) on the individual’s attitudes towards the division of household labour separately by gender for each wave the information is recorded. The construction of the principal component index follows the methodology used in a similar context as here (see Alesina and Giuliano 2007, and Sevilla-Sanz, 2010). The first principal components give a high negative weight on statements expressing less egalitarian gender roles, so that higher ranks in the principal component index mean more egalitarian gender roles attitudes (see Table C.5 in Appendix C).

Column (1) in Table 6 shows that there are 2336 (2142) women who are always married and 164 (189) women who are always single during the sample period in the BHPS-UKHLS (HILDA). About 3 per cent of the women transit to the marriage state during the sample period, 68 in the BHPS-UKHLS, and 73 in HILDA. The transiting numbers are very similar for men: 2300 (2014), always married, 178 (188), always single, and 96 (52), marrying in the BHPS-UKHLS (HILDA) (see Column (6) in Table 6). Columns 2, 3, 7 and 8 in Table 6 show that our descriptive results of Table 4 hold for this restricted sample: women marrying increase routine housework time while men marrying

decrease (increase) it slightly in the BHPS-UKHLS (HILDA). Consistent with the literature (Corrigall and Konrad 2007, Vespa 2009), columns 4 and 5 in Table 6 show that gender role attitudes become less egalitarian for women upon marriage. Women marrying during the sample period in the BHPS-UKHLS (HILDA) go from 0.609 (0.481) to 0.173 (0.149) in a 0/1 scale. a are always single during the sample period. Also, as previously suggested, men's role attitudes become more egalitarian upon marriage, from 0.269 (2.242) to 0.377 (0.289) for those marrying in the BHPS-UKHLS (HILDA) - see columns 9 and 10 in Table 6.

Results in column 1 of Table 7 showing the marriage coefficient from estimating Equation 3 in a model additionally controlling for an individual's egalitarian index (shown as the regression analysis with Group 2 Controls), suggest that changes in gender role attitudes are not responsible for changes in housework time upon marriage. The fact that women's gender role attitudes become less egalitarian upon marriage (shown in Table 6) has virtually no impact on the marriage coefficients of Table 7; for men, controlling for individual gender role attitudes only increases the size of the reduction in routine housework time upon marriage. In consequence, the marriage coefficient continues to be significant in the OLS specification after controlling for gender role attitudes, and diminishes further once we control for the individual FE as before.

Robustness Checks

As in the cross-sectional results in Section 2, we can rule out that our results are driven by transitions into having children rather than into marriage. Our main results continue to hold when individuals without children are considered. The FE coefficients in Columns 1 and 4 in Table 8 for the sample of individuals without children are very similar to the FE coefficients for the whole sample of individuals presented in Table 5. We still observe selection on permanent unobservable characteristics for this subsample of non-parents. In particular, selection explains between 55% and 63% of all the increase in housework for women, and as for the results using the whole sample of individuals, controlling for fixed effects can explain over 100 percent of the decrease in housework time upon marriage for men in the PSID and HILDA and about 50 per cent in the BHPS-UKHLS.

Similarly, when we select the sample of cohabiting individuals, results continue to hold (Columns 2 and 5 of Table 8). In particular, we consider always-single individuals (i.e., single individuals not living in the parental home), always-cohabiting individuals (i.e., individuals who are in a partnership but not legally married), and individuals entering into cohabitation during the sample period. We exclude transitions from cohabitation into legal marriage.⁶ As in the cross-sectional

⁶ Results are robust to using a different sample selection where those ever legally married are included. In the PSID cohabiting is not a special marital status category but can be computed using available information. First, when

results, the OLS coefficient in the cohabiting sample is smaller than the OLS coefficient when the whole sample of women is considered, and larger for men. However, the FE coefficients are remarkably similar to those obtained for the married (legally married and cohabiting) sample reported in Table 5. Interestingly, the selection effect is generally lower for the sample of cohabiting individuals than for the whole sample. It even turns negligible for the PSID, drops to 36% from the previous 53% in UKHLS-BHPS, and remains roughly similar around 70% in HILDA.⁷

4.3 Understanding the Mechanisms behind the Fixed Effects

A possible mechanism to explain the above findings is that women are more likely to marry when they have an ex-ante higher preference for routine housework, whereas men with a lower taste for routine housework are more likely to tie the knot. In other words, a necessary condition is that individuals who have a more traditional view on the division of household labour are more likely to marry. If this is the case, we should expect the selection effect to be higher for individuals holding more traditional gender roles about what being a “husband” and a “wife” means (Akerlof and Kranton, 2000).

Several pieces of evidence from Tables 5 and 8 seem to corroborate this gender roles hypothesis. First, the smaller explanatory power of selection into marriage for the UK, compared to Australia and the US shown in Table 5, is consistent with more traditional gender roles in Australia and the US vs in the UK. Standard measures of gender equality used for example in Guiso et al., (2008) and Bertrand (2011) show that in 2009 in the UK a majority of 77% of individuals disagreed or totally disagreed with the statement “When jobs are scarce, men should have more right to a job than women”, compared to 73% in Australia and 69% in the US. Similarly, the ratio of women to men in ministerial-level and parliamentary positions is around 30% in the UK, compared to less than 20% in Australia and about 16% in the US (See Table C.8).

Second, consistent with the gender roles explanation the selection effect is lower for younger individuals (columns 3 and 6 of Table 8), as well as for cohabiting individuals (columns 2 and 5 in Table 8). Younger individuals are more likely to hold less traditional gender roles, based on existing

cohabitation lasts for longer than 12 months the study starts recording information on both members of the couple, just as if a legal marriage had taken place. If not part of the PSID sample, the male cohabitor turns head and the female cohabitor turns “wife”. Second, to detect first-year cohabitations we can use information on other household members. The PSID records whether a boyfriend or girlfriend of the household head lives in the residence, and, therefore, we can know whether the household head is cohabiting. The PSID does not record housework or labour market information for these first-year cohabitators, what may partly explain the lower sample size of cohabiting individuals in the PSID compared to the BHPS and HILDA. In the BHPS and HILDA there are differentiated categories for those legally married and living as couple (categories 1 and 2 when asked about marital status).

⁷ Regression results using a PSID sample from 1985, the first year the housework variable was asked in the PSID, confirm that our results are robust to the inclusion of earlier years (see Appendix Table C.6). Results are also robust to controlling for the type of dwelling and the type of ownership of the household home (see Appendix Table C.7).

evidence showing that holding less egalitarian attitudes has declined across cohorts over the last years (see Fortin 2005 and Fernandez 2013). Similarly, cohabiting individuals are less likely to hold traditional gender roles than legally married individuals, as shown by their lower degree of couple specialization (Barg and Beblo, 2012).

Lastly, the gender roles explanation implies that women with a higher overall preference for housework have a higher preference for marriage, which results in a negative correlation between an individual's egalitarian gender role attitudes and her predicted fixed effect from running Equation (3) in Column 1 of Table 5. Conversely, the gender roles hypothesis implies that men with a lower overall preference for housework have a higher propensity to marriage, resulting in a positive correlation between an individual's egalitarian gender role attitudes and his predicted fixed effect from running Equation (3) in Column 2 of Table 5. To test this hypothesis, we run the following OLS regression:

$$IFE_i = \alpha + \beta_2' X_i + \beta_3 EGAL_i + \varepsilon_i \quad (4)$$

where IFE_i denotes the predicted individual fixed effect term of individual i from Columns 1 and 2 in Table 5. X_i is a vector of covariates as in Equation (3) that includes average values for a quadratic on age, education at age 25 in years, an interaction term of age and years of education, number of children, hours of paid work, predicted wages, and the number of rooms in the house to control for observed variables that can affect both the housework preference and the egalitarian attitudes. The individual-specific egalitarian index $EGAL_i$, is a dummy variable that takes value 1 if the average (across waves) of the individual's egalitarian index in Section 4.2 is greater than the sample mean. As in the main analysis, we restrict the sample to individuals between 24 and 65 years of age not living in the parental home for which we have information for all the variables, including the egalitarian index, and who answered gender role attitudinal questions at least once ⁸

Columns 1 and 2 in Table 9 show that in both BHPS-UKHLS and HILDA samples, more egalitarian women have a lower predicted fixed effect. The negative coefficient on the egalitarian dummy for women suggests that women more likely to marry have higher preference for housework. Conversely, and also consistent with the gender roles explanation, Columns 3 and 4 in Table 9 show that in both BHPS-UKHLS and HILDA samples, more egalitarian men have a lower predicted fixed effect. The positive coefficient on the egalitarian dummy for men suggests that men marrying are the ones with a lower preference for housework (i.e., less egalitarian). The absolute values of the

⁸ For the BHPS-UKHLS, we are unable to compute the index for between 4 and 5 per cent of the sample, who never responded to the values questions; in HILDA, between 5 and 6 per cent of the sample could not be used for this analysis for the same reasons. The results in Table 5 hold.

coefficients on the egalitarian dummy are larger for women than for men, indicating that the selection with respect to gender attitudes may be stronger for women.

These findings are consistent with the gender roles explanation, and suggestive that the fixed effect in Equation (3) is not capturing a marriage wage premium (penalty) for men (women). A necessary condition for this alternative explanation to be a valid mechanism driving selection is that women with a higher preference for housework tasks before marriage are perceived as more desirable partners in the marriage market, and similarly that men with a lower preference for housework tasks before marriage are perceived as more desirable partners. This last condition is however unlikely, as there is now mounting evidence that men who contribute more to home production are more likely to enter a partnership (see Sevilla-Sanz, 2010; Gimenez-Nadal, J.I., Molina, J. and Sevilla, A., 2012; Burda et al., 2013; and Bertrand et al., 2016). All in all, results from fixed effects estimates using longitudinal data for the US, the UK, and Australia in Tables 5-8 suggest that, to the extent that there are no other omitted variables that could be captured by the individual fixed effect, selection into marriage can account for a substantial portion of the cross-section variation in housework upon marriage, particularly with respect to routine housework activities such as cooking and cleaning. Additionally, the results seem to suggest that the selection runs in opposite directions for women and men.

4.4 Transitions into Marriage and Non-Routine Housework

Results based on routine housework seem to suggest a gender imbalance with respect to the effects of marriage on housework time. In contrast to women, where there is a genuine increase in routine housework time upon marriage, routine housework upon marriage may stay the same (in Australia) or decrease (in the UK) for men. However Table 3 documented that married men did more non-routine housework than single men, so routine housework may not give a full picture of the variation of housework time. We observe a measure of non-routine housework in HILDA, which relates to outdoor housework activities such as gardening and home repairs. In particular, HILDA asks “How much time would you spend on Outdoor tasks, including home maintenance (repairs, improvements, painting etc.), car maintenance or repairs and gardening in a typical week?”

Results in Table 10 provide a fuller picture of the effect of marriage on housework time by looking at what happens to non-routine housework upon marriage. Column (1) in Table 10 shows that the hour per week increase of routine housework for married women relative to single women observed in Table 5 is compensated by a similar increase in non-routine housework for married men

relative to single men, which increases by 1.32 hours per week (Column 2). Thus, the net effect on housework time from marriage seems to be similar for men and women once a more comprehensive measure of housework is considered. In particular, total housework increases by 1.08 hours per week for women, and by 1.49 hours per week for men (Column 3). Compared to Column (1), χ^2 -tests comparing OLS and FE coefficients in Column (2) in Table 10 reveal no selection effects in non-routine housework arising from unobserved permanent heterogeneity, for either men or women, suggesting that the increases in non-routine housework for men are genuine and happen as a result of marrying.

