

UNIVERSITY OF TARTU
Faculty of Social Sciences
School of Economics and Business Administration

Aleksandra Grishechko

SHIFTING PATTERNS OF INTRA-FAMILY TIME ALLOCATION OF PAID WORK AND
HOUSEWORK: CROSS-EUROPEAN ANALYSIS BASED ON HETUS DATA

Master's thesis

Supervisor: PhD Maryna Tverdostup

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I have written this Master's Thesis independently. Any ideas or data taken from other authors or other sources have been fully referenced.

Abstract

This thesis investigates the persistence of gender roles in time allocation within dual-earning heterosexual couples, focusing on paid work, housework, and childcare. Utilizing Harmonised European Time Use Survey (HETUS) data from 10 countries, the analysis considers personal, partner, household, and macro-level factors influencing time distribution. Unlike previous literature that often relies on aggregated data or individual country analyses, this study maintains granularity by comparing time allocation between husbands and wives within each household across a diverse range of countries. The results show that despite reduced gender gaps in paid work, an enduring imbalance exists in the distribution of housework and childcare responsibilities, with women consistently shouldering a disproportionate burden. The persistent disparity, evident even in countries recognized for progress in gender equality, highlights the complex obstacles in attaining an equitable distribution of household responsibilities. Addressing this gap not only has the potential to benefit individual households but also contributes to broader economic advantages by improving efficiency and nurturing a more inclusive society.

Keywords: paid work; unpaid work; gender gap; gender equality; gender roles; household structure; time use; intra-family decisions; labour market outcomes; European countries

CERCS codes: S180, S196, S212

Introduction

In recent years, there has been a gradual shift toward achieving gender equality in the allocation of time for both paid and unpaid work. Despite this progress, a distinct gendered pattern still exists in the division of household chores and childcare responsibilities. The historical expectation that women are primarily responsible for domestic duties has limited their availability for paid employment while men's predominant role in the workforce has often been used to rationalize their lower commitment to household tasks.

To verify whether these gender roles are still preserved when both men and women engage in paid employment, we focus in this thesis on studying the distribution of time within a couple for paid work, housework, and childcare in heterosexual couples with dual earnings. We analyze the factors that influence the allocation of time and include personal characteristics, partner's and household's characteristics, and macro-level factors. We base our analysis on Harmonised European Time Use Survey (HETUS) data of 10 selected countries. A distinctive feature of our study is the focus on a broad range of countries, combined with a detailed analysis of time allocation differences within each individual household. The majority of the previous literature is built either on the analysis of aggregated data regarding gender differences and country comparisons (Gimenez-Nadal and Molina 2020; Galvez-Munoz et al. 2011) or on a deep analysis of an individual country (Boda et al. 2023; Sevilla-Sanz et al. 2010). In our study, we maintain granularity by utilizing comparative data between husbands and wives within each household, while simultaneously expanding the list of countries.

This thesis is organised into several sections, each serving a specific purpose. Section 1 revisits earlier literature focusing on critical theoretical and empirical studies on the gender gaps in time allocation including traditional and doing-gender hypothesis. Section 2 discusses data sources, criteria for data and sample selection. Section 3 describes our research methodology and approach to analyzing differences in time allocation. Section 4 presents empirical results on the distribution of work hours, household chores, and childcare within couples, it also evaluates possible theoretical explanations for variations in time allocation. Section 5 provides a summary and conclusion, it highlights the key discoveries and suggests potential directions for future research. The ultimate goal of this research is to expand knowledge about intra-family time distribution and conduct a cross-European comparative analysis of gender differences in various countries. A better understanding of the factors influencing time differences can be used to establish a foundation for determining the next

steps in terms of policies and processes necessary to reduce the gender gap and enhance equality levels in individual countries and the EU as a whole.

1. Literature review

Gender disparities in the allocation of labour market and household work, including unpaid care, have been widely documented in the literature (Blau and Kahn 2007). Even despite considerable improvements of female prospects and equality on the labour market (Kabeer 2021), a strand of empirical literature documents that women continue to do more household work, compared to their male partners (Mandel and Lazarus 2021; Schröder and Burow 2016; Bertrand et al. 2015; Greig and Bohnet 2009; Aguiar and Hurst 2007). Furthermore, marriage and motherhoods tend to strengthen an uneven allocation of labour market and household work, referred to as a “work-division puzzle” (Kimmel and Connelly 2007).

Traditional household models often adhere to a set of predefined gender roles that prescribe distinct responsibilities and expectations based on an individual's sex. These models typically ascribe the role of breadwinner and financial provider to men, while women are expected to assume caregiving and domestic responsibilities. Such traditional frameworks contribute to the perpetuation of gender stereotypes and a binary understanding of roles within the household. Within the framework of traditional household theories, the unequal distribution of work within couples is often linked to gendered specialization. This specialization is believed to be influenced by gender-based variations in productivity, as indicated by studies such as those conducted by Couprie et al. (2017), Angelov et al. (2016), Blau and Kahn (2007), Becker (1981) and others.

In contrast, the "doing-gender" hypothesis, developed by sociologists Candace West and Don Zimmerman, challenges these fixed notions. The hypothesis suggests that gender is not an inherent trait but rather a social accomplishment achieved through ongoing performances in daily life. According to this perspective, individuals actively engage in behaviors and expressions that align with societal expectations of masculinity or femininity. The doing-gender framework emphasizes the fluid and socially constructed nature of gender, asserting that individuals play an active role in shaping and negotiating their gender identities within diverse social contexts, thereby challenging and transcending traditional household models (Auspurg et al. 2017; Rudman and Phelan 2010).

Datasets with records of time use, including the Harmonised European Time Use Survey (HETUS) data, can help assess which theories are closer to the truth and widely used

in the research. A study by Giménez and Molina Chueca (2020) uses HETUS data to analyse how men and women allocate their time to paid work, unpaid work (such as household chores), and child care, and how these patterns vary across countries and regions. They find that women spend more time on unpaid work than men in all countries and regions, with the largest gaps observed in Southern Europe and the smallest gaps in Northern Europe. The authors also note that when taking into account how sociodemographic characteristics affect time use differently for men and women, the difference in time spent on paid work between genders disappears, the gender gap in unpaid work becomes smaller, but the gap in time spent on childcare increases in certain countries. The article also examines how gender differences in time use vary by employment status, education level, and family structure. Women who are employed spend less time on unpaid work than non-employed women but still spend more time on unpaid work than employed men. Women with higher levels of education tend to spend more time on paid work and less time on unpaid work than women with lower levels of education. These findings support previous studies such as the one conducted on the country level with Spain data by Sevilla-Sanz et al. (2010) or on the European level by Gálvez-Muñoz et al. (2011).

A strand of literature looked into the role of various family characteristics on the patterns of within-family time allocation. Among others, Kimmel and Connelly (2007) rely on the 2003 and 2004 American Time Use Survey and document that female caregiving time increases with the number of children and decreases with age of the child. This result appears with a body of empirical findings on the primary role of mothers in childcare even in dual-earning families (Mandel and Lazarus 2021), which suggests that women's economic dependency, albeit being an important covariate (Aassve et al. 2014), is not a key factor explaining the division of housework. Even in families with both parents working full-time, mothers assume a major responsibility for housework and childcare (Barigozzi et al. 2020).

Another study by Zaiceva-Razzolini (2022) found that women in Europe are more likely than men to engage in multitasking, which involves combining two or more activities at the same time. Women were found to spend more time than men on activities such as housework, childcare, and meal preparation, which often require multitasking. Similarly, Offer and Schneider (2011) report that mothers spent more time multitasking than fathers and that this time spent on multitasking are mainly related to housework and childcare activities. Furthermore, the same study reports that multitasking is more often related to psychological distress and work-family conflict for mothers, as compared to fathers, for

whom multitasking is a less negative experience, suggesting that composition of actual tasks performed by multitasking mothers is more demanding and stressful.

Apart from individual and family characteristics, macro-level factors, including economic development, female labour-force participation, gender norms, and welfare regimes, as well as gender equality on the societal level matter largely shape within-family work division (Grunow 2019; Burda et al. 2013; Craig and Mullan 2010). In particular, within-family allocation of time in paid work and housework appears more even in more egalitarian countries, whereas in countries with more stringent gender norms reveal strongly gendered division of paid work and housework (Fuwa, 2004).

It is worth mentioning that the COVID-19 pandemic has had a significant impact on the way individuals allocate their time, particularly with respect to work and caregiving responsibilities. Research has shown that the pandemic has exacerbated existing gender inequalities in time use, with women bearing a disproportionate burden of unpaid care work and domestic responsibilities. Uneven effect of the pandemic on spousal time allocation largely stem from disproportional employment shocks experienced by men and women, as well as gender difference in job flexibility (Lee et al. 2021).

A study by Collins et al. (2021) analysed time use data from the United States and found that mothers with young children reduced their work hours four to five times more than fathers during the pandemic and that mothers were also more likely to report an increase in childcare responsibilities, in line with concerns expressed by Alon et al. (2020). Another study by Boca et al. (2022) analysed time use data from Italy and also found that mothers with young children spent more time on childcare during the pandemic, while fathers' time allocation remained largely unchanged. Similar conclusions were drawn based on two waves of surveys in the UK by Andrew et al. (2020) and by Zamberlan et al. (2021). These findings are consistent with a growing body of research that suggests that the pandemic has widened the gender gap in time allocation, with women being more likely to reduce their work hours or drop out of the labour force entirely in order to meet caregiving demands. This has important implications for gender equality and economic stability, as well as for individual well-being.