5. Conclusions

This paper documents changes in home labour upon forming a household and explores in depth one possible explanation: selection effects arising from unobserved heterogeneity. Using cross-sectional data for a wide range of high-income countries we document that married women do about five more hours per week of housework than single women. Compared to married women, men's housework time is half an hour per week higher when married than when single. Differences in housework across marital states persist after conditioning on a wide set of time-varying and time-invariant observable characteristics such as age, education, and the number and age of children. These findings follow even after controlling for time spent in the labour market, and for different sub-groups of individuals.

Results from fixed effects estimates using longitudinal data for the US, the UK, and Australia suggest that permanent unobserved heterogeneity can account for about 50 and 70 per cent of the increase of routine housework upon marriage for women, and all the decrease in routine housework upon marriage observed in the cross-section for men. There is no evidence that other unobserved heterogeneity, such as gender roles, may be biasing our marriage coefficient even after controlling for permanent unobserved heterogeneity as in Equation 3. All in all our results suggest that the changes in housework observed in the cross-section may be partly driven by individuals with a higher preference for marriage also having a more traditional view on the division of household labour, rather than being more highly valued in the marriage market.

Upon marriage there remains a genuine increase of non-routine housework for men and of routine housework for women of between one hour and a half and two hours per week. Women increase routine housework upon marriage, such as meal preparation and cleaning. In contrast men increase the time spent in non-routine housework (such as outdoor and maintenance activities). Compared to non-routine housework, routine housework needs to be performed on job days and is difficult to postpone or contract out and is more likely to impose a penalty upon labour market

activities and wages (see Hersch (1991) and Hersch and Stratton (2002)). The gender specialization across housework tasks upon marriage cannot thus be overlooked, and should inform economic models and the design of policies interested in the distributional effects within households.

The causal positive effect of marriage on housework identified here supports the view that gains from marriage go beyond the efficiency gains derived from specialization in paid work. As previously suggested in the literature, the production and consumption of household public goods may be an important source of marital gains. Economists have devoted time and effort to identify the economies of scale associated to changes in the size of the household, which rest on the idea that two can live more cheaply than one (for instance Deaton and Paxson, 1997). The focus in the literature is usually on monetary expenditures. Our findings point towards a substitution of market goods towards home produced goods upon marriage, and highlight the importance of incorporating into household models economic activity that escapes the market economy (see Krueger et al. (2009)).

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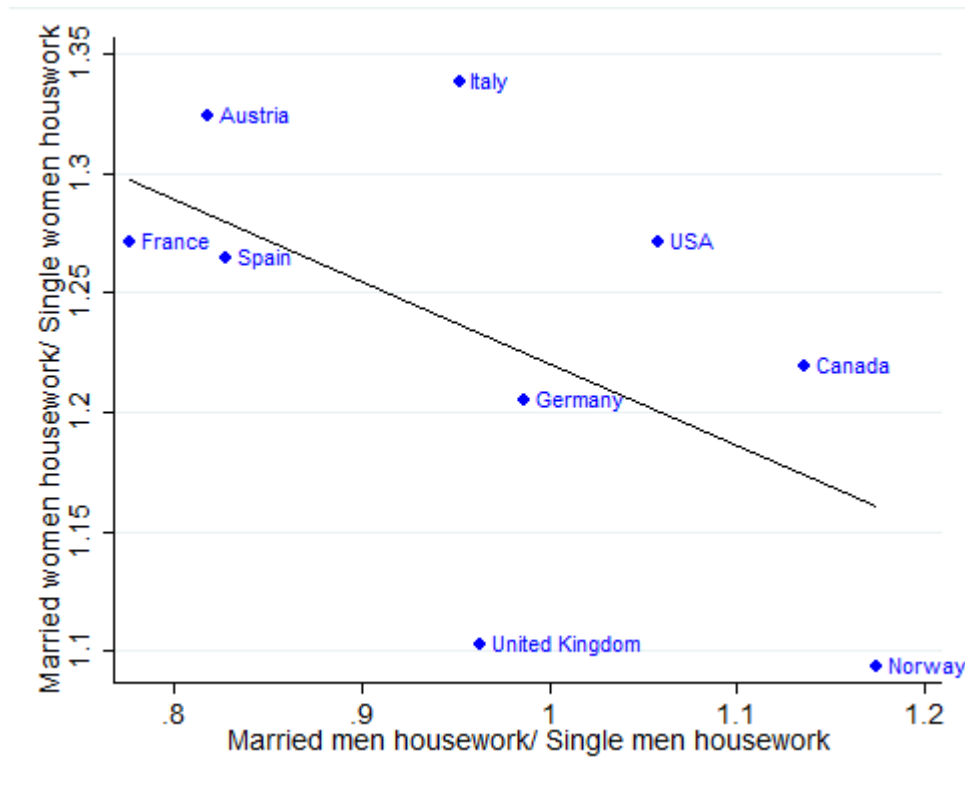
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Figures

Figure 1 Relationship between housework performed by married women and married men relative to singles, by country.



Notes: Data source is the Multinational Time Use Study (MTUS). The sample consists of individuals between 24 and 65 years old not living in parental home. Housework is calculated as the time spent in cooking and washing up, odd jobs, gardening, shopping, finances, and household related travel measured in hours per week. We consider singles (i.e., single individuals not living in the parental home) and marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting). In the x-axis we represent the average value of housework by married men divided by the average value of housework by single men. In the y-axis we represent the average value of housework by married women divided by the average value of housework by single women. A standard fitted OLS regression also shown.

Table 1: Housework and Marriage: Evidence from cross-sectional data

		(1)	(2)	(3)	(4)	(5)	(6)
		Women		Men		Both	
		Average	Differential effect	Average	Differential effect	Average	Differential effect
		Housework Singles	Marrieds	Housework Singles	Marrieds	Housework Singles	Marrieds
All		25.13 (1.56)	*** 8.58 (1.15)	*** 16.39 (0.46)	-0.74 (0.45) *	21.53 (0.90) ***	3.22 (0.50) ***
	Obs.	110185		90596		200781	
Austria		30.63 (0.54)	*** 9.93 (0.60)	*** 15.9 (0.63)	-2.9 (0.67) ***	25.8 (0.49) ***	1.61 (0.54) **
	Obs.	7836		6363		14199	
Canada		24.3 (0.65)	*** 4.95 (0.75)	*** 15.35 (0.70)	2.1 (0.79) **	20.16 (0.50) ***	3.09 (0.57) ***
	Obs.	3669		3208		6877	
France		24.05 (0.55)	*** 6.53 (0.61)	*** 15.52 (0.52)	-3.47 (0.57) ***	20.41 (0.44) ***	0.92 (0.48)
	Obs.	5006		4538		9544	
Germany		25.95 (0.32)	*** 5.41 (0.37)	*** 17.86 (0.50)	-0.2 (0.53)	23.67 (0.29) ***	1.01 (0.32) **
	Obs.	11847		9656		21503	
Italy		31.84 (0.44)	*** 10.76 (0.48)	*** 13.23 (0.40)	-0.64 (0.43)	23.96 (0.38) ***	4.15 (0.41) ***
	Obs.	13456		11934		25390	
Norway		24.05 (0.69)	*** 2.34 (0.77)	*** 16.21 (0.83)	2.72 (0.91) **	20.23 (0.55) ***	2.37 (0.61) ***
	Obs.	2865		2381		5246	
Spain		30.6 (0.47)	*** 8.12 (0.51)	*** 14.73 (0.46)	-2.53 (0.49) ***	24.62 (0.41) ***	1.64 (0.44) ***
	Obs.	13052		11049		24101	
UK		27.1 (0.48)	*** 2.84 (0.55)	*** 17.05 (0.62)	-0.42 (0.67)	23.23 (0.40) ***	-0.05 (0.45)
	Obs.	5974		4962		10936	
US		22.85 (0.15)	*** 6.19 (0.19)	*** 16.91 (0.18)	0.98 (0.21) ***	20.26 (0.12) ***	3.04 ***
	Obs.	46480		36505		82985	

Chi-test of equality of coefficients	584.95 (0.000)	165.56 (0.000)	84.39 (0.000)	117.10 (0.000)	391.45 (0.000)	93.42 (0.000)
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Notes: Data source is the Multinational Time Use Study (MTUS). Countries are ordered in alphabetical order. The sample consists of individuals between 24 and 65 years old not living in the parental home. We consider singles (i.e., single individuals not living in the parental home) and marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting). Housework is calculated as the time spent in cooking, household upkeep, shopping, domestic travel, maintenance, and gardening, measured in hours per week. OLS regressions of housework on a dummy for living with a partner (cohabiting or being married). The coefficient for singles represent the average amount of housework, while for married individuals they represent the differential effect with respect to singles. Proposed MTUS weights used. Standard errors in brackets.

Table 2: Housework and Marriage: Evidence from cross-sectional data adjusting for covariates

		(1)	(2)		(3)	(4)		(5)		(6)			
				Women				Men					
		Total		Routine		Non-routine		Total		Non-routine			
All		5.36	***	5.86	***	-0.5	***	0.13		-1.36	***	1.49	***
		(0.12)		(0.10)		(0.09)		(0.13)		(0.07)		(0.12)	
	Obs.	110185		110185		110185		90596		90596		90596	
Austria		5.84	***	5.91	***	-0.07		-2.43	***	-4.36	***	1.93	***
		(0.52)		(0.44)		(0.34)		(0.61)		(0.31)		(0.55)	
	Obs.	7836		7836		7836		6363		6363		6363	
Canada		2.62	***	2.33	***	0.29		1.99	**	-0.51		2.5	***
		(0.64)		(0.49)		(0.51)		(0.72)		(0.41)		(0.64)	
	Obs.	3669		3669		3669		3208		3208		3208	
France		3.91	***	4.66	***	-0.75	*	-2.71	***	-3.89	***	1.18	**
		(0.47)		(0.39)		(0.30)		(0.52)		(0.28)		(0.44)	
	Obs.	5006		5006		5006		4538		4538		4538	
Germany		2.95	***	3.73	***	-0.78	**	1.33	**	-1.94	***	3.27	***
		(0.32)		(0.24)		(0.24)		(0.46)		(0.22)		(0.42)	
	Obs.	11847		11847		11847		9656		9656		9656	
Italy		6.65	***	7.3	***	-0.65	**	-0.46		-2.71	***	2.25	***
		(0.36)		(0.32)		(0.24)		(0.37)		(0.19)		(0.32)	
	Obs.	13456		13456		13456		11934		11934		11934	
Norway		2.87	***	3.8	***	-0.94		2.54	**	-1.33	**	3.88	***
		(0.65)		(0.51)		(0.49)		(0.86)		(0.50)		(0.75)	
	Obs.	2865		2865		2865		2381		2381		2381	
Spain		5.06	***	4.9	***	0.16		-0.61		-3.03	***	2.42	***
		(0.41)		(0.34)		(0.28)		(0.44)		(0.25)		(0.37)	
	Obs.	13052		13052		13052		11049		11049		11049	
UK		2.51	***	2.81	***	-0.3		1.42	*	-1.51	***	2.92	***
		(0.45)		(0.35)		(0.33)		(0.58)		(0.32)		(0.50)	
	Obs.	5974		5974		5974		4962		4962		4962	
US		4.12	***	3.14	***	0.98	***	2	***	-0.58	***	2.58	***
		(0.17)		(0.13)		(0.14)		(0.21)		(0.12)		(0.18)	
	Obs.	46480		46480		46480		36505		36505		36505	
Chi-test of equality of coefficients		76.19 (0.000)		156.86 (0.000)		69.66 (0.000)		118.29 (0.000)		190.82 (0.000)		19.81 (0.011)	

Notes: Data source is the Multinational Time Use Study (MTUS). Countries are ordered in alphabetical order. The sample consists of individuals between 24 and 65 years old. We consider singles (i.e., single individuals not living in the parental home) and marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting). Total stands for total housework hours per week; routine

refers to routine housework hours per week, including general household upkeep, cooking, and washing up; and non-routine is non-routine housework in hours per week, including house repairs, car maintenance, paying bills, gardening, shopping and domestic travel. Housework is measured in hours per week. OLS regressions of housework (routine and non-routine) on a dummy for cohabiting or being married, minutes spent in paid work during the diary day, age, age squared, household size, number of children, education level, and day of the week dummies. Proposed MTUS weights used. Standard errors in brackets. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 3: Housework and Marriage: Evidence from cross-sectional data adjusting for covariates (Robustness Checks)

	(1) Routine housework for women			(2) Single vs. cohabiting			(3) 25-44 year-olds			(4) Non-routine housework for men			(5) Single vs. cohabiting			(6) 25-44 year-olds		
	Families without children			Single vs. cohabiting			25-44 year-olds			Families without children			Single vs. cohabiting			25-44 year-olds		
All	6.56	***		2.96	***		5.05	***		1.96	***		0.66	**		0.66	***	
	(0.13)			(0.19)			(0.13)			(0.14)			(0.23)			(0.16)		
Austria	6.59	***		4.40	***		4.91	***		2.19	***		1.43			1.96	**	
	(0.53)			(1.01)			(0.63)			(0.61)			(1.07)			(0.74)		
Canada	3.08	***		0.17			1.77	**		3.32	***		1.80	*		1.81	*	
	(0.60)			(0.70)			(0.63)			(0.68)			(0.84)			(0.78)		
France	5.68	***		2.20	***		3.48	***		1.12	*		0.41			1.14	*	
	(0.47)			(0.54)			(0.54)			(0.51)			(0.58)			(0.54)		
Germany	4.32	***		2.19	***		3.22	***		4.08	***		4.29	***		3.39	***	
	(0.34)			(0.49)			(0.33)			(0.49)			(0.71)			(0.63)		
Italy	7.59	***		5.04	***		6.58	***		2.27	***		0.58			1.68	***	
	(0.37)			(0.74)			(0.48)			(0.35)			(0.65)			(0.38)		
Norway	3.84	***		2.80	***		3.12	***		4.35	***		2.56	**		3.21	**	
	(0.72)			(0.67)			(0.66)			(0.85)			(0.91)			(1.03)		
Spain	5.58	***		1.73	*		4.36	***		2.51	***		1.24	*		1.82	***	
	(0.42)			(0.67)			(0.51)			(0.44)			(0.59)			(0.47)		
UK	3.42	***		0.91			2.32	***		2.59	***		2.96	***		2.79	***	
	(0.47)			(0.56)			(0.43)			(0.54)			(0.74)			(0.66)		
US	3.90	***		1.78	***		2.49	***		3.32	***		1.49	***		1.18	***	
	(0.18)			(0.32)			(0.17)			(0.24)			(0.42)			(0.26)		

Notes: Data source is the Multinational Time Use Study (MTUS). Countries are ordered in alphabetical order. In Columns 1 and 4 the sample consists of individuals between 24 and 65 years old, who are either singles (i.e., single individuals not living in the parental home) or marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting) and who are not living with any child under 18 years of age. In Columns 2 and 5 the sample consists of individuals between 24 and 65 years old who are either singles (i.e., single individuals not living in the parental home) or cohabiting (i.e., individuals who are in a partnership, but not legally married). In columns 3 and 6 the sample consists of individuals between 24 and 45 years old, who are either singles (i.e., single individuals not living in the parental home) or marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting). Total stands for total housework hours per week; routine refers to routine housework hours per week, including general household upkeep, cooking, washing up, shopping and domestic travel; and non-routine is non-routine housework in hours per week, including DIY activities, car maintenance, paying bills, and gardening. Housework is measured in hours per week. OLS regressions of housework on a dummy for cohabiting or being married, minutes spent in paid work during the diary day, age, age squared, household size, number of children, education level, and day of the week dummies. Standard errors in brackets. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 4. Hours per week in Routine Housework by Marital Status: Evidence from longitudinal data

	Women			Men		
	(1) Observations	(2) Single	(3) Married	(4) Observations	(5) Single	(6) Married
Panel A. PSID						
Always single (not in parental home)	286	8.91		327	6.86	
Marrying (not from parental home)	153	7.99	12.09	205	6.25	8.02
Always married	3106		18.45	3663		7.07
Panel B. UKHLS						
Always single (not in parental home)	260	10.40		327	7.11	
Marrying (not from parental home)	146	9.84	12.62	177	6.35	5.74
Always married	3073		17.66	3050		5.39
Panel C. HILDA						
Always single (not in parental home)	410	10.26		470	7.11	
Marrying (not from parental home)	225	10.03	13.05	264	5.89	6.57
Always married	3959		18.12	3863		6.18

Notes: Data comes from the 1992-2015 PSID, the 1991-2015 Harmonized BHPS-UKHLS, and the 2002-2013 HILDA. Sample is women (men) between 24 and 65 years old, not living in the parental home, who have not been divorced, and who are observed in at least two waves. We consider singles (i.e., single individuals not living in the parental home), marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting), and marrying (i.e. individuals who transition from single to married). Housework is reported in hours per week as the answer to the question “About how much time do you spend on housework in an average week? I mean time spent cooking, cleaning, and doing other work around the house?”, in PSID, “About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?”, in UKHLS, and “About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?” (variable lshw), in HILDA.

Table 5. Changes of housework upon marriage: Evidence from longitudinal data

	(1) Women			(2) Men		
	Coefficien t	Standard Error	% Explained	Coefficien t	Standard Error	% Explained
Panel A: PSID						
OLS without controls	9.56	(0.39)***		0.41	(0.25)	
OLS with controls	4.66	(0.43)***	51%	-0.12	(0.28)	> 100%
FE	1.55	(0.60)***	67%	0.94	(0.40)**	> 100%
Chi2 test of equality of coefficients FE-OLS with controls	29.39 (0.000)			5.47 (0.019)		
N obs.	3545			4195		
Panel B: UKHLS						
OLS without controls	7.24	(0.47)***		-1.56	(0.22)***	
OLS with all controls	3.87	(0.42)***	47%	-1.44	(0.24)***	8%
FE	1.83	(0.40)***	53%	-0.73	(0.34)**	49%
Chi2 test of equality of coefficients FE-OLS with controls	15.44 (0.000)			3.57 (0.058)		
N obs.	3479			3554		
Panel C: HILDA						
OLS without controls	7.73	(0.38)***		-0.64	(0.20)***	
OLS with all controls	3.49	(0.35)***	55%	-0.83	(0.21)***	-30%
FE	1.05	(0.43)**	70%	0.11	(0.27)	> 100%
Chi2 test of equality of coefficients FE-OLS with controls	20.10 (0.000)			8.56 (0.003)		
N obs.	4594			4597		

Notes: Data comes from the 1992-2015 PSID, the 1991-2015 Harmonized BHPS-UKHLS and the 2002-2016 HILDA. Sample is women (men) between 24 and 65 years old, not living in the parental home, who have not been divorced, and who are observed in at least two waves. We consider singles (i.e., single individuals not living in the parental home), marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting) and marrying (i.e. individuals who transition from single to married). Housework is reported in hours per week as the answer to the question “About how much time do you spend on housework in an average week? I mean time spent cooking, cleaning, and doing other work around the house?”, in PSID, “About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?”, in UKHLS, and “How much time would you spend on housework, such as preparing meals, washing dishes, cleaning house, washing clothes, ironing and sewing, in a typical week?” (variable lshw), in HILDA. The regressions of housework on a dummy for living with a partner (cohabiting or being married). Controls include a quadratic on age, education at age 25 in years, an interaction term of age and years of education, predicted wages, a logarithm in the number of children, hours of paid work, and number of household rooms. Percentage explained by controls obtained as the difference between the OLS coefficient without controls and the OLS coefficient with controls, divided by the OLS coefficient without controls; percentage explained by FE

obtained as the difference between the OLS coefficient with controls and the FE coefficient, divided by the OLS coefficient with controls. In both cases we denote >100% when the formula yields a number greater than 100%. Standard errors in brackets. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 6. Routine Housework and Egalitarian Attitudes by Marital Status: Evidence from longitudinal data

	Women					Men				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Observations	Housework		Egalitarian Index		Observations	Housework		Egalitarian Index	
		Single	Married	Single	Married		Single	Married	Single	Married
Panel. A. BHPS-UKHLS										
Always single (not in parental home)	164	10.86		0.009		178	6.93		-0.034	
Marrying (not from parental home)	68	8.79	12.05	0.609	0.173	96	6.29	5.58	0.269	0.377
Always married	2336		18.26		-0.041	2300		5.38		0.003
Panel. B. HILDA										
Always single (not in parental home)	189	10.58		0.226		188	7.06		0.089	
Marrying (not from parental home)	63	10.92	13.60	0.481	0.149	52	6.25	6.35	0.242	0.289
Always married	2142		18.46		0.060	2014		6.28		0.114

Notes: Data comes from the 1993, 1995, 1997, 1999, 2001, 2003, and 2005 Harmonized BHPS-UKHLS and the 2005, 2008, 2011, and 2015 HILDA. Sample is women (men) between 24 and 65 years old, not living in the parental home, who have not been divorced, and who are observed in at least two waves. We consider singles (i.e., single individuals not living in the parental home), marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting) and marrying (i.e. individuals who transition from single to married). Housework is reported in hours per week as the answer to the question “About how much time do you spend on housework in an average week? I mean time spent cooking, cleaning, and doing other work around the house?”, in PSID, “About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?”, in UKHLS, and “How much time would you spend on housework, such as preparing meals, washing dishes, cleaning house, washing clothes, ironing and sewing, in a typical week?” (variable lshw), in HILDA. The egalitarian index is the first principal component of the eight (seventeen) questions on the individual’s attitudes towards the division of household labour separately by gender for each of the 3, 5, 7, 9, 11, 13, and 15 (5, 8, 11, and 15) waves in the BHPS-UKHLS (HILDA).