Within-family gaps in work allocation have negative consequences both on individual level, as it interferes with female employment success and career progression, and on the macro level, as females do not use their skills and capacities to a full extent on a labour market. The latter is especially pronounced in light of looming labour and skill shortages, as a paramount role of females in housework and childcare accelerate slacks of human capital,

with women tending to develop and apply talents and abilities on labour market below their potential (Sullivan and Gershuny 2016). Hence, not only female empowerment on labour matters for females' success on labour market, as well as reduction of gender disparities in access to highly paid jobs, career progression and wages. Within-family decisions and processes, in particular equalisation of spousal contribution to housework and childcare is of primary importance in strengthening female labour market commitment and improving labour market outcomes of women and especially mothers.

Overall, the correlation between excessive housework and childcare burden and female labor market outcomes has been extensively studied, revealing a complex interplay that significantly impacts employment, wages, and work hours. Numerous research papers, such as those by Goldin et al. (2022), have highlighted how the unequal distribution of household responsibilities disproportionately affects women. The heavier load of domestic duties often leads to reduced employment opportunities, lower wages due to interrupted careers or part-time work necessitated by childcare responsibilities, and restricted work hours to accommodate household chores. Studies consistently emphasise the need for equitable distribution of domestic responsibilities to mitigate the adverse effects on female labour market outcomes and promote gender equality in employment and wages.

2. Data

2.1 HETUS dataset

The Harmonised European Time Use Survey (HETUS) is a dataset that collects information about how individuals spend their time in various activities such as work, leisure, household chores, caregiving, etc. This data is used in various studies to gain insights into the patterns of time use across different countries, genders, and socio-economic groups (among others, Gimenez-Nadal et al. 2012; Sevilla-Sanz et al. 2010).

HETUS data is collected through surveys where respondents track their daily activities for 24 hours in time-use diaries with 10-minute intervals. They record details like the start and end times of each activity, their location, and who they're with. These diaries provide a comprehensive snapshot of how people spend their time, which is then can be used for analysis to understand societal trends.

HETUS contains ten categories of activities: 1) personal care like eating, sleeping, washing, etc.; 2) employment, which includes main and second jobs performed both at home and on the employer's premises, and activities related to employment such as breaks if other activity is not specified; 3) study, which includes school or university classes and lectures,

homework, and free time study such as language courses or professional trainings; 4) household and family care, which includes all kinds of housework such as cleaning and cooking, shopping, doing laundry, caring for pets, doing construction and repair, interacting with commercial and administrative services such as post office or bank, household management such as paper work, budgeting or phone calls, etc.; childcare, which includes physical care and supervision of children, teaching, playing, accompanying child to a doctor, etc.; help to a dependent adult household member; 5) voluntary work and meetings, which includes both formal work for or through an organisation and informal help to other households; 6) social life and entertainment, which includes socializing with family and friends, celebrations and cultural events; 7) sport and outdoor activities, such as physical exercise or fishing; 8) hobbies and computing, which includes art and hobbies, games; 9) mass media, which includes reading periodicals or books, watching TV, listening to radio, etc.; 10) travel, which includes all time spent on traveling to different places. All collected data on activities in different countries are manually checked and coded according to Eurostat guidelines. After that, the data goes through an anonymization and harmonization procedure carried out by Eurostat.

At the time of writing this thesis, two rounds of data collection have been carried out (wave 2000 and wave 2010) and the third round 2020 has been postponed due to COVID-19 and is still at the stage of collecting and processing information in some countries, the publication date of the third wave data has not yet been announced. In this thesis, we use the second round data collected in 18 European countries between 2008 and 2015. During this round, all countries followed a standardized procedure including processing and coding of activities in accordance with Eurostat guidelines.

To address the reliability and accuracy of the data, different researchers conducted experiments comparing diary entries with other sources of time use data, e.g. cameras or smart devices. In the paper by Gershuny et al. (2020), 148 participants kept HETUS format diaries throughout the day and their time was also recorded using wearable cameras and accelerometers. The results showed that the average time deviation in 8 of the main 10 activities was less than 10%, and the deviations in the remaining 2 activities could be explained by the peculiarities of data collection and processing.

There are some other factors that can potentially affect the accuracy of the data, such as the representativeness of respondents who agree to participate in the study, errors when filling out diaries retrospectively, subjective assessment when coding activities, etc. (Sturgis, 2004). Nevertheless, the HETUS dataset is generally considered to be accurate and reliable, it

is based on a standardised survey instrument that has been harmonized across different countries and time periods, so we do not expect it to have any systematic errors that would be able to influence our results.

In addition to the time use data itself, HETUS contains information on respondents and households, such as gender, age group, education, household size and others. Due to strict anonymization rules, many of these variables are presented in the aggregated form or not made available to researchers outside Eurostat at all, for example, data on household income are only presented in the dataset as five quintile groups. Besides that, each participating country has its own legislation regarding the collection and storage of personal information, so data on some variables may be missing because the question was not asked to respondents in that country. All this adds complexity to the research and requires careful selection of countries and variables for analysis.

HETUS is not the only existing time use survey, many countries outside Europe conduct similar surveys for analytical purposes. Some of them have a similar diary format (e.g. the Time Use Survey in Canada, the Irish National Time Use Survey, the Australia's Time Use Survey), others are questionnaires filled out retrospectively (e.g. ATUS, the American Time Use Survey), which makes it easier to collect information but reduces its detail and accuracy. Many European countries have also conducted time use studies in the past, with the Federal Statistical Office of Germany (Destatis), for example, beginning to collect data in the early 1990s. However, now HETUS is the most comprehensive and universal data source for analysis of time use in the European Union countries due to its standardized procedure and harmonization.

2.2 Sample selection

In this thesis, we had to reduce the number of countries from 18 to 10 since some of them had missing data on the variables of interest. After careful consideration, we decided to proceed with the following countries: Belgium, Estonia, Finland, France, Germany, Greece, Luxemburg, Poland, Romania and the United Kingdom. All countries listed have a sufficient number of respondents with data on the following variables: gender, age group, household size, number of children aged 0 to 6 and 7 to 17, education level, marital status, self-declared labour market status, working full-time or part-time, being born in or outside the survey country, household total income band.

The final sample includes one- and two-generation households (only spouses and spouses with children), with spouses being heterosexual and in a registered marriage/partnership. We consider only households with both spouses aged between 20 and

64 and both being employed, i.e. dual-earner couples. We analyse three main categories of time allocation: paid work, housework, and childcare in case of couples with children. HETUS data does not contain an identifier that allows us to match spouses, so we had to exclude households containing more than two adults so as not to mistakenly match children with parents or other family members. For the same reason, we selected only couples in a registered marriage or partnership to exclude households consisting of one parent living with a child, siblings, other family members or flatmates. The focus of our study is specifically on dual-income couples, so we exclude couples where only one partner is employed as they tend to have a more dedicated division of responsibilities with the non-working partner doing most of the housework. We are interested in how partners allocate time for housework and childcare when they both spend part of their time on paid work, so we select couples that kept their diaries on a regular workday.

The degree of gender inequality in time allocation within couples is closely related to the broader level of gender equality observed in the labor market and in society. Some of previous research has identified substantial correlations between macro-level societal factors and the degree of gender equality in time distribution (Mandel and Lazarus 2021; Grunow 2019; Fuwa 2004).

To evaluate this impact, we included the following macro-level indicators in the analysis: (i) gender gap in employment, measured as the difference between the employment rates of men and women aged 20-64; (ii) unadjusted gender wage gap, measured as the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees; (iii) childcare enrolment, defined as the percentage of children (under 3 years old) cared for by formal arrangements other than by the family; (iv) female representation in top management positions, defined as the share of female board members and executives in the largest publicly listed companies; (v) female representation in executive government positions, defined as the proportion of women in national parliaments and national governments; (vi) share of people with higher education in the country.

Figure 1 shows the number of households in the final sample, as well as separately the number of households with one or more children. The total number of households in the sample is 7629, the number of households with children is 4336 which is about 57 percent of the total. As we can see, the number of households differs markedly across countries due to the size of the countries' populations, we can also assume that in different countries it was possible to involve different percentages of the population to data collection, which could be

influenced by a multitude of factors. We are also focusing on households of a certain type that reduces the sample size.

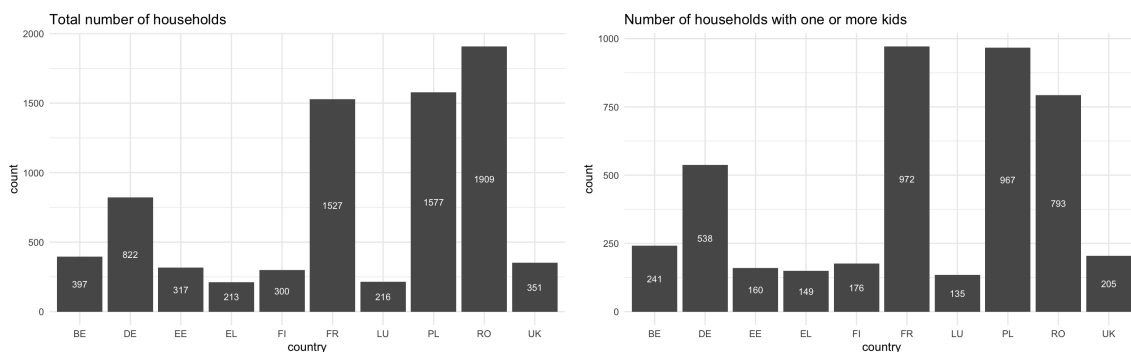


Figure 1. Number of households in the final sample by country

Source: HETUS, wave 2010, selected sample.