Table 7. Housework and Marriage: Evidence from Longitudinal Data. Controlling for Changes in Family Attitudes upon Marriage

	(1) Women			(2) Men		
	Coefficient	Standard Error	% Explained	Coefficient	Standard Error	% Explained
Panel B: BHPS-UKHLS						
OLS without controls	7.67	(0.60)***		-1.43	(0.26)***	
OLS control group 1	3.96	(0.55)***	48%	-1.41	(0.27)***	1%
OLS control group 2	4.00	(0.56)***	-1%	-1.54	(0.27)***	-9%
Chi2 test of equality of coeff. OLS group1-OLS group 2	0.75 (0.388)			10.21 (0.001)		
FE	1.73	(0.62)***	57%	-0.50	(0.60)	68%
Chi2 test of equality of coeff. FE-OLS control group 2	8.79 (0.003)			2.86 (0.091)		
N obs.	2568			2569		
Panel C: HILDA						
OLS without controls	7.76	(0.53)***		-0.69	(0.35)**	
OLS control group 1	3.04	(0.51)***	61%	-0.77	(0.37)**	-12%
OLS control group 2	3.02	(0.50)***	1%	-0.85	(0.37)**	-10%
Chi2 test of equality of coeff. OLS group1-OLS group 2	0.19 (0.661)			3.40 (0.065)		
FE	-0.11	(1.19)	> 100%	-0.23	(0.69)	73%
Chi2 test of equality of coeff. FE-OLS control group 2	6.70 (0.009)			0.70 (0.403)		
N obs.	2394			2254		

Notes: Data comes from the 1993, 1995, 1997, 1999, 2001, 2003, and 2005 Harmonized BHPS-UKHLS and the 2005, 2008, 2011, and 2015 HILDA. Sample is women (men) between 24 and 65 years old, not living in the parental home, who have not been divorced, and who are observed in at least two waves. We consider singles (i.e., single individuals not living in the parental home), marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting) and marrying (i.e. individuals who transition from single to married). Housework is reported in hours per week as the answer to the question “About how much time do you spend on housework in an average week? I mean time spent cooking, cleaning, and doing other work around the house?”, in PSID, “About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?”, in UKHLS, and “How much time would you spend on housework, such as preparing meals, washing dishes, cleaning house, washing clothes, ironing and sewing, in a typical week?” (variable lshw), in HILDA. The regressions of housework on a dummy for living with a partner (cohabiting or being married). Controls in group 1 include a quadratic on age, education at age 25 in years, an interaction term of age and years of education, predicted wages, a logarithm in the number of children, hours of paid work, and number of household rooms. Controls in group 2 additionally include the first principal components of the eight (seventeen) questions on the individual’s attitudes towards the division of household labour separately by gender for each of the 3, 5, 7, 9, 11, 13, and 15 (5, 8, 11, and 15) waves in the UKHLS (HILDA). Percentage explained by controls obtained as the difference between the OLS coefficient without controls and the OLS coefficient with controls, divided by the OLS coefficient without controls; percentage explained by FE obtained as the difference

between the OLS coefficient with controls and the FE coefficient, divided by the OLS coefficient with controls. In all cases we denote >100% when the formula yields a number greater than 100%. Standard errors in brackets. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 8. Robustness Checks. Changes of housework upon marriage: Evidence from longitudinal data. Different samples.

	(1)		(2)		(3)		(4)		(5)		(6)	
			Women		25-44 year-olds				Men		25-44 year-olds	
	Coeff.	St. Error	Coeff.	St. Error	Coeff.	St. Error	Coeff.	St. Error	Coeff.	St. Error	Coeff.	St. Error
Panel A: PSID												
OLS no controls	8.76	(0.39)***	3.86	(0.69)***	9.76	(0.40)***	0.09	(0.28)	0.58	(0.38)	0.60	(0.25)**
OLS with controls	4.21	(0.44)***	2.65	(0.68)***	3.81	(0.46)***	-0.21	(0.30)	0.07	(0.42)	-0.23	(0.27)
% Explained by controls	52%		31%		61%		> 100%		88%		> 100%	
FE	1.9	(0.51)***	2.69	(0.81)***	1.7	(0.65)***	0.97	(0.45)**	1.49	(0.87)*	0.75	(0.43)*
% Explained by fixed effects	55%		-2%		55%		> 100%		<-100%		> 100%	
Chi2 test of equality of coeff.	14.68 (0.000)		0.00(0.969)		7.62 (0.006)		5.37 (0.020)		2.97 (0.085)		4.50 (0.034)	
N obs.	2303		557		2863		2443		962		2912	
Panel B: UKHLS												
OLS no controls	7.19	(0.41)***	2.65	(0.52)***	7.4	(0.52)***	-1.64	(0.23)***	-1.20	(0.25)***	-0.95	(0.21)***
OLS with controls	4.26	(0.42)***	1.88	(0.44)***	2.62	(0.42)***	-1.45	(0.24)***	-1.10	(0.27)***	-0.71	(0.22)***
% Explained by controls	41%		29%		65%		12%		8%		25%	
FE	1.85	(0.38)***	1.20	(0.50)**	1.72	(0.43)***	-0.72	(0.39)*	-0.54	(0.46)	-0.49	(0.34)
% Explained by fixed effects	57%		36%		34%		50%		51%		31%	
Chi2 test of equality of coeff.	19.56 (0.000)		1.35 (0.247)		2.81 (0.094)		3.23 (0.072)		1.46 (0.227)		0.37 (0.542)	
Nobs.	2686		1149		2469		2702		1296		2399	
Panel C: HILDA												
OLS no controls	6.57	(0.36)***	3.38	(0.45)***	7.91	(0.46)***	-0.26	(0.18)	-0.36	(0.24)	0.14	(0.19)
OLS with controls	3.16	(0.35)***	2.54	(0.40)***	3.03	(0.42)***	-0.24	(0.19)	-0.30	(0.24)	-0.11	(0.20)
% Explained by controls	52%		25%		62%		8%		17%		> 100%	
FE	1.16	(0.43)***	0.61	(0.47)	1.26	(0.47)***	0.45	(0.30)	0.19	(0.32)	0.07	(0.28)
% Explained by fixed effects	63%		76%		58%		> 100%		> 100%		> 100%	
Chi2 test of equality of coeff.	15.19 (0.001)		10.14 (0.001)		8.32 (0.004)		4.37 (0.037)		1.73 (0.188)		0.32 (0.569)	
Nobs.	3387		1831		3057		1707		2016		2869	

Notes: Data comes from the 1992-2015 PSID, the 1991-2015 Harmonized BHPS-UKHLS, and the 2002-2016 HILDA. In Columns 1 and 4 the sample consists of individuals between 24 and 65 years old, not living in the parental home, who have not been divorced, who are observed in at least two waves and who are not living with any child under 18 years of age. In Columns 2 and 5 the sample consists of individuals between 24 and 45 years old, not living in the parental home, who have not been divorced, and who are observed in at least two waves. In columns 3 and 6 the sample consists of individuals between 24 and 65 years old, not living in the parental home, who have not been divorced, and who are observed in at least two waves. We consider singles (i.e., single individuals not living in the parental home), marrieds (i.e., individuals who are legally married) and marrying (i.e. individuals who transition from single to legally married). Housework is reported in hours per week as the answer to the question "About how much time do you spend on housework in an average week? I mean time spent cooking, cleaning, and doing other work around the house?", in PSID, "About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?", in UKHLS, and "How much time would you spend on housework, such as preparing meals, washing dishes, cleaning house, washing clothes, ironing and sewing, in a typical week?" (variable lshw), in HILDA. The regressions of housework on a dummy for living with a partner (cohabiting or being married). Controls include a quadratic on age, education at age 25 in years, an interaction term of age and years of education, predicted wages, a logarithm in the number of children, hours of paid work, and number of household rooms. Percentage explained by controls obtained as the difference between the OLS coefficient without controls and the OLS coefficient with controls, divided by the OLS coefficient without controls; percentage explained by FE obtained as the difference between the OLS coefficient with controls and the FE coefficient, divided by the OLS coefficient with controls. In both cases we denote >100% when the formula yields a number greater than 100%. Standard errors in brackets. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 9. Housework, Marriage and Egalitarian Attitudes

	Women		Men	
	(1) Specif. 1	(2) Specif. 2	(3) Specif. 1	(4) Specif. 2
Panel A: BHPS-UKHLS				
Egalitarian attitudes dummy	-8.25*** (0.52)	-1.13*** (0.20)	0.37*** (0.11)	0.86*** (0.11)
Other controls	No	Yes	No	Yes
R-squared	0.090	0.889	0.005	0.120
Observations	2568	2568	2548	2548
Panel B: HILDA				
Egalitarian attitudes dummy	-3.99*** (0.19)	-1.12*** (0.15)	0.87*** (0.08)	0.66*** (0.08)
Other controls	No	Yes	No	Yes
R-squared	0.103	0.500	0.031	0.132
Observations	3950	3950	3845	3845

Notes: Data comes from the 1991-2015 Harmonized BHPS-UKHLS and the 2002-2016 HILDA. Sample is women (men) between 24 and 65 years old, not living in the parental home, who have not been divorced, who responded to family attitudes questions in at least one of the waves, and who are observed in at least two waves. We consider singles (i.e., single individuals not living in the parental home), marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting) and marrying (i.e. individuals who transition from single to married). The dependent variables are predicted individual fixed effects from a fixed effect regression of housework on a dummy for living with a partner (cohabiting or being married), a quadratic on age, education at age 25 in years, an interaction term of age and years of education, a logarithm in the number of children, number of household rooms, weekly work hours and predicted wages. Specification 2 additionally controls for average values of age, education at age 25 in years, an interaction term of age and years of education, a logarithm in the number of children, number of household rooms, weekly work hours, and predicted wages. Standard errors in brackets. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 10: Changes of housework upon marriage by type of Housework

	(1)			(2)			(3)		
	Routine Housework			Non-routine Housework			Total Housework		
	Coefficient	Standard Error	% Explained	Coefficient	Standard Error	% Explained	Coefficient	Standard Error	% Explained
Panel A. Women									
OLS without controls	7.73	(0.38)***		0.48	(0.19)**		8.21	(0.50)***	
OLS with controls	3.49	(0.35)***	55%	0.06	(0.19)	88%	3.54	(0.45)***	57%
FE	1.05	(0.43)**	70%	0.03	(0.30)	50%	1.08	(0.60)*	69%
Chi2 test of equality of coeff. FE-OLS with controls	20.10 (0.000)			0.01 (0.937)			11.49 (0.000)		
Nobs.	4594			4594			4594		
Panel B. Men									
OLS without controls	-0.64	(0.20)***		2.36	(0.18)***		1.72	(0.32)***	
OLS with controls	-0.83	(0.21)***	-30%	1.91	(0.22)***	19%	1.08	(0.35)***	37%
FE	0.11	(0.27)	> 100%	1.39	(0.34)***	27%	1.49	(0.47)***	-38%
Chi2 test of equality of coeff. FE-OLS with controls	8.56 (0.003)			1.86 (0.172)			0.55 (0.457)		
Nobs.	4597			4597			4597		

Notes: Data comes from the 2002-2016 HILDA. Sample is women between 24 and 65 years old, not living in the parental home, who have not been divorced, and who are observed in at least two waves. We consider singles (i.e., single individuals not living in the parental home), marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting) and marrying (i.e. individuals who transition from single to married). All housework variables are reported in hours per week and constitute the answer to the question “How much time would you spend on each of the following activities in a typical week?”. The activity for Column 1 is “Housework, such as preparing meals, washing dishes, cleaning house, washing clothes, ironing and sewing”. In Column 2 it is “Outdoor tasks, including home maintenance (repairs, improvements, painting etc.), car maintenance or repairs and gardening”. The regressions of housework on a dummy for living with a partner (cohabiting or being married). Controls include a quadratic on age, education at age 25 in years, an interaction term of age and years of education, predicted wages, a logarithm in the number of children, hours of paid work, and number of household rooms. Percentage explained by controls obtained as the difference between the OLS coefficient without controls and the OLS coefficient with controls, divided by the OLS coefficient without controls; percentage explained by FE obtained as the difference between the OLS coefficient with controls and the FE coefficient, divided by the OLS coefficient with controls. In both cases we denote >100% when the formula yields a number greater than 100%. Standard errors in brackets. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Appendix A: MTUS