Figure 2 depicts a density graph of the time spent by husbands and wives on paid work, housework and childcare. As can be seen, the paid work graph is left skewed since in most of the households both partners or at least one of them work full-time. Conversely, graphs of the housework and childcare are right skewed having a big number of observations with zero minutes spent on these activities which is especially noticeable in the case of husbands and childcare time.

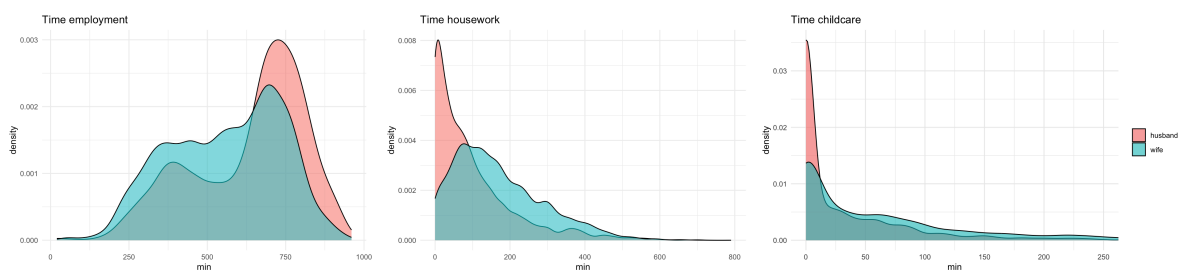


Figure 2. Distribution of time spent on paid work, housework and childcare by husbands and wives

Note: Kernel density estimate. For the childcare graph, only data from households with one or more children of any age is used, the x-axis is cut at 250 min for visualization purposes.

Source: HETUS, wave 2010, selected sample.

Thus, 1486 husbands reported zero minutes spent on housework, versus 281 wives. Among households with one or more children of any age, 2473 husbands and 1740 wives

reported spending zero minutes of time on childcare. All respondents in the dataset spent part of their time on paid work during the day, the employment time variable does not contain zero values.

3. Methodology

Time-use diary data is typically analysed using a variety of methods that include OLS models (Frazis and Stewart, 2012), multinomial logit models as an addition to OLS (Gershuny, 2012), tobit regression models (Foster and Kalenkoski, 2013), sequence analysis, event history analysis, clustering, etc.

In this thesis, we use multivariate OLS and tobit regressions as our main instruments to analyse gender gaps in time spent on paid work, housework and childcare in different countries and the role that socio-demographic and macro-level characteristics play in explaining these gaps. We use tobit regressions specifically for housework and childcare time since these variables contain a large number of zero values.

The main OLS model we estimate is:

$$T_i = a + \beta Female_i + \gamma Personal_i + \delta Partner\ Gap_i + \eta Household_i + \mu Fixed_i + \varepsilon_i \quad (1)$$

where

T_i – observed time spent on paid work by individual i

$Female_i$ – variable indicating the gender (ref. level: male) of individual i

$Personal_i$ – vector of individual i characteristics which includes age group, education level, working full-time, and being born in the survey country or abroad

$Partner\ Gap_i$ – vector of the differences between own and partner's characteristics similar to the individual characteristics, it includes gaps in education level, age group and employment type

$Household_i$ – vector of the individual i 's household characteristics, including household size, number of children aged 0 to 6 and 7 to 17, and household total income band

$Fixed_i$ – set of fixed effects, including country, year, month and week day of the record

ε_i – random error term.

We report weighted estimates, which account for a combined individual response and day weight. Similarly, we estimate weighted maximum-likelihood tobit regression in the following form:

$$T_{ik}^* = \alpha_k + \beta_k \text{Female}_i + \gamma_k \text{Personal}_i + \delta_k \text{Partner Gap}_i + \eta_k \text{Household}_i + \mu_k \text{Fixed}_i + \varepsilon_{ik} \quad (2)$$

$$T_{ik} = T_{ik}^* \text{ if } T_{ik}^* > 0 \text{ and } T_{ik} = 0 \text{ if } T_{ik}^* \leq 0,$$

where

T_{ik} – observed time spent on the reference activity k (housework, childcare) by individual i

Female_i – variable indicating the gender (ref. level: male) of individual i

Personal_i – vector of individual i characteristics which includes age group, education level, working full-time, and being born in the survey country or abroad

Partner Gap_i – vector of the differences between own and partner's characteristics similar to the individual characteristics, it includes gaps in education level, age group and employment type

Household_i – vector of the individual i 's household characteristics, including household size, number of children aged 0 to 6 and 7 to 17, and household total income band

Fixed_i – set of fixed effects, including country, year, month and week day of the record

ε_{ik} – random error term.

We report weighted estimates, which account for a combined individual response and day weight. The dependent variable, which is individual relative housework or childcare time, is censored at zero as a result of the common scenario where husbands frequently allocate no time to housework or childcare, and the less frequent but still notable instances where wives similarly contribute no time to these activities, although the latter proportion is significantly smaller.

The dependent variable, time spent on activities in minutes is continuous. Independent variables are defined as dichotomous and have following levels:

- working full-time: both partners working full-time, both partners working part-time, husband working full-time while wife working part-time, wife working full-time while husband working part-time;
- household size: two persons, three persons, four or more persons;
- number of children aged 0 to 6: no children, one child, two or more children;
- number of children aged 7 to 17: no children, one child, two or more children;
- household total income band: five quintile groups with “<P20” being the first income quintile group and “P80 or more” being the fifth income quintile group;
- own age group: five-year binds from 20 to 64 years old;
- age gap: husband and wife in the same five-year age group, husband older, wife older;
- own education: low, medium, high;
- education gap: same education level, husband is more educated, wife is more educated;
- immigration status: born in the survey country, born in another country.

We first employ a multivariate OLS and tobit regression models to examine pooled-country data controlling for fixed effects such as country, week day, month and year. After that we include personal, partner and household controls and estimate the adjusted models. Then we analyse models on the individual country samples controlling for fixed effects such as week day, month and year, as well as personal, partner and household characteristics. We also combine countries into groups along geographic and economic lines looking at the similarities between countries in the same region or at a similar stage of economic development. Finally, we include macro-level indicators and compare results to the previous models.

Additionally we use hierarchical clustering as one of the ways to group countries for our analysis which allows us to move away from formal characteristics of countries such as geographical location and focus on pure differences in time allocation to look for similarities between different countries. In particular, we use Ward's method that is a hierarchical clustering approach that minimizes the variance within each cluster. Ward's method is often regarded as the most appropriate approach for numerical variables. Similar to other clustering techniques, Ward's method initiates with n clusters, each containing a single object. These n clusters then progressively merge into one, containing all objects. Throughout each iteration, the method generates a new cluster that minimizes variance, quantified using the sum of squares index. We use the square Euclidean distance, which measures geometric distance as if the observations were points in a multi-dimensional space formed by variables:

$$d(p, q) = \sqrt{(p_1 - q_1)^2 + (p_2 - q_2)^2 + \dots + (p_n - q_n)^2}, \tag{3}$$

where

p – point with coordinates (p_1, p_2, \dots, p_n)

q – point with coordinates (q_1, q_2, \dots, q_n) .

We anticipate that employing the chosen methods will allow us to examine the dataset from various perspectives and draw conclusions about the overall gap in time allocation by gender, as well as determine which socio-demographic factors have the strongest association with this gap. We also aim to identify and assess variations and similarities among different countries in our sample.

4. Results and Discussion

4.1 Descriptive of disparities in time allocation

The effects of individual-specific characteristics and broader household characteristics on time allocation are our main focus of interest, beyond identifying differences between countries. Table 1 shows the average time per day for wives and husbands spent on different types of activity, grouped according to a set of key characteristics. It also includes the number of households and differences in absolute and percentage terms between wives and husbands. Time indicators by country can be found in Tables A1.

Table 1

Time devoted to paid work, housework and childcare by demographic and household characteristics

Time use in minutes	n	Housework			Paid work			Childcare		
		Hus band	Wife	Diff, %	Hus band	Wife	Diff, %	Hus band	Wife	Diff, %
Total	7,629	98	168	72%	635	559	-12%	31	65	108%
<i>By household size</i>										
2 persons	1,983	101	159	57%	642	595	-7%	-	-	-
3 persons	2,316	94	166	77%	636	556	-13%	37	72	95%
4 or more persons	3,330	98	175	79%	630	539	-14%	29	63	115%
<i>By number of kids aged 0 to 6</i>										
No children	5,696	102	173	70%	638	580	-9%	11	25	129%
1 child	1,429	84	155	84%	629	517	-18%	49	98	97%
2 or more children	504	94	155	65%	626	467	-25%	67	146	118%
<i>By household net income band</i>										

<P20*	145	76	130	71%	624	619	-1%	49	50	2%
P20 to <P40	299	82	161	96%	664	570	-14%	31	64	103%
P40 to <P60	935	102	169	66%	610	551	-10%	38	66	75%
P60 to <P80	2,377	101	174	73%	628	545	-13%	32	73	125%
>P80**	3,873	96	165	72%	643	568	-12%	29	61	105%
<i>By within-couple age gap</i>										
Husband older	3,406	100	163	64%	636	566	-11%	34	66	92%
Same five-year age group	3,512	93	168	81%	637	563	-12%	30	62	103%
Wife older	711	107	189	77%	624	520	-17%	25	73	191%
<i>By within-couple education gap</i>										
Husband more educated	880	95	179	89%	649	551	-15%	30	67	124%
Same education level	5,363	94	168	78%	637	562	-12%	32	63	95%
Wife more educated	1,386	113	158	39%	614	554	-10%	30	73	145%
<i>By employment type</i>										
Both full-time	5,750	93	149	60%	642	600	-7%	34	64	89%
Both part-time	107	135	171	26%	549	532	-3%	48	72	52%
Husband full-time	1,633	100	197	97%	636	503	-21%	28	68	141%
Wife full-time	139	125	109	-13%	567	649	14%	24	27	13%

Note: Weighted averages. * = First income quintile group. ** = Fifth income quintile group.

To calculate the average time spent on childcare, only data from households with one or more kids of any age was used.

Source: HETUS, wave 2010, own calculations.

The results indicate that wives allocate a greater portion of their time to housework and less time to paid work than husbands both at the aggregate level and when grouped by different characteristics. In total, wives spend an average of 559 minutes (12 % less) on paid work per day versus 635 minutes spent by husbands. Conversely, wives spend on average 168 minutes (72% more) a day on housework versus 98 minutes spent by husbands. Assuming an equal distribution of time within a household, which implies that if one partner devotes more time to paid work, the other takes on an equivalent amount of household responsibilities, we would expect to have mutually exclusive differences between paid work and housework, but as can be seen, the difference in housework is much larger. Overall, the difference in time spent on paid work between husbands and wives ranges from -25% to 14%, in time spent on housework from -13% to 97%, and in time spent on childcare from 5% to 188%.

The largest difference in the time of paid work, excluding the type of employment, is observed in households with 2 or more children aged between 0 and 6 years and is 25% lower for wives, which may be related to the marginal employment, which prevails for mothers

with young kids. Overall, having even one child under 6 years of age nearly doubles the difference in time spent on paid work compared to couples without children. Thus, the difference is about 7% when household size is equal 2, and the smallest difference is observed in low-income households, about 1% which may be related to the need for both partners to work to cover household expenses. In absolute numbers, low household income increases wives' paid work time but makes little difference to husbands' time.

In the time allocated to housework, the greatest differences are observed when broken down by education, so wives with an education lower than their husbands spend 179 minutes a day on housework, which is 89% more, and wives who have a higher education in a couple spend 158 minutes, which is 39% more than husbands. The difference also becomes smaller when the wife works full-time and the husband works part-time, this is the only group in which wives, on average, spend less time on housework than husbands, 109 minutes per day versus 125 minutes or about 13% less.

Among all activities, childcare shows the most notable differences in time allocation between husbands and wives. On average, wives spend 65 minutes a day caring for children, which is 103% more than husbands with 31 minutes a day. The greatest difference is observed in cases where the wife is older than the husband, about 191%. In contrast to housework, the difference also increases when the wife has higher education than the husband and reaches 145% or 73 minutes a day. The smallest difference in time allocation can be seen in low income households, only 2%, and in cases where the wife works full time and the husband works part time which reduces it to 13%. However, regardless of grouping, wives always spend more time on average on childcare compared to husbands.

4.2 Disparities in time allocation by personal and household characteristics

In the next step of the analysis, we use linear regression with different controls to evaluate their impact on the time distribution between activities. On the first step, we control only for the country fixed effects, week day, month and year of completing the time-use diary. In the second step, in addition to the controls listed, we also include personal, partner, and household characteristics, such as: own age, own education, whether both partners work full-time or part-time, household size, number of kids aged between 0 and 6, number of kids aged between 7 and 17, household income band, age gap and education gap between partners. Table 2 presents regression results with controls for personal and household characteristics. We can observe that, with other characteristics being equal, wives spend 80 min less on paid work, but 84 min more on housework and 59 min more on childcare.

Table 2

Time devoted to paid work, housework and childcare by personal and household characteristics - linear regression and tobit results on pooled country sample

Dependent variable:	Time Employment	Time Housework	Time Childcare
<i>Spouse (base: husband)</i>			
Wife	-80.714***	83.806***	58.814***
	-2.846	-0.048	-0.054
<i>Age (base: 20 to 24)</i>			
25 to 29	9.923	1.848***	18.574***
	-18.231	-0.309	-0.346
30 to 34	13.917	-11.102***	18.029***
	-17.97	-0.305	-0.342
35 to 39	13.992	2.084***	3.601***
	-17.867	-0.303	-0.343
40 to 44	15.403	2.118***	-2.385***
	-17.874	-0.303	-0.344
45 to 49	-8.407	22.050***	-19.131***
	-17.864	-0.303	-0.351
50 to 54	-1.386	17.393***	-21.746***
	-17.916	-0.304	-0.36
55 to 59	-5.089	7.910***	-45.725***
	-18.099	-0.307	-0.434
60 to 64	-64.679***	38.941***	-35.610***
	-18.934	-0.321	-0.549
<i>Migration status (base: born in the survey country)</i>			
Born in a foreign country	27.873***	-29.477***	-18.483***
	-7.279	-0.125	-0.143
<i>Education (base: low)</i>			
Education high	10.207	-19.694***	15.988***
	-6.413	-0.109	-0.129
Education medium	4.449	-6.616***	5.344***
	-5.982	-0.101	-0.122
<i>Employment type (base: both full-time)</i>			
Both part-time	-53.554***	31.909***	-6.993***
	-9.046	-0.153	-0.155
Wife part-time, husband full-time	-24.857***	20.248***	0.919***
	-3.408	-0.058	-0.064
Wife full-time, husband part-time	-11.867	-4.478***	-7.710***
	-9.306	-0.159	-0.194
<i>Household size (base: 2 persons, base childcare: 3 persons)</i>			
3 persons	-16.667***	3.742***	
	-4.45	-0.076	
4 or more persons	-9.780+	8.128***	-19.480***
	-5.76	-0.098	-0.09
<i>Number of children aged 0 to 6 (base: no children)</i>			
1 child	-41.734***	-7.947***	90.063***
	-4.751	-0.081	-0.09
2 or more children	-62.976***	-5.686***	128.871***

	-7.574	-0.129	-0.154
<i>Number of children aged 7 to 17 (base: no children)</i>			
1 child	-12.999**	2.549***	-19.144***
	-4.517	-0.077	-0.102
2 or more children	-21.110***	3.149***	17.528***
	-6.12	-0.104	-0.142
<i>Household net income band (base: <P20)</i>			
P20 to P40	56.701**	1.135**	-15.020***
	-21.326	-0.367	-0.413
P40 to P60	11.383	17.724***	-24.246***
	-19.376	-0.334	-0.375
P60 to P80	17.127	18.078***	-20.905***
	-18.982	-0.327	-0.369
>P80	27.234	14.504***	-20.497***
	-18.937	-0.327	-0.369
<i>Age gap (base: in the same five-year age category)</i>			
Husband older	2.178	0.531***	8.754***
	-3.054	-0.052	-0.057
Wife older	-15.512***	11.433***	5.955***
	-4.485	-0.076	-0.082
<i>Education gap (base: same level)</i>			
Husband more educated	10.930**	-2.968***	-3.165***
	-3.8	-0.065	-0.073
Wife more educated	-6.762+	2.828***	-2.532***
	-3.895	-0.066	-0.07
Num.Obs.	15258	15258	8672
+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001			

Note: For the time spent on childcare model, only data from households with one or more kids of any age was used. All models additionally control for year, month, week day and country fixed effects. All estimates account for individual response and day weight.

Source: Linear regression estimates (employment time) and tobit regression estimates (housework and childcare) based on HETUS data, wave 2010.

There are several characteristics that associate with the time spent on paid work. One of them is a respondent belonging to the highest age group (-65 min), most likely related to retirement or a reduction in working hours. Being born in a foreign country increases time allocated to paid work by 28 min. Working part-time for both partners or just the husband working full-time reduces the time spent by 54 min and 25 min, respectively. The result for couples where the wife works full-time and the husband works part-time is insignificant, which might be due to the relatively small number of such couples (Table 1). A household size of 3 people compared to 2 reduces the amount of time spent on paid work by 17 min. Similarly, having one child between 0 and 6 years of age reduces the amount of time spent by 42 min compared to not having children of that age, and two or more children by 63 min.

Having 1 child or 2 or more children aged 7 years and older also reduces the amount of time by 13 min and 21 min respectively. Classifying a household in the second lowest income band increases time spent on paid work by 57 min. Also in couples where the husband is more educated, the amount of time is 11 min higher. The age gap when the wife is older decreases the amount of time for paid work by 16 min.

Being born in a foreign country reduces time spent on housework by 29 min, same as having medium or high education (-7 min and -20 min respectively). Living in a household with higher number of members and children aged 7 to 17 increases housework time but having children aged 0 to 6 decreases it which allows us to assume that in this case part of the time is relocated to childcare. The age gap when the wife is older increases the housework time by 11 min. Also, household belonging to a higher income group increases the time spent on housework with a maximum of 18 min in the P60 to P80 band. Being in the 30 to 34 age group reduces the amount of time by 10 min while in older groups the time increases.

As could be expected, the number children of different ages is the main factor that increases the amount of time spent on childcare but this is especially true for children between 0 and 6 years old (+90 min for one child and +130 min for two or more children). Also, the time is increased for respondents in the 25 to 29 and 30 to 34 age groups (+18 min in both cases), which may be related to the average age of having children. Any kind of age gap increases the time spent on childcare, while the education gap reduces it. Higher household income reduces time spent on child care by 15-25 min, which may indicate greater availability of child care services and other services such as after school activities.