Table A1 Survey design

Country	Year	Survey coverage	Diary days	Time interval	Mode of data collection	Number of activities	Original sample size
Austria	1992	Main collection in March and September 1992, some diaries from February, April through August, and October 1992	1-day	15 min.	Self- completion	202	25,233 diaries
Canadá	1998	January - December 1998	1-day	Free	Recall by telephone	178	10,726 diaries
France	1998	January - December 1998	1-day	10 min.	Self- completion	139	15,441 diaries
Germany	2001	April 2001-March 2002	3-day	10 min.	Self- completion	271	35,813 diaries
Italy	2002	April 2002-March 2003	1-day	10 min.	Self- completion	96	55,773 diaries
Norway	2000-01	February 2000's - February 2001	2-day	10 min.	Self- completion	122	6,628 diaries
Spain	2002-03	October 2002-October 2003	1-day	10 min.	Self- completion	198	46,774 diaries
The United Kingdom	2000-01	June 2000's - August 2001	2-day	10 min.	Self- completion	265	20,980 diaries
The United States	2003-08	Whole years of 2003, 2004, 2005, 2006, 2007, and 2008	1-day	Free	Recall by telephone	564	85,177 diaries

We restrict the sample to individuals who had time diaries that added up to a complete day (i.e., 1440 min). All surveys include sample weights to ensure each day of the week and each survey are uniformly represented.

Source: Multinational Time Use Study (MTUS, www.timeuse.org) version 5.8 release 5 for Austria, France, Spain, UK, and US, and version 5.53 for Canada, Germany, Italy, and Norway..

Table A2 Coding of Housework Activities

Activity	MTUS activity code	Type	Definition
Cooking, washing up	AV6	Routine	Food preparation, baking, freezing foods, making jams, pickles, preserves, drying herbs, washing up, putting away dishes, ,making a cup of tea, coffee, etc., and setting the table
Household upkeep	AV7	Routine	Washing clothes, hanging washing out to dry, bringing it in, ironing clothes, making, changing beds, dusting, hovering, vacuum cleaning, general tidying, outdoor cleaning, other manual domestic work, housework elsewhere unspecified, and putting shopping away. It also includes all ``sundry\` or ``other\` house/domestic work variables
Odd jobs	AV8	Non-routine	Repair, upkeep of clothes, heat and water supply upkeep, DIY, decorating, household repairs, vehicle maintenance, car washing, etc., home paperwork (not computer), pet care, care of houseplants, (other) tasks in and around the home (unspecified), feeding and food preparation for dependent adults, washing, toilet needs of dependent adults, shopping for others, fetching/carrying for other, other care of adults, doing housework for someone else (unpaid), care of adults (unspecified), service for animals (e.g., animals to vet), fetching, picking up, dropping off, and home paperwork on computer, obtaining medical care for household adults and self administered medical care and medical care administered to (by respondent) other household adults, unpaid help to others (i.e. house cleaning; farm help; assistance in correspondence, transportation, etc).
Gardening	AV9	Non-routine	Gardening and any original variables which combine “gardening” and “animal care”
Shopping	AV10	Routine	Everyday shopping, shopping unspecified, shopping for durable goods, services for upkeep of possessions, money services, attending jumble sales, bazaars, etc., video rental or return, other service organizations or use (e.g. travel agent), and all activities where a ``maintenance service\` is used (i.e. filling up car at the gas station, taking clothes to the cleaners or laundry, etc). It also includes all activities labelled ``other\` or ``uncodeable\` services, and ``errands\` and ``running errands”).
Domestic travel	AV12	Routine	Accompanying adult or child (i.e. to doctor), shopping/services (travel to/from), care of others (travel), posting a letter, and all travel related to household, care of children, shopping, personal services/care, etc.

Source: MTUS 1992-2008.

Table A3 MTUS Summary statistics of dependent variables

	Housework	Housework zeros	Routine housework	Routine housework zeros	Non-routine housework	Non-routine housework zeros	Observations
Women							
Austria	38.68 (0.22)	0.01 (0.00)	27.49 (0.16)	0.02 (0.00)	11.18 (0.14)	0.24 (0.00)	7836
Canada	28.05 (0.34)	0.02 (0.00)	16.74 (0.25)	0.06 (0.00)	11.31 (0.22)	0.27 (0.01)	3669
France	29.33 (0.28)	0.02 (0.00)	21.20 (0.21)	0.03 (0.00)	8.13 (0.18)	0.28 (0.01)	5006
Germany	30.03 (0.18)	0.01 (0.00)	17.99 (0.13)	0.04 (0.00)	12.04 (0.12)	0.17 (0.00)	11847
Italy	40.87 (0.17)	0.01 (0.00)	30.30 (0.13)	0.02 (0.00)	10.57 (0.11)	0.23 (0.00)	13456
Norway	25.95 (0.40)	0.01 (0.00)	17.43 (0.30)	0.02 (0.01)	8.52 (0.26)	0.22 (0.01)	2865
Spain	37.59 (0.17)	0.02 (0.00)	27.80 (0.13)	0.03 (0.00)	9.78 (0.11)	0.28 (0.00)	13052
UK	29.30 (0.25)	0.02 (0.00)	18.33 (0.19)	0.04 (0.00)	10.97 (0.16)	0.22 (0.01)	5974
US	26.74 (0.09)	0.03 (0.00)	12.93 (0.07)	0.17 (0.00)	13.80 (0.06)	0.16 (0.00)	46480
Men							
Austria	13.32 (0.22)	0.32 (0.00)	3.28 (0.11)	0.64 (0.01)	10.05 (0.18)	0.44 (0.01)	6363
Canada	17.01 (0.31)	0.13 (0.01)	6.21 (0.15)	0.27 (0.01)	10.80 (0.26)	0.37 (0.01)	3208
France	12.57 (0.26)	0.22 (0.01)	4.55 (0.13)	0.44 (0.01)	8.01 (0.22)	0.38 (0.01)	4538
Germany	17.68 (0.18)	0.10 (0.00)	5.63 (0.09)	0.28 (0.00)	12.06 (0.15)	0.26 (0.00)	9656
Italy	12.68 (0.16)	0.28 (0.00)	4.03 (0.08)	0.50 (0.00)	8.64 (0.14)	0.43 (0.00)	11934
Norway	18.45 (0.36)	0.07 (0.01)	8.14 (0.18)	0.15 (0.01)	10.31 (0.31)	0.28 (0.01)	2381
Spain	12.45 (0.17)	0.27 (0.00)	4.96 (0.08)	0.43 (0.00)	7.49 (0.14)	0.47 (0.00)	11049
UK	16.69 (0.24)	0.11 (0.01)	6.73 (0.12)	0.22 (0.01)	9.96 (0.20)	0.34 (0.01)	4962
US	17.59 (0.09)	0.11 (0.00)	5.14 (0.04)	0.47 (0.00)	12.45 (0.07)	0.21 (0.00)	36505

Source: MTUS 1992-2008.

Table A4 Construction of Variables in MTUS

Variable	Variable definition	Derived from MTUS variable(s)
Housework	Average weekly hours of housework.	AV6, AV7, AV8, AV9, AV10, AV12
Routine housework	Average weekly hours of routine housework.	AV6, AV7, AV10, AV12
Non-routine housework	Average weekly hours of non-routine housework.	AV8, AV9
Married	Dummy variable equal to 1 if currently married or cohabiting , and 0 single, divorced or widowed	CIVSTAT, CPHOME
Cohabiting	Dummy variable equal to 1 if currently cohabiting, and 0 single, divorced, widowed, or legally married	COHAB, CIVSTAT, CPHOME
Not in parental home	Dummy variable equal to 1 if mother and father not in respondents household, and 0 otherwise	CPHOME
Age	Age at date of interview (years)	AGE
Primary	Dummy variable equal to 1 if education level of respondent (ISCED) is <3	EDTRY, EDCAT
Secondary	Dummy variable equal to 1 if education level of respondent (ISCED) is 3 or 4.	EDTRY, EDCAT
More than secondary	Dummy variable equal to 1 if education level of respondent (ISCED) is >4.	EDTRY, EDCAT
Number of children	Number of under 18 in the household	NCHILD
Paid work	Average weekly hours of paid work.	AV1, AV2, AV3, AV5

Source: MTUS 1992-2008.

Table A.5 MTUS Summary statistics of independent variables

	Married	Cohabiting	Paid work	Edulevel1	Edulevel2	Edulevel3	No. Of children	Age	Observations
Women									
Austria	0.81 (0.00)	0.03 (0.00)	17.05 (0.31)	0.72 (0.00)	0.19 (0.01)	0.09 (0.00)	0.82 (0.01)	43.17 (0.12)	7836
Canada	0.76 (0.01)	0.09 (0.00)	25.87 (0.49)	0.19 (0.01)	0.22 (0.01)	0.59 (0.01)	0.88 (0.02)	42.68 (0.18)	3669
France	0.81 (0.01)	0.13 (0.00)	21.58 (0.40)	0.17 (0.01)	0.47 (0.01)	0.36 (0.01)	0.91 (0.02)	43.50 (0.15)	5006
Germany	0.75 (0.00)	0.04 (0.00)	17.80 (0.25)	0.12 (0.00)	0.62 (0.00)	0.26 (0.00)	0.81 (0.01)	44.92 (0.09)	11847
Italy	0.84 (0.00)	0.03 (0.00)	17.06 (0.24)	0.23 (0.00)	0.68 (0.00)	0.09 (0.00)	0.67 (0.01)	45.35 (0.09)	13456
Norway	0.81 (0.01)	0.16 (0.00)	22.63 (0.58)	0.14 (0.01)	0.53 (0.01)	0.33 (0.01)	1.05 (0.02)	43.22 (0.21)	2865
Spain	0.86 (0.00)	0.04 (0.00)	16.90 (0.24)	0.28 (0.00)	0.52 (0.00)	0.20 (0.00)	0.78 (0.01)	45.31 (0.09)	13052
UK	0.77 (0.01)	0.09 (0.00)	21.46 (0.36)	0.39 (0.00)	0.34 (0.01)	0.28 (0.01)	0.94 (0.01)	43.39 (0.13)	5974
US	0.63 (0.00)	0.03 (0.00)	26.53 (0.14)	0.09 (0.00)	0.26 (0.00)	0.65 (0.00)	1.07 (0.01)	44.01 (0.05)	46480
Men									
Austria	0.89 (0.00)	0.03 (0.00)	37.90 (0.44)	0.76 (0.00)	0.12 (0.01)	0.12 (0.01)	0.88 (0.01)	44.21 (0.13)	6363
Canada	0.79 (0.01)	0.12 (0.00)	41.35 (0.62)	0.20 (0.01)	0.20 (0.01)	0.60 (0.01)	0.85 (0.02)	42.58 (0.19)	3208
France	0.85 (0.01)	0.16 (0.00)	36.08 (0.52)	0.16 (0.01)	0.50 (0.01)	0.34 (0.01)	0.90 (0.02)	43.85 (0.16)	4538
Germany	0.88 (0.00)	0.05 (0.00)	33.84 (0.36)	0.06 (0.00)	0.47 (0.00)	0.46 (0.00)	0.80 (0.01)	46.62 (0.11)	9656
Italy	0.87 (0.00)	0.03 (0.00)	39.75 (0.32)	0.17 (0.00)	0.73 (0.00)	0.10 (0.00)	0.70 (0.01)	46.13 (0.10)	11934
Norway	0.82 (0.01)	0.19 (0.00)	36.79 (0.72)	0.11 (0.01)	0.52 (0.01)	0.37 (0.01)	0.98 (0.02)	43.02 (0.22)	2381
Spain	0.90 (0.00)	0.04 (0.00)	39.66 (0.34)	0.23 (0.00)	0.53 (0.00)	0.24 (0.00)	0.81 (0.01)	46.01 (0.10)	11049
UK	0.85 (0.01)	0.11 (0.00)	37.50 (0.47)	0.35 (0.00)	0.37 (0.01)	0.29 (0.01)	0.87 (0.01)	43.80 (0.14)	4962
US	0.70 (0.00)	0.04 (0.00)	39.62 (0.18)	0.09 (0.00)	0.27 (0.00)	0.64 (0.00)	0.98 (0.01)	43.91 (0.05)	36505

Source: MTUS 1992-2008.