Figure 3 shows the difference between wives versus husbands in the estimated average time spent on paid work, housework, and childcare. Unadjusted values include controls for gender, year, month, and day of time diary recording. Adjusted values include also controls for all personal, household and gaps with partner characteristics discussed above.

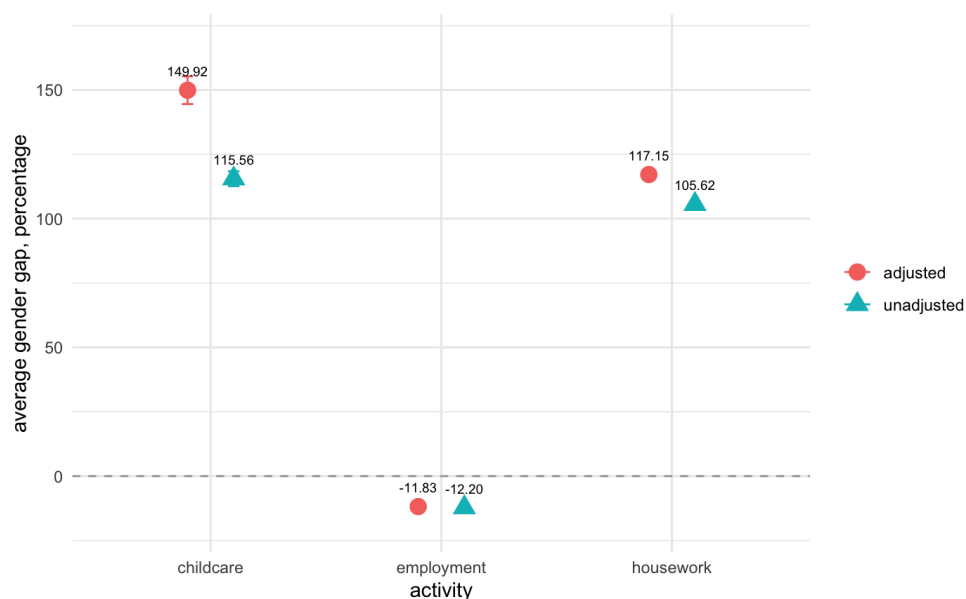


Figure 3. Gender gaps in worktime, housework and childcare

Note: Unadjusted gaps are estimated controlling for gender, year, month, week day of time diary recording and country fixed effects. Adjusted values are estimated additionally controlling for own age group, migration status, own education, own and partner’s full-time/part-time work, household size, number of kids aged 0 to 6, number of kids aged 7-17, household net income band, age gap between husband and wife, education gap between husband and wife. For the time spent on childcare models, only data from households with one or more kids of any age was used.

Source: Linear regression estimates (employment time) and tobit regression estimates (housework and childcare) based on HETUS data, wave 2010, weighted averages.

As noted earlier, the difference in paid work time is small and does not differ much between the adjusted and unadjusted values. Time spent on childcare shows the biggest difference between husbands and wives. The unadjusted difference is around 115% and means that wives, on average, spend twice as much time caring for children as husbands, regardless of other factors, the adjusted value goes up to 150%. For housework, the adjusted value is also higher than the unadjusted one, which confirms the significant influence of other factors such as full and part-time employment, age, etc. However, even the unadjusted gap is more than 100% and is not comparable, for example, to the gap in working hours.

4.3 Disparities in time allocation across countries

Figure 4 depicts the difference between wives versus husbands in the estimated average time spent on paid work, housework, and childcare by country. Complete regression estimates can be found in Appendix Tables A2 - A4.

As can be seen at the individual country level, in most cases the adjusted and unadjusted values do not differ that much, which confirms our assumption that gender is the main factor influencing the time use gap.

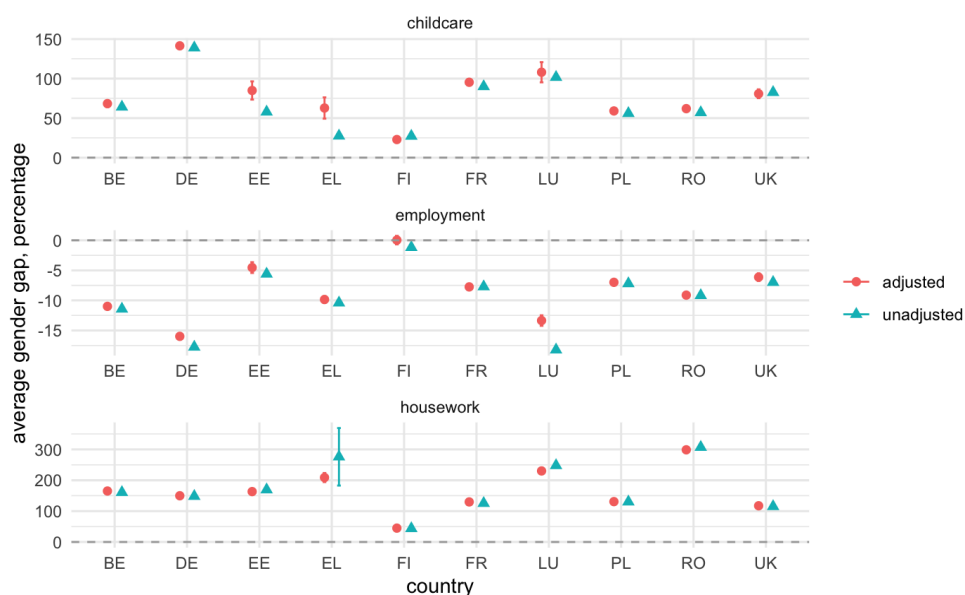


Figure 4. Gender gaps in worktime, housework and childcare by country

Note: Unadjusted gaps are estimated controlling for gender, year, month, week day of time diary recording and country fixed effects. Adjusted values are estimated additionally controlling for own age group, migration status, own education, own and partner’s full-time/part-time work, household size, number of kids aged 0 to 6, number of kids aged 7-17, household net income band, age gap between husband and wife, education gap between husband and wife. For the time spent on childcare models, only data from households with one or more kids of any age was used.

Source: Linear regression estimates (employment time) and tobit regression estimates (housework and childcare) based on HETUS data, wave 2010, weighted averages.

All countries have differences in housework time of more than 100 percent, except Finland (FI), which generally scores high in gender equality rankings. Thus, in 2015, it ranked 3rd among European countries after Sweden and Denmark in the ranking of the

European Institute for Gender Equality¹. Finland also shows the smallest difference in time spent on paid work and childcare between husbands and wives. Estonia (EE) is another country that shows a small gap in time spent on paid work (less than 5%) but at the same time the gap in time spent on housework is quite large and amounts to about 170% for both the unadjusted and adjusted estimates.

The countries with the largest gap in paid work hours are Germany and Luxembourg, over 15%. The largest gap in housework time was also observed in Luxembourg, as well as in Greece and Romania (more than 300% gap). In all other countries, the difference between husbands and wives in the time spent on housework ranges between 100% and 200%. The difference in childcare time is also the smallest in Finland (about 25%) and the largest in Germany and Luxembourg (140% and 110% respectively).

Geographical proximity often leads to shared cultural and historical contexts. These similarities can influence governance structures, societal norms, policies and economic systems which affect gender equality. Figure 5 shows the difference between wives versus husbands in the estimated average time spent on paid work, housework, and childcare by countries grouped by geographic region:

- Western Europe: Belgium (BE), France (FR) and Luxembourg (LU);
- Northern Europe: Finland (FI), Estonia (EE);
- Central Europe: Germany (DE), Poland (PL);
- Southern Europe: Greece (EL), Romania (RO);
- United Kingdom (UK) often stands alone as a country, but in our analysis it is considered part of Western Europe.

As we might expect, Northern Europe has the smallest differences in time spent on all three types of activity. The gap in paid work is less than 3%, and in housework it is about 35%. Southern Europe, on the contrary, shows an average difference in paid work time among all regions, but the gap in housework is almost ten times larger than in Northern Europe and amounts to more than 400%. Western Europe and Central Europe show average values between these two points, with Central Europe having a slightly larger gap in all three metrics. Differences in time spent on childcare are lower in Northern and are highest in Central and Southern Europe. Complete regression estimates can be found in Appendix Tables A5.

¹ Gender Equality Index 2015: <https://eige.europa.eu/gender-equality-index/2015>

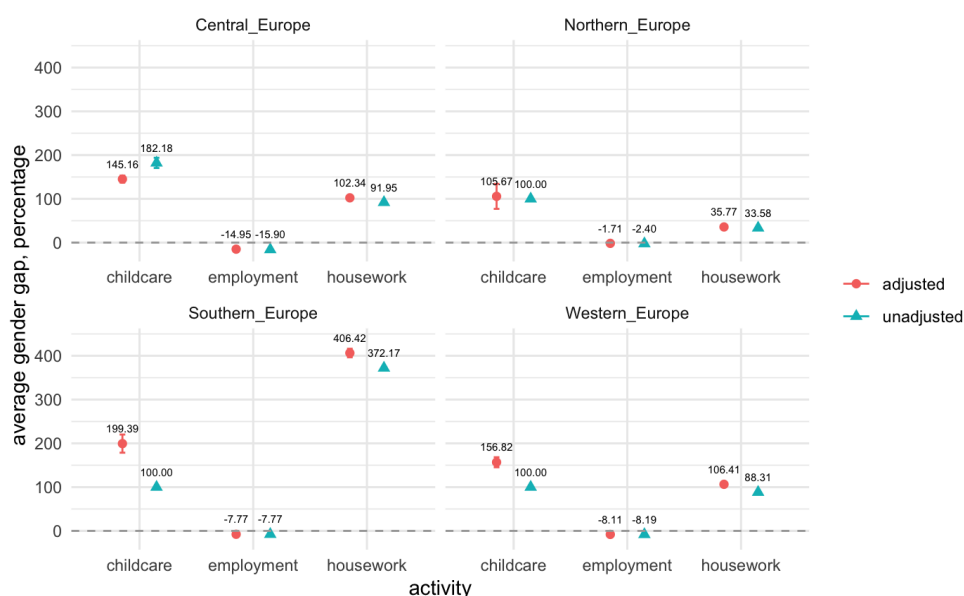


Figure 5. Gender gaps in worktime, housework and childcare by region

Note: Unadjusted gaps are estimated controlling for gender, year, month, week day of time diary recording and country fixed effects. Adjusted values are estimated additionally controlling for own age group, migration status, own education, own and partner’s full-time/part-time work, household size, number of kids aged 0 to 6, number of kids aged 7-17, household net income band, age gap between husband and wife, education gap between husband and wife. For the time spent on childcare models, only data from households with one or more kids of any age was used.

Source: Linear regression estimates (employment time) and tobit regression estimates (housework and childcare) based on HETUS data, wave 2010, weighted averages.

The high level of economic development of a country is in most cases closely related to the level of gender equality. When both men and women have equal access to education, healthcare, and job opportunities, it can lead to a more skilled and diverse workforce. This, in turn, can positively impact a country's productivity and economic output. To assess the impact of economic development on the gender gap in time use, we assessed the GDP per capita in Purchasing Power Standards (PPS) of the selected countries and divided them into two groups - with a GDP above 100 PPS and less than 100 PPS. Information on GDP per capita can be found in Table A6 in the Appendix:

- First group: Greece (EL), Poland (PL), Estonia (EE) and Romania (RO);

- Second group: Belgium (BE), Germany (DE), Finland (FI), France (FR), Luxembourg (LU), United Kingdom (UK).

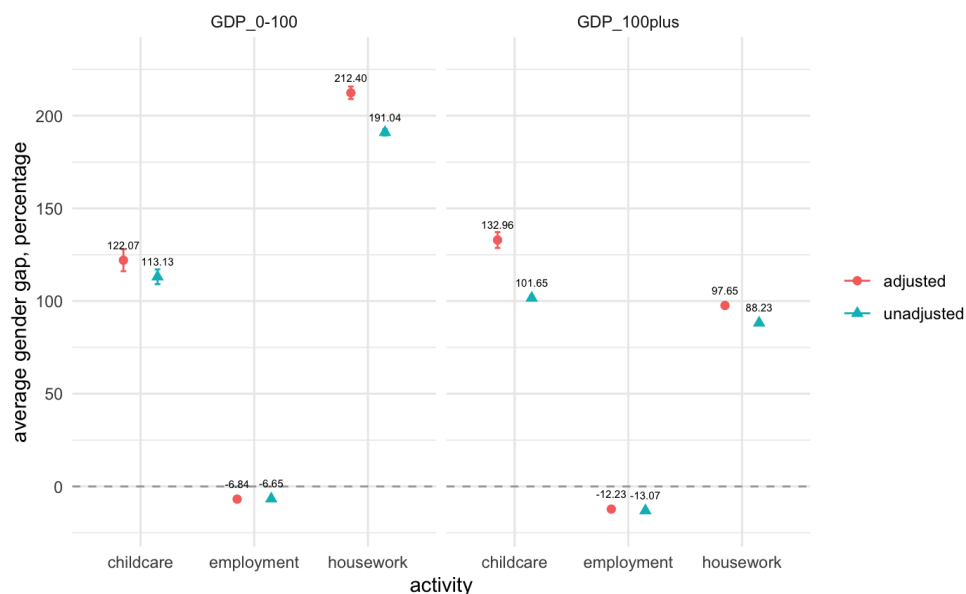


Figure 6. Gender gaps in worktime, housework and childcare by GDP per capita group

Note: GDP_0-100 includes EL, PL, EE, RO; GDP_100plus includes BE, DE, FI, FR, LU, UK. Unadjusted gaps are estimated controlling for gender, year, month, week day of time diary recording and country fixed effects. Adjusted values are estimated additionally controlling for own age group, migration status, own education, own and partner’s full-time/part-time work, household size, number of kids aged 0 to 6, number of kids aged 7-17, household net income band, age gap between husband and wife, education gap between husband and wife. For the time spent on childcare models, only data from households with one or more kids of any age was used.

Source: Linear regression estimates (employment time) and tobit regression estimates (housework and childcare) based on HETUS data, wave 2010, weighted averages.

Figure 6 depicts the difference between wives versus husbands in the estimated average time spent on paid work, housework, and childcare by countries grouped by GDP per capita group. Countries with a high level of GDP show a smaller gap in time spent on housework than countries in the group with a GDP below 100 PPS, 97% versus 220% (adjusted gap). Conversely, the gap in time spent on paid work is slightly higher, 13% versus 7%. This may be due to the fact that overall higher income allows women to work fewer hours if they need to care for children, which is also reflected in higher time spent on childcare. For childcare, we can observe roughly the same differences in both groups. In

highly developed countries, children are often valued higher than in less developed countries, and therefore, parents generally invest more time in childcare, especially women which makes the gap bigger. However, in less developed countries, the average number of children per family is higher, which, despite spending less time on each child, may result in a roughly similar total amount of childcare time.

As a next step, we move away from formal country profiles by region or economic indicators and group them solely based on gender gaps in time use.

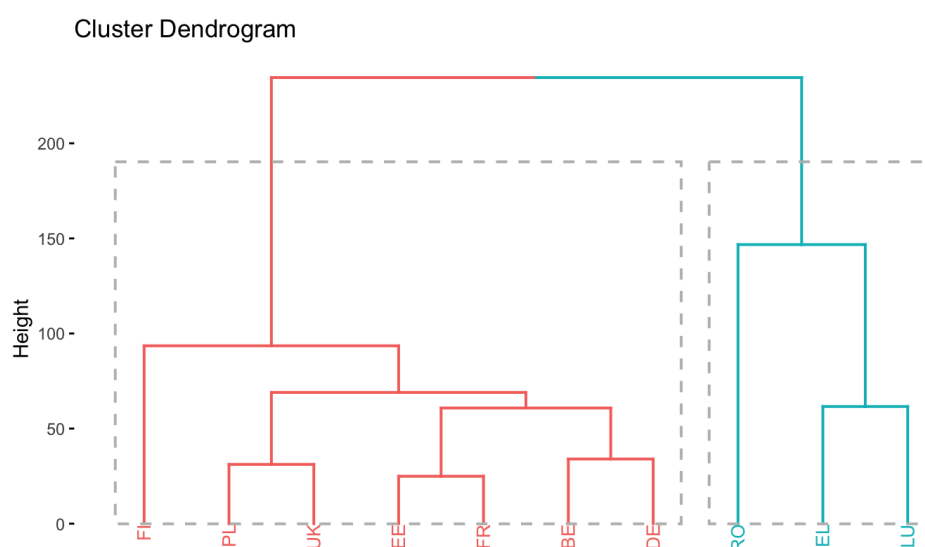


Figure 7. Hierarchical clustering by time gaps in paid work, housework and childcare

Note: Countries grouped by weighted average time spent on paid work, housework and childcare by husbands and wives. For the time spent on childcare, only data from households with one or more kids of any age was used.

Source: Hierarchical clustering based on HETUS wave 2010 data, Ward's method.

Figure 7 shows a dendrogram that is a result of a hierarchical cluster analysis using the Ward's method. This method showed better accuracy comparing to other methods such as the average linkage between groups method and the single linkage and complete linkage methods, therefore, despite quite similar results, it was chosen for our analysis. The optimal number of clusters were defined by using Silhouette score and equals 2, the plot and the comparison of methods can be found in Table A7 and Figure A1 in the Appendix. For clustering, we used weighted averages of time spent on paid work, housework, and childcare by husbands and wives separately. Final groups:

- Cluster 1: Finland (FI), Poland (PL), United Kingdom (UK), Estonia (EE), France (FR), Belgium (BE) and Germany (DE);
- Cluster 2: Romania (RO), Greece (EL) and Luxemburg (LU).

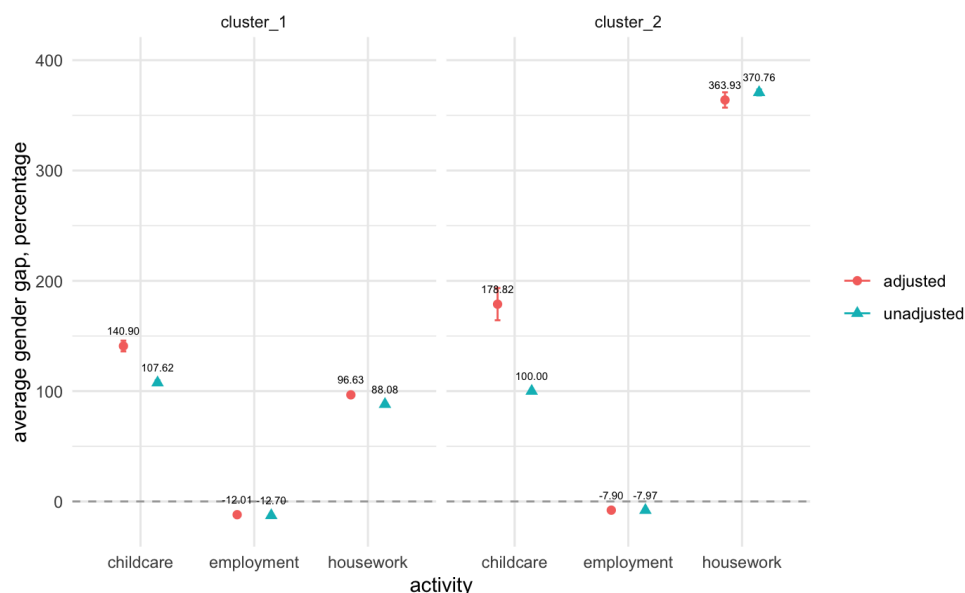


Figure 8. Gender gaps in worktime, housework and childcare by cluster

Note: Cluster 1 includes FI, PL, UK, EE, FR, BE, DE; Cluster 2 includes RO, EL, LU. Unadjusted gaps are estimated controlling for gender, year, month, week day of time diary recording and country fixed effects. Adjusted values are estimated additionally controlling for own age group, migration status, own education, own and partner’s full-time/part-time work, household size, number of kids aged 0 to 6, number of kids aged 7-17, household net income band, age gap between husband and wife, education gap between husband and wife. For the time spent on childcare models, only data from households with one or more kids of any age was used.