Table A.6: Housework and Marriage: Full Estimation Results

	(1) All countries	(2) Austria	(3) Canada	(4) France	(5) Germany	(6) Italy	(7) Norway	(8) Spain	(9) UK	(10) US
Panel A. Women										
Married dummy	5.357*** (0.636)	5.838*** (0.523)	2.619*** (0.640)	3.912*** (0.467)	2.950*** (0.316)	6.650*** (0.362)	2.870*** (0.649)	5.061*** (0.410)	2.510*** (0.447)	4.120*** (0.170)
Age	1.427*** (0.162)	1.724*** (0.156)	1.230*** (0.224)	1.864*** (0.144)	1.484*** (0.136)	1.992*** (0.114)	0.932*** (0.203)	2.009*** (0.123)	1.190*** (0.153)	1.101*** (0.064)
Age squared	-0.014*** (0.002)	-0.018*** (0.002)	-0.013*** (0.003)	-0.019*** (0.002)	-0.014*** (0.001)	-0.019*** (0.001)	-0.008*** (0.002)	-0.020*** (0.001)	-0.011*** (0.002)	-0.010*** (0.001)
Education level ISCED 1-2	2.516* (1.177)	3.614*** (0.523)	0.372 (0.857)	0.321 (0.512)	-1.095** (0.426)	3.325*** (0.367)	-0.278 (0.770)	1.690*** (0.344)	-0.487 (0.453)	-0.484 (0.310)
Education level ISCED 5-6	-3.009* (1.588)	-2.952*** (0.801)	-1.445** (0.681)	-2.626*** (0.408)	-0.343 (0.317)	-4.794*** (0.469)	-1.044* (0.560)	-5.922*** (0.373)	-1.966*** (0.479)	0.035 (0.187)
No. of children	0.790*** (0.161)	1.504*** (0.217)	1.925*** (0.286)	0.700*** (0.190)	1.422*** (0.180)	2.117*** (0.163)	1.413*** (0.281)	0.670*** (0.175)	1.347*** (0.187)	1.144*** (0.080)
Hours of paidwork	-0.383*** (0.018)	-0.386*** (0.009)	-0.342*** (0.009)	-0.371*** (0.007)	-0.356*** (0.006)	-0.476*** (0.005)	-0.303*** (0.009)	-0.401*** (0.006)	-0.360*** (0.007)	-0.351*** (0.003)
Constant	3.039 (1.843)	0.564 (3.307)	7.569 (4.713)	-7.367** (3.049)	-2.221 (3.002)	-4.615* (2.480)	5.540 (4.307)	-4.988* (2.711)	6.362** (3.209)	5.539*** (1.371)
Observations	110,185	7,836	3,669	5,006	11,847	13,456	2,865	13,052	5,974	46,480
R-squared	0.352	0.320	0.319	0.454	0.305	0.473	0.320	0.395	0.345	0.304
Panel B. Men										
Married dummy	0.128 (0.669)	-2.428*** (0.610)	1.993*** (0.721)	-2.710*** (0.518)	1.331*** (0.458)	-0.460 (0.367)	2.545*** (0.859)	-0.612 (0.444)	1.419** (0.580)	1.995*** (0.205)
Age	0.332** (0.113)	-0.225 (0.157)	0.952*** (0.232)	0.127 (0.148)	0.198 (0.153)	0.248** (0.114)	0.566** (0.251)	0.432*** (0.121)	0.702*** (0.166)	0.641*** (0.070)
Age squared	-0.003* (0.001)	0.004** (0.002)	-0.010*** (0.003)	-0.000 (0.002)	-0.002 (0.002)	-0.001 (0.001)	-0.005* (0.003)	-0.005*** (0.001)	-0.006*** (0.002)	-0.006*** (0.001)
Education level ISCED 1-2	-1.526* (0.679)	0.243 (0.573)	-1.497* (0.854)	-0.518 (0.499)	-1.235** (0.595)	-1.229*** (0.345)	-0.611 (1.008)	-1.309*** (0.326)	-1.301*** (0.473)	-2.773*** (0.323)
Education level ISCED 5-6	1.953*** (0.561)	-0.498 (0.744)	0.313 (0.692)	-0.121 (0.383)	-0.702** (0.292)	-1.658*** (0.405)	0.571 (0.637)	-0.020 (0.312)	-0.791 (0.488)	0.845*** (0.195)
No. of children	0.489*** (0.092)	0.025 (0.195)	0.770*** (0.287)	-0.017 (0.182)	-0.118 (0.185)	0.039 (0.146)	0.654** (0.326)	-0.342** (0.158)	0.191 (0.201)	0.283*** (0.087)
Hours of paidwork	-0.272*** (0.008)	-0.236*** (0.007)	-0.284*** (0.008)	-0.218*** (0.006)	-0.309*** (0.005)	-0.267*** (0.004)	-0.278*** (0.010)	-0.233*** (0.004)	-0.277*** (0.006)	-0.281*** (0.003)
Constant	16.978*** (2.103)	27.810*** (3.363)	5.375 (4.882)	18.770*** (3.115)	23.207*** (3.452)	15.803*** (2.493)	12.592** (5.146)	14.791*** (2.642)	9.422*** (3.464)	11.961*** (1.496)
Observations	90,596	6,363	3,208	4,538	9,656	11,934	2,381	11,049	4,962	36,505
R-squared	0.270	0.244	0.308	0.300	0.327	0.337	0.287	0.248	0.334	0.267

Notes: Data source is the Multinational Time Use Study (MTUS). Countries are ordered in alphabetical order. The sample consists of individuals between 24 and 65 years old. We consider singles (i.e., single individuals not living in the parental home) and marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting). The dependent variable is total housework hours per week. Each column in each panel comes from a different regression. Controls for day of the week additionally included. Proposed MTUS weights used. Standard errors in brackets. Robust errors clustered at the country level in column 1. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Appendix B: Validating Stylized Survey Time Use Measures with Time Use Diary

In order to assure comparability with the cross-sectional results from the MTUS in Section 1, we first provide a validation exercise of the routine housework measures in the PSID and BHPS-UKHLS derived from stylized questions with those from the time use diary in MTUS. The validation exercise compares the regression coefficients from estimating Equation (1) in Columns 2 and 5 of Table 2, to the regression coefficients on a similar sample of individuals from the PSID and the BHPS-UKHLS. In particular, we use the 2003 to 2007 American Time Use Study from MTUS and the 2003 to 2007 waves from the PSID for the US, and the 2001 United Kingdom Time Use Survey from MTUS and the 2001 wave from the BHPS-UKHLS for the UK. As in the cross-sectional analysis presented in Section 2, we restrict the sample to respondents between 24 and 65 years old who are no longer living with their parents, and exclude retired individuals and students in order to net out life-cycle effects that are closely related to time-use patterns. This comparison cannot be conducted for Australia, as the Australian time diary data is not available to researchers outside Australia.

We use the definition of routine housework from the PSID and the BHPS-UKHLS as dependent variable. There is a straightforward relationship between the activities recorded in time use diaries as “routine housework” and the housework measures derived from the stylized-type questions in the longitudinal surveys (see also Hill (1985), and Robinson (1985) for similar comparisons). In particular, stylized questions in the three longitudinal surveys specifically ask about the activities recorded and categorized in section 1 as routine housework, such as cooking, cleaning, washing, ironing. These stylized questions clearly refer to a narrow definition of routine, female-oriented, housework.

The results from the validation exercise are presented in Table B.1, which shows the estimates from Equation (1) on cross-sections from PSID and BHPS-UKHLS, and similar cross-sections from the corresponding MTUS. The coefficients on marriage are very similar when using the stylized questions about housework and when using the time diary to measure housework, indicating that the two types of housework measures are comparable in terms of reliability. This is particularly true for women. We find that married women devote about 3.14 more hours per week to housework than single women when using the PSID sample, and 4.01 more hours per week to housework when using the US-MTUS definition of housework. In the UK, results from the BHPS-UKHLS sample yield 2.81 more hours of housework per week for married women with respect to single women, whereas results using the UK-MTUS sample yield 2.85 more hours of housework per week.

The coefficients on marriage for men are systematically higher (in absolute value) when using the definition of housework derived from stylized questions in the longitudinal data than when using

the time diary surveys from MTUS. Whereas married men spend 0.58 hours less of housework than single men in the US according to estimates using the MTUS, they do 1.14 hours a week less of housework according to the estimates using the PSID. Similarly, whereas married men spend 1.50 hours less of housework than single men in the UK according to estimates using the MTUS, they do 2.15 hours a week less of housework according to the estimates using the Harmonized BHPS-UKHLS. Given that there is no panel diary survey that would allow us to undertake the analysis aimed in this section, these panel data sets seem the best suited data for the task at hand.

References to Appendix B

- Hill, M. 1985. "Patterns of Time Use," In: Juster, T., Stafford, J., (Eds.) *Time, goods, and well-being*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Robinson, J.P., 1985. "The validity and reliability of diaries versus alternative time use measures." In: Juster, T., Stafford, J., (Eds.) *Time, goods, and well-being*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.

Table B1. Validating Stylized Survey Time Use Measures with Time Use Diary

	MTUS-PSID		MTUS-BHPS	
	(1) MTUS	(2) PSID 2003-2007	(3) MTUS	(4) UKHLS year 2001
Panel A. Women				
Married	3.14*** (0.13)	4.01*** (0.25)	2.81*** (0.35)	2.85*** (0.45)
Age	0.53*** (0.05)	-0.02 (0.09)	0.86*** (0.12)	0.34*** (0.08)
Age^2	-0.01*** (0.00)	0.00* (0.00)	-0.01*** (0.00)	-0.00*** (0.00)
Number of Children	1.53*** (0.06)	2.61*** (0.14)	1.84*** (0.15)	2.79*** (0.25)
Hours of paid work	-0.17*** (0.00)	-0.16*** (0.01)	-0.20*** (0.01)	-0.15*** (0.01)
Constant	2.34** (1.03)	12.20*** (1.83)	-1.90 (2.51)	6.00*** (1.74)
R-squared	46,480	9,935	5,974	2,824
Observations	0.197	0.173	0.241	0.214
Panel B. Men				
Married	-0.58*** (0.12)	-1.14*** (0.24)	-1.50*** (0.32)	-2.15*** (0.40)
Age	0.28*** (0.04)	0.13** (0.06)	0.27*** (0.09)	-0.04 (0.04)
Age^2	-0.00*** (0.00)	-0.00* (0.00)	-0.00** (0.00)	0.00 (0.00)
Number of Children	0.46*** (0.05)	0.54*** (0.08)	0.34*** (0.11)	0.38** (0.16)
Hours of paid work	-0.08*** (0.00)	-0.06*** (0.01)	-0.09*** (0.00)	-0.07*** (0.01)
Constant	2.55*** (0.85)	7.16*** (1.26)	3.92** (1.93)	10.60*** (0.95)
R-squared	36,505	9,192	4,962	2,425
Observations	0.0910	0.0259	0.151	0.0875

Notes: Each column presents regression coefficients as in Table 1 and 2 in the text. As in the analysis presented in Tables 1 and 2 we restrict the sample to respondents between 24 and 65 years old, and exclude retired individuals and students in order to net out life-cycle effects that are closely related to time-use patterns. We also restrict the sample to individuals who are no longer living with their parents. The dependent variable is routine housework and is measured in hours per week. Routine housework is defined as the time spent in cooking and household upkeep in columns 1, 2, 5, and 6 (codes Av6 and av7 in MTUS). In columns 3, 4, 7 and 8 routine housework is the response to the question "About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?". Specifications in columns 2, 4, 6, and 8 also include education dummies (secondary education, and post-secondary education or more, less than secondary education being the reference category). Source: MTUS (2000-2001, 2003-2007), Harmonized BHPS-UKHLS (2001), and PSID (2003-2007).

Appendix C: PSID, UKHLS, and HILDA

Table C.1 Variable Definitions

Variable	Variable definition	Derived from variable(s)
Panel A. PSID		
Housework	Average weekly hours of housework.	HHOURS_HEAD, HHOURS_WIFE
Married	Dummy variable equal to 1 if currently married or cohabiting , and 0 single, divorced or widowed	MARST
Cohabiting	Dummy variable equal to 1 if currently married or cohabiting , and 0 single, divorced or widowed	MARST, RELATIONSHIP TO HEAD
Always single	Dummy variable equal to 1 if single, divorced, or widowed during all waves , and 0 otherwise	MARST
Always married	Dummy variable equal to 1 if married during all waves , and 0 otherwise	MARST
Transition into marriage-single	Dummy variable equal to 1 for first transition into marriage from single, and 0 otherwise	MARST
Age	Age at date of interview (years)	AGE_HEAD, AGE_WIFE
Years of education	Years of schooling	EDUCATION
Number of children	Number of under 18 in the household	NCHILD
Number of rooms	Number of rooms in the respondent's house	ROOMS
Paid work	Average weekly hours of market work	WHOURS_HEAD, WHOURS_WIFE
Wages	Predicted average hourly earnings	WAGE_HEAD, WAGE_WIFE
Dwelling type	Categories for detached, semidetached, flat, and mobile home	TYPE DU
Ownership status	Categories for own, rent, or neither	OWN/RENT OR WHAT
Panel B. UKHLS		
Housework	Average weekly hours of housework.	HOWLNG
Married	Dummy variable equal to 1 if currently married or cohabiting , and 0 single, divorced or widowed	MASTAT
Not in parental home	Dummy variable equal to 1 if mother and father not in respondents household, and 0 otherwise	HGFNO, HGMNO
Cohabiting	Dummy variable equal to 1 if currently married or cohabiting , and 0 single, divorced or widowed	MASTAT
Always single	Dummy variable equal to 1 if single, divorced, or widowed during all waves , and 0 otherwise	MASTAT
Always married	Dummy variable equal to 1 if married during all waves , and 0 otherwise	MASTAT
Transition into marriage-single	Dummy variable equal to 1 for first transition into marriage from single, and 0 otherwise	MASTAT
Age	Age at date of interview (years)	AGE
Years of education	Years of schooling with the following translation: 18 for Higher Degree, 16 for First Degree, 15 for Further Education, 13 for A-levels, 11 for O-levels and other secondary education, 10 for other or no qualification.	QFEDHI
Number of children	Number of under 18 in the household	NKIDS
Number of rooms	Number of rooms in the respondent's house	HSROOM
Paid work	Average weekly hours of market work	JBHRS, JBOT
Wages	Predicted average hourly earnings	PAYGU_DV, JBHRS, JBOTPD
Dwelling type	Categories for detached, semidetached, flat, and other	HSTYPE
Ownership status	Categories for own, rent, or neither	TENURE
Panel C. HILDA		
Housework	Average weekly hours of housework.	LSHW
Married	Dummy variable equal to 1 if currently married or cohabiting , and 0 single, divorced or widowed	MRCURR
Not in parental home	Dummy variable equal to 1 if mother and father not in respondents household, and 0 otherwise	HHMID HHFID

Cohabiting	Dummy variable equal to 1 if currently married or cohabiting , and 0 single, divorced or widowed	MRCURR
Always single	Dummy variable equal to 1 if single, divorced, or widowed during all waves , and 0 otherwise	MRCURR
Always married	Dummy variable equal to 1 if married during all waves , and 0 otherwise	MRCURR
Transition into marriage-single	Dummy variable equal to 1 for first transition into marriage from single, and 0 otherwise	MRCURR
Age	Age at date of interview (years)	HGAGE
Years of education	Years of schooling with the following translation: 18 for Postgrad - masters or doctorate, 17 for Grad diploma, grad certificate, 16 for Bachelor or honours, 14 for Adv diploma, diploma, 13 for Cert III or IV, 12 for Year 12, 11 for Year 11 or equivalent, 10 for Year 10 or equivalent / Junior Seco, 9 for Year 9 or equivalent, 8 for Year 8 or equivalent, 7 for Year 7 or equivalent (NSW, VIC, TAS), O-levels and other secondary education, 6 for Primary school.	EDHIGH EDHISTS
Number of children	Number of under 18 in the household	HGAGE
Number of rooms	Number of rooms in the respondent's house	HSBEDRM
Paid work	Average weekly hours of market work	LSEMP
Wages	Predicted average hourly earnings	WSCEI, JBHRUC, ESRD
Dwelling type	Categories for detached, semidetached, flat, and other	DODTYPE
Ownership status	Categories for own, rent, or neither	HSTENR

Source: PSID (1992-2015), Harmonized BHPS-UKHLS (1991-2015), and HILDA (2002-2016).

Table C.2. Summary Statistics Source: PSID (1992-2015), BHPS-UKHLS (1991-2015), and HILDA (2002-2016).

	Housework	Married	Cohabiting	Age	Years of education	If children under 5	If children	Number of children	Number of house rooms	Paid work	Wages	Observed
Panel A: Women												
PSID	17.53 (0.08)	0.92 (0.00)	0.03 (0.00)	41.86 (0.06)	13.75 (0.01)	0.24 (0.00)	0.52 (0.00)	0.54 (0.00)	25.44 (0.11)	18.51 (0.04)	6.74 (0.01)	27290
UKHLS	17.03 (0.06)	0.93 (0.00)	0.12 (0.00)	43.39 (0.06)	12.55 (0.01)	0.16 (0.00)	0.43 (0.00)	0.42 (0.00)	22.50 (0.10)	8.58 (0.02)	4.69 (0.01)	36177
HILDA	17.26 (0.06)	0.90 (0.00)	0.15 (0.00)	43.87 (0.05)	13.14 (0.01)	0.22 (0.00)	0.48 (0.00)	0.50 (0.00)	22.79 (0.09)	27.84 (0.03)	3.38 (0.00)	39220
Panel B: Men												
PSID	7.07 (0.04)	0.93 (0.00)	0.03 (0.00)	42.56 (0.06)	13.78 (0.01)	0.25 (0.00)	0.53 (0.00)	0.55 (0.00)	39.34 (0.10)	26.27 (0.06)	6.68 (0.01)	28243
UKHLS	5.53 (0.03)	0.92 (0.00)	0.14 (0.00)	43.90 (0.06)	12.79 (0.01)	0.16 (0.00)	0.43 (0.00)	0.43 (0.00)	38.76 (0.10)	6.86 (0.01)	4.64 (0.01)	34181
HILDA	6.28 (0.03)	0.89 (0.00)	0.16 (0.00)	44.73 (0.06)	13.32 (0.01)	0.22 (0.00)	0.48 (0.00)	0.50 (0.00)	38.22 (0.10)	32.12 (0.04)	3.37 (0.01)	37489

Source: PSID (1992-2015), Harmonized BHPS-UKHLS (1991-2015), and HILDA (2002-2016).

Table C.3. Wage Equations

	(1) PSID	(2) UKHLS	(3) HILDA
Panel A. Women			
Age	0.59*** (0.10)	0.16*** (0.02)	0.19** (0.09)
Age squared	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)
Years of education	2.21*** (0.19)	0.28*** (0.02)	1.00*** (0.11)
Age*Years of education	-0.00 (0.00)	0.02*** (0.00)	0.02*** (0.00)
Constant	-33.56*** (3.13)	-6.76*** (0.52)	-4.29* (2.46)
Unrestricted obs.	41120	57982	50945
Selection equation			
Mother employed when respondent was 14		-0.23*** (0.01)	0.24*** (0.01)
Constant		0.66*** (0.01)	0.39*** (0.01)
Total obs.	57411	87641	76214
Panel B. Men			
Age	0.55*** (0.13)	0.35*** (0.02)	0.32*** (0.07)
Age squared	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)
Years of education	0.58** (0.24)	0.09*** (0.02)	1.03*** (0.09)
Age*Years of education	0.06*** (0.01)	0.01*** (0.00)	0.03*** (0.00)
_cons	-27.14*** (4.04)	-8.01*** (0.49)	-11.30*** (1.88)
Unrestricted obs.	45207	51549	53494
Selection equation			
Father self-employed when respondent was 14		-0.08*** (0.01)	0.22*** (0.01)
_cons		0.43*** (0.01)	0.75*** (0.01)
Total obs.	52596	64770	65238

Notes: Data comes from the 1985-2015 PSID. Sample is women (men) between 24 and 65 years old, not living in the parental home, who have not been divorced, and who are observed in at least two waves. We consider singles (i.e., single individuals not living in the parental home), marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting) and marrying (i.e. individuals who transition from single to married). Housework is reported in hours per week as the answer to the question "About how much time do you spend on housework in an average week? I mean time spent cooking, cleaning, and doing other work around the house?". The regressions of housework on a dummy for living with a partner (cohabiting or being married) also control for a quadratic on age, education at age 25 in years, an interaction term of age and years of education, predicted wages, a logarithm in the number of children, hours of paid work, and number of household rooms. Percentage explained by controls obtained as the difference between the OLS coefficient without controls and the OLS coefficient with controls, divided by the OLS coefficient without controls; percentage explained by FE obtained as the difference between the OLS coefficient with controls and the FE coefficient, divided by the OLS coefficient with controls. In both cases we denote >100% when the formula yields a number greater than 100%. Standard errors in brackets. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table C.4. Attitudinal Variable Definitions and Summary Statistics