Source: Linear regression estimates (employment time) and tobit regression estimates (housework and childcare) based on HETUS data, wave 2010, weighted averages.

Figure 8 depicts the difference between wives versus husbands in the estimated average time spent on paid work, housework, and childcare by cluster. As has already been confirmed earlier, the countries included in the second cluster have a much larger difference in the time spent on housework, which, when aggregated, increases further and amounts to more than 300%. At the same time, the difference in time spent on paid work and child care is slightly smaller than in the first cluster. In general, the grouping of countries using

gender-based time use clustering follows fairly closely the division of countries by economic indicators and geography. This confirms the close link between gender equality and a country's economic development with the only exception being Luxembourg which is a highly developed country in Western Europe but showing greater differences in time spent on housework between husbands and wives.

4.4 Macro-level factors' effect on disparities in time allocation

As a next step to more accurately assess countries' levels of gender equality, we include the following indicators in the analysis: gender gap in employment, unadjusted gender wage gap, childcare enrolment of children under 3 years old, female representation in top management positions, female representation in executive government positions, share of people with higher education. We do not consider differences in the share of higher education between men and women, since in most of the countries under consideration the percentage of women with higher education is higher. The only exception is Germany, where 3pp more men have higher education, and Luxembourg with a difference of about 1pp. Knowing this, we take total share as an indicator of the accessibility of education in the country, which is closely related to gender equality. All macro-level indicators used for the analysis can be found in Table A8 in Appendix.

We can observe a correlation of varying strength between selected macro-level indicators and gaps in time allocation, all correlation coefficients (Spearman's method) are shown in Figure 9. For time spent on paid work, the strongest relationship is observed with the percentage of kids from 0 to 6 years old in childcare facilities (-0.54), which reduces the time gap, as well as with the wage gap (0.37), which, on the contrary, increases the time gap. Housework has a strong positive correlation with the employment gap (0.68) and a negative correlation with the percentage of women in top management (-0.63). Time spent on childcare has the strongest connection with the percentage of kids in childcare (0.39) and with the wage gap (-0.27).

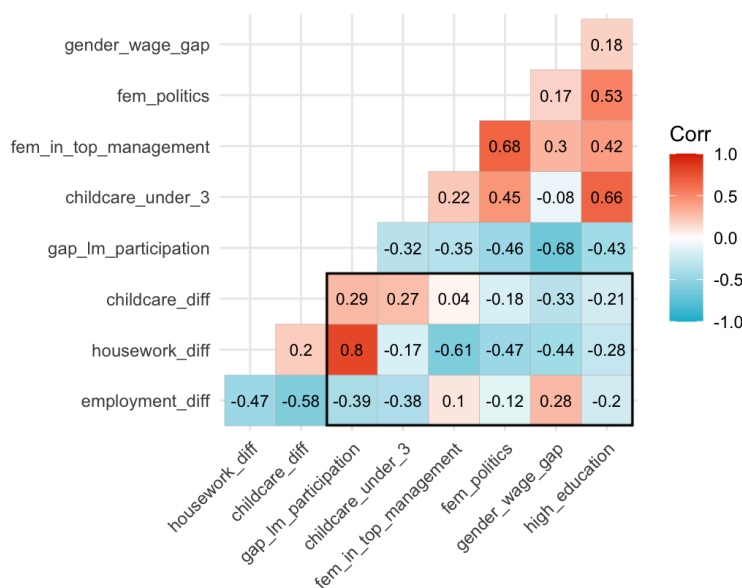


Figure 9. Correlation between selected macro-level indicators and average gaps in time allocation

Note: Spearman’s rank correlation coefficients between macro-level factors such as gender gap in employment, unadjusted gender wage gap, childcare enrolment of children under 3 years old, female representation in top management positions, female representation in executive government positions, share of people with higher education, and weighted average gaps in time allocation between husbands and wives.

Source: HETUS, wave 2010, macro-level indicators are available at <https://ec.europa.eu/eurostat/web/main/data/database>

After including macro-level variables in the model, we can see that they all have a significant effect on the time gap for paid work, except for the wage gap, which means that less pay does not lead to less wives’ working time. Macro-level indicators have a similar effect on housework time, with the employment gap being the strongest, so an increase in the gap by 1pp increases housework time by 7.9pp. The percentage of people with higher education and the percentage of women in politics have the greatest impact on childcare time, increasing it by 2.2pp and 2.9pp respectively. A larger percentage of kids in childcare, on the contrary, reduces time spent on childcare by 1.3pp.

To illustrate the effect of macro-level indicators on gaps in time spent on paid work, housework, and childcare by husbands and wives, we plot them against the adjusted estimates of individual country regressions, Figures 10 - 12.

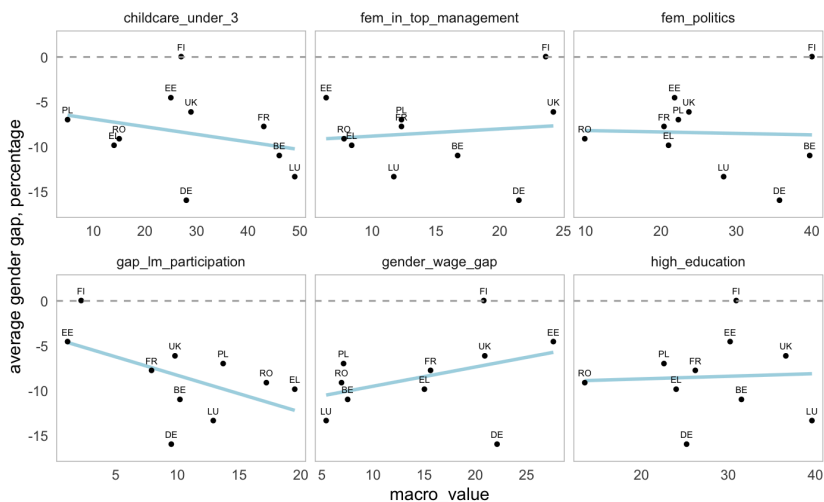


Figure 10. Gaps between husband’s and wife’s time spent on paid work, plotted versus macro-level country indicators

Note: Adjusted gaps are estimated controlling for gender, year, month, week day of time diary recording and country fixed effects, as well as for own age group, migration status, own education, own and partner’s full-time/part-time work, household size, number of kids aged 0 to 6, number of kids aged 7-17, household net income band, age gap between husband and wife, education gap between husband and wife.

Source: Linear regression estimates (employment time) and tobit regression estimates (housework and childcare) based on HETUS data, wave 2010, Eurostat macro-level indicators.

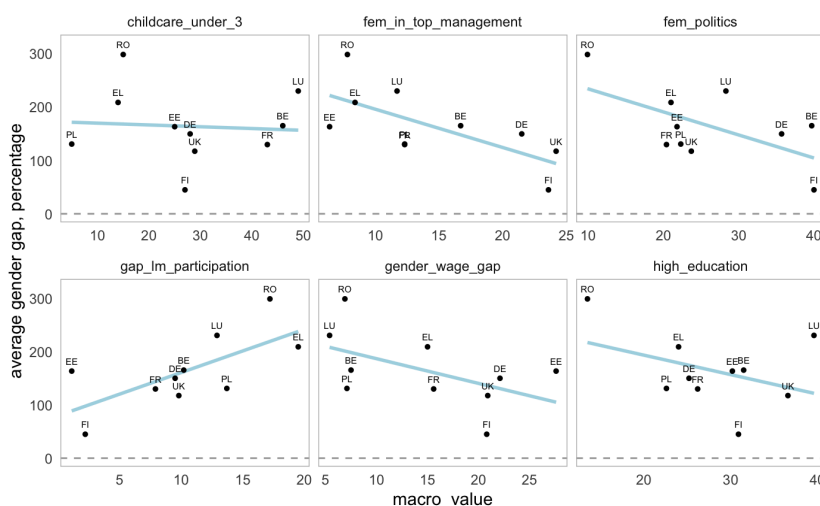


Figure 11. Gaps between husband’s and wife’s time spent on housework, plotted versus macro-level country indicators

Note: Adjusted gaps are estimated controlling for gender, year, month, week day of time diary recording and country fixed effects, as well as for own age group, migration status, own education, own and partner’s full-time/part-time work, household size, number of kids aged 0 to 6, number of kids aged 7-17, household net income band, age gap between husband and wife, education gap between husband and wife.