Attitude Statement	Female			Male			Min	Max	Variable Name
	Obs.	Mean	Std.Dev	Obs.	Mean	Std.Dev			
Panel A. UKHLS									
Pre-school child suffers if mother works	13,047	3.11	1.06	12,461	2.77	1.03	1	5	OPFAMA
Family suffers if woman works full time	13,047	3.08	1.08	12,461	2.99	1.03	1	5	OPFAMB
Woman and family happier if she works	13,047	3.15	0.73	12,461	3.20	0.75	1	5	OPFAMC
Husband and wife should both contribute	13,047	2.65	0.88	12,461	2.68	0.89	1	5	OPFAMD
Full time job makes women independent	13,047	2.99	0.97	12,461	2.89	0.91	1	5	OPFAME
Husband should earn, wife stay at home	13,047	3.75	0.96	12,461	3.52	0.98	1	5	OPFAMF
Children need father as much as mother	13,047	1.92	0.78	12,461	1.84	0.71	1	5	OPFAMG
Employers should help with childcare	13,047	2.08	0.86	12,461	2.21	0.88	1	5	OPFAMH
Panel B. HILDA									
Many working mothers seem to care more about being successful at work	7,440	3.12	1.61	7,102	3.45	1.48	1	7	ATWKWMS
Many working fathers seem to care more about being successful at work	7,440	3.57	1.66	7,102	3.82	1.51	1	7	ATWKWFS
If both partners in a couple work, they should share equally	7,440	6.17	1.12	7,102	5.70	1.26	1	7	ATWKSEH
Whatever career a woman may have, her most important role in life is caring	7,440	5.41	1.72	7,102	5.07	1.66	1	7	ATWKWRL
Whatever career a man may have, his most important role in life is caring	7,440	5.32	1.71	7,102	5.14	1.62	1	7	ATWKMRL
Mothers who dont really need the money shouldnt work	7,440	3.21	1.87	7,102	3.50	1.79	1	7	ATWKMSW
Children do just as well if the mother earns the money	7,440	5.48	1.41	7,102	5.17	1.43	1	7	ATWKCDW
It is better for everyone involved if the man earns the money	7,440	3.01	1.82	7,102	3.35	1.74	1	7	ATWKBMW
As long as the care is good, it is fine for children under 3 years	7,440	3.15	1.81	7,102	3.14	1.69	1	7	ATWKADC
A working mother can establish just as good a relationship	7,440	4.71	1.76	7,102	4.18	1.73	1	7	ATWKWMR
A working father can establish just as good a relationship	7,440	4.90	1.63	7,102	4.42	1.65	1	7	ATWKWFR
A father should be as heavily involved in the care of his children	7,440	5.74	1.30	7,102	5.60	1.28	1	7	ATWKFHI
It is not good for a relationship if the woman earns more than the man	7,440	2.37	1.57	7,102	2.33	1.45	1	7	ATWKMMF
On the whole, men make better political leaders than women do	7,440	2.33	1.65	7,102	3.14	1.82	1	7	ATWKMPL
A pre-school child is likely to suffer if his/her mother works full-time	7,440	3.66	1.87	7,102	3.88	1.72	1	7	ATWKPSC
Children often suffer because their fathers concentrate too much	7,440	4.17	1.63	7,102	4.45	1.51	1	7	ATWKCS
If parents divorce it is usually better for the child to stay with the mother	7,440	3.69	1.63	7,102	3.42	1.60	1	7	ATWKDCM

Source: BHPS-UKHLS (1991-2015), and HILDA (2002-2016).

Table C.5. First Principal Component of Attitudinal Variables

Attitudes	(1) Females	(2) Males
Panel A. UKHLS		
Pre-school child suffers if mother works	-0.754	-0.732
Family suffers if woman works full time	-0.823	-0.817
Woman and family happier if she works	0.588	0.628
Husband and wife should both contribute	0.419	0.415
Full time job makes women independent	0.415	0.399
Husband should earn, wife stay at home	-0.696	-0.707
Children need father as much as mother	-0.167	-0.088
Employers should help with childcare	0.408	0.419
Proportion of explained variance	32.7	32.6
Panel B. HILDA		
Many working mothers seem to care more about being successful at work	-0.623	-0.601
Many working fathers seem to care more about being successful at work	-0.514	-0.485
If both partners in a couple work, they should share equally	0.060	0.018
Whatever career a woman may have, her most important role in life is caring	-0.454	-0.529
Whatever career a man may have, his most important role in life is caring	-0.412	-0.485
Mothers who don't really need the money shouldn't work	-0.635	-0.618
Children do just as well if the mother earns the money	0.462	0.414
It is better for everyone involved if the man earns the money	-0.712	-0.708
As long as the care is good, it is fine for children under 3 years	0.369	0.262
A working mother can establish just as good a relationship	0.618	0.534
A working father can establish just as good a relationship	0.519	0.391
A father should be as heavily involved in the care of his children	0.229	0.140
It is not good for a relationship if the woman earns more than the man	-0.553	-0.510
On the whole, men make better political leaders than women do	-0.512	-0.512
A pre-school child is likely to suffer if his/her mother works full-time	-0.676	-0.684
Children often suffer because their fathers concentrate too much	-0.509	-0.482
If parents divorce it is usually better for the child to stay with the mother	-0.506	-0.442
Proportion of explained variance	27.6	25.4

Notes: This table shows the average weights assigned to each variable for the first principal component in constructing women's and men's indices of gender role attitudes. The three highest factor loadings are shaded in grey. The last row also shows the proportion of variance attributable to the first principal component.

Source: BHPS-UKHLS (1991-2015), and HILDA (2002-2016).

Table C.6. Housework and marriage: Evidence from longitudinal data. PSID 1985-2015

	(1) Women			(2) Men		
	Coefficient	Standard Error	% Explained	Coefficient	Standard Error	% Explained
OLS without controls	10.15	(0.43)***		0.20	(0.25)	
OLS with controls	4.77	(0.41)***	53%	-0.28	(0.27)	> 100%
FE	2.16	(0.51)***	55%	0.69	(0.35)*	> 100%
Chi2 test of equality of coeff.	18.03 (0.000)			5.87 (0.015)		
N obs.	3920			4285		

Notes: Data comes from the 1985-2015 PSID. Sample is women (men) between 24 and 65 years old, not living in the parental home, who have not been divorced, and who are observed in at least two waves. We consider singles (i.e., single individuals not living in the parental home), marrieds (i.e., individuals who are in a partnership, either legally married or cohabiting) and marrying (i.e. individuals who transition from single to married). Housework is reported in hours per week as the answer to the question “About how much time do you spend on housework in an average week? I mean time spent cooking, cleaning, and doing other work around the house?”. The regressions of housework on a dummy for living with a partner (cohabiting or being married) also control for a quadratic on age, education at age 25 in years, an interaction term of age and years of education, predicted wages, a logarithm in the number of children, hours of paid work, and number of household rooms. Percentage explained by controls obtained as the difference between the OLS coefficient without controls and the OLS coefficient with controls, divided by the OLS coefficient without controls; percentage explained by FE obtained as the difference between the OLS coefficient with controls and the FE coefficient, divided by the OLS coefficient with controls. In both cases we denote >100% when the formula yields a number greater than 100%. Standard errors in brackets. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table C.7. Housework and marriage: Evidence from longitudinal data. Controlling for dwelling type and ownership.

	(1) Women			(2) Men		
	Coefficient	Standard Error	% Explained	Coefficient	Standard Error	% Explained
Panel A: PSID						
OLS without controls	9.55	(0.39)***		0.40	(0.25)	
OLS control group 1	4.66	(0.43)***	51%	-0.09	(0.28)	> 100%
OLS control group 2	4.37	(0.44)***	6%	-0.20	(0.28)	< -100%
FE	1.46	(0.61)**	67%	0.87	(0.40)**	> 100%
Chi2 test of equality of coefficients FE-OLS control group 3	20.30 (0.000)			5.30 (0.021)		
N obs.	3545			4188		
Panel B: UKHLS						
OLS without controls	7.28	(0.46)***		-1.56	(0.22)***	
OLS control group 1	3.86	(0.42)***	47%	-1.46	(0.24)***	6%
OLS control group 2	3.58	(0.43)***	7%	-1.29	(0.25)***	12%
FE	1.84	(0.42)***	49%	-0.76	(0.35)**	41%
Chi2 test of equality of coefficients FE-OLS control group 2	10.63 (0.001)			1.79 (0.181)		
N obs.	3476			3509		
Panel C: HILDA						
OLS without controls	7.71	(0.39)***		-0.65	(0.21)***	
OLS control group 1	3.49	(0.35)***	55%	-0.83	(0.21)***	-28%
OLS control group 2	3.36	(0.36)***	4%	-0.84	(0.22)***	-1%
FE	1.04	(0.44)**	69%	0.11	(0.27)	> 100%
Chi2 test of equality of coefficients FE-OLS control group 2	18.28 (0.000)			8.62 (0.003)		
N obs.	4611			4609		

Notes: Data comes from the 1992-2015 PSID, the 1991-2015 Harmonized BHPS-UKHLS, and the 2002-2016 HILDA. Sample is women (men) between 24 and 65 years old, not living in the parental home, who have not been divorced, and who are observed in at least two waves. We consider singles (i.e., single individuals not living in the parental home), marrieds (i.e., individuals who are legally married) and marrying (i.e. individuals who transition from single to legally married). Housework is reported in hours per week as the answer to the

question “About how much time do you spend on housework in an average week? I mean time spent cooking, cleaning, and doing other work around the house?”, in PSID, “About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?”, in BHPS-UKHLS, and “How much time would you spend on housework, such as preparing meals, washing dishes, cleaning house, washing clothes, ironing and sewing, in a typical week?” (variable lshw), in HILDA. The regressions of housework on a dummy for living with a partner (cohabiting or being married). Control group 1 includes a quadratic on age, education at age 25 in years, an interaction term of age and years of education, and predicted wages, a logarithm in the number of children, hours of paid work, and number of household rooms. Control group 2 additionally includes home ownership status (ref. owner) and type of dwelling dummies (ref. detached house). Percentage explained by controls obtained as the difference between the OLS coefficient without controls and the OLS coefficient with controls, divided by the OLS coefficient without controls; percentage explained by FE obtained as the difference between the OLS coefficient with controls and the FE coefficient, divided by the OLS coefficient with controls. In both cases we denote >100% when the formula yields a number greater than 100%. Standard errors in brackets. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table C8. Gender Identity Measures.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Global Gender Gap Political Empowerment subindex			Disagreement with men more right to a job			Agreement with marriage an outdated institution		
	2006	2010	2015	1990s	2000s	2010s	1980s	1990s	2000s
United States	0.0968	0.1861	0.162	69%	74%	69%	8%	10%	13%
United Kingdom	0.3074	0.2933	0.335	60%	77%	-	14%	17%	23%
Australia	0.1634	0.1917	0.193	67%	64%	73%	13%	18%	17%

Notes: Data in Columns 1-3 comes from the World Economic Forum's Gender Gap in Political Empowerment Index which measures the ratio of women to men in minister-level and parliamentary positions. Data in Columns 4-9 comes from the World Values Surveys. Columns 4-6 show the average level of disagreement with the statement: "When jobs are scarce, men should have more right to a job than women." Columns 7-9 show the average level of agreement with the statement: "Marriage is an outdated institution".

Sources: World Economic Forum (2006-2015) and World Values Survey (1989-1993 1994-1998 1999-2004 2005-2009 2010-2014),