Source: Linear regression estimates (employment time) and tobit regression estimates (housework and childcare) based on HETUS data, wave 2010, Eurostat macro-level indicators.

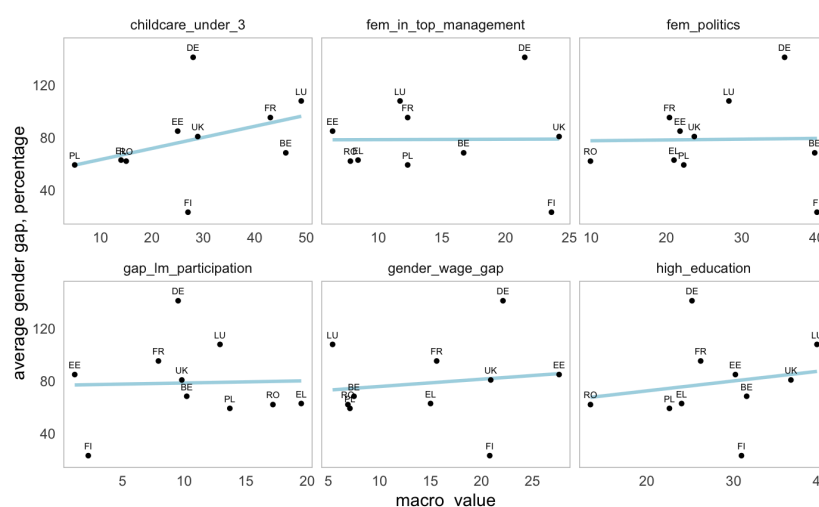


Figure 12. Gaps between husband’s and wife’s time spent on childcare, plotted versus macro-level country indicators

Note: Adjusted gaps are estimated controlling for gender, year, month, week day of time diary recording and country fixed effects, as well as for own age group, migration status, own education, own and partner’s full-time/part-time work, household size, number of kids aged 0 to 6, number of kids aged 7-17, household net income band, age gap between husband and wife, education gap between husband and wife. For the time spent on childcare models, only data from households with one or more kids of any age was used.

Source: Linear regression estimates (employment time) and tobit regression estimates (housework and childcare) based on HETUS data, wave 2010, Eurostat macro-level indicators.

Trends in the time spent on paid work are not so easily determined since the gap in most cases is very small, only the gap in employment has a strong negative effect. Conversely, we can clearly observe the influence of macro-level factors on housework, when

a greater percentage of kids in childcare, women in politics and top management, a greater percentage of people with higher education reduce the time gap, and the employment gap predictably widens the time gap in housework. The wage gap, on the contrary, reduces it, which is due to the fact that most countries with a high overall gender equality index still had a large wage gap in a given period of time. For childcare time, most factors do not show a clear trend, but we can see that a higher percentage of kids in childcare correlates with a higher time gap. Although having kids in daycare reduces the total amount of time spent on childcare, it does not necessarily have a direct impact on the allocation of time between husbands and wives within the family.

5. Conclusions

In this thesis we analysed how couples divide their time among paid work, household duties, and childcare across diverse European countries using data of the Harmonised European Time Use Survey (HETUS), wave 2010. We examined the influence of gender, individual characteristics, partner characteristics, and household factors on the allocation of time to these activities. Moreover, we delved deeper into how economic conditions and overall levels of gender equality influence the time gap between husbands and wives.

The difference between men and women in paid work is getting smaller, and in some countries like Finland, it is nearly non-existent. This suggests increased equality in job opportunities for women, making it easier for them to participate in the labor market. Although there is still a gap in wages and employment, on average, in a couple, wives work about the same amount of time as husbands. With this in mind, it might seem logical to expect an equal distribution of time spent on household chores and childcare. However, our analysis revealed that this assumption doesn't hold true.

One striking revelation from our analysis is the enduring imbalance in housework and childcare, where women consistently shoulder a disproportionate burden, irrespective of their own employment status. We can clearly see that even in countries recognized for their strides in gender equality, this disparity persists. From a grouped analysis of countries along geographic and economic lines, we can assume that cultural norms and prevailing economic conditions significantly influence this division, contributing to increased inequality in societies dominated by traditional gender roles.

Childcare duties mirror the housework trend, with women taking on a larger share across all scenarios we examined. In situations when wives have reduce work hours, the resultant increase in housework and childcare they undertake is far greater than expected. This

disparity hints at complex underlying factors, including societal expectations and perceptions of gender roles, that go beyond simple working hours in shaping the allocation of household tasks. Even though how time is divided within a family is a personal decision and result of agreements, across all the countries we studied, we consistently see a similar pattern where women tend to handle more household chores and childcare responsibilities.

It is crucial to contextualize these findings within the broader landscape of gender equality. Despite notable advances in providing women with greater employment opportunities and greater labor force participation, a persistent and disproportionate division of household and childcare responsibilities prevails. While there have been improvements in such areas as increased representation of women in various professions and policy changes promoting gender parity, the persistence of unequal household labor distribution demonstrates the strong position of entrenched gender disparities. Thus, our analysis includes countries that consistently occupy high places in gender equality ratings, but even in these cases we observe a large gap between husbands and wives in the time spent on housework and childcare.

Closing this persistent gap could yield substantial benefits, by not only improving individual household well-being but also unlocking broader economic advantages. A more equitable distribution of household responsibilities can improve household efficiency, which, in turn, can positively impact the overall economy. In summary, while observable progress is evident in certain domains of gender equality, the enduring unequal distribution of household responsibilities remains a significant challenge. Addressing this multifaceted issue requires concerted efforts not only to promote fairness within families but also to foster a more inclusive and prosperous society for all.

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Appendix

Table A1

Average time devoted to paid work, housework and childcare by demographic and country

Time use in minutes	n	Housework			Paid work			Childcare		
		Hus band	Wife	Diff, %	Hus band	Wife	Diff, %	Hus band	Wife	Diff, %
Total	7,629	98	168	72%	635	559	-12%	31	65	108%
<i>By country</i>										
BE	397	106	186	76%	614	547	-11%	27	44	67%
DE	822	102	178	75%	634	528	-17%	31	78	152%
EE	317	102	173	70%	614	573	-7%	30	39	29%
EL	213	57	178	213%	644	576	-11%	49	58	19%
FI	300	131	158	21%	557	549	-1%	37	48	31%
FR	1,527	105	166	58%	632	582	-8%	28	51	83%
LU	216	65	166	153%	703	577	-18%	28	64	128%
PL	1,577	97	158	62%	603	560	-7%	55	80	45%
RO	1,909	54	141	160%	736	681	-8%	18	48	164%
UK	351	94	144	54%	593	550	-7%	34	65	90%

Note: Weighted averages. To calculate the average time spent on childcare, only data from households with one or more kids of any age was used.

Source: HETUS, wave 2010, own calculations.

Table A2

Time devoted to paid work by personal and household characteristics - linear regression results

time_employment	BE	EE	EL	RO	UK
wife	-71.678***	-36.592*	-58.097***	-54.131***	-46.700**
	-12.52	-15.815	-16.299	-4.043	-14.201
own_age4	6.065	69.416	124.766	27.736	345.489+
	-64.165	-70.625	-125.499	-22.014	-180.899
own_age5	27.229	67.545	90.79	55.872**	272.119
	-66.076	-69.495	-103.023	-21.467	-179.524
own_age6	-3.353	-13.594	130.549	68.935**	261.29
	-65.509	-69.499	-103.312	-21.678	-180.154
own_age7	-10.123	-29.451	98.413	65.007**	317.080+
	-65.468	-69.293	-103.055	-21.643	-179.433
own_age8	-31.761	-61.616	120.949	55.579*	281.402
	-65.965	-69.646	-102.539	-21.95	-179.489
own_age9	-18.388	-8.126	143.897	53.944*	266.981
	-65.319	-69.579	-104.53	-22.026	-179.884
own_age10	-34.818	-9.989	173.969	51.698*	246.133

	-66.512	-70.389	-107.824	-22.731	-179.591
own_age11	100.571	-64.876	27.565	-17.365	171.196
	-85.696	-78.764	-236.516	-31.818	-182.511
country_born_newsame_country	-69.708*	-22.586	6.984	-62.561	-39.490
	-27.306	-21.194	-26.58	-55.937	-28.665
own_educown_educ_high	34.767+	-22.894	-37.270	17.228	10.347
	-19.513	-46.337	-26.697	-11.054	-49.553
own_educown_educ_medium	47.451**	29.294	-35.670	15.843	14.413
	-17.577	-45.385	-26.501	-10.555	-49.843
full_timeboth_part_time	-63.367*	82.83	-41.960	-172.093**	2.561
	-29.774	-90.46	-104.729	-59.941	-44.238
full_timehusband_full_time	-7.918	-31.999	15.925	-81.527***	-30.456+
	-14.128	-26.291	-25.396	-18.153	-16.14
full_timewife_full_time	39.895	-108.934+	46.662	34.449	-5.915
	-30.998	-60.988	-46.387	-39.556	-46.273
household_size3	4.146	27.234	-93.458**	-24.919***	42.739+
	-22.346	-25.026	-34.282	-6.347	-23.989
household_size4	-24.342	55.885+	-50.666	-4.819	53.422+
	-24.894	-29.877	-40.464	-7.133	-29.3
n_kids_0_61	-29.906	-70.955**	55.665+	-48.910***	-32.365
	-25.681	-24.87	-31.008	-6.549	-24.696
n_kids_0_62	5.461	-9.343	2.195	-64.637***	-70.019*
	-32.476	-57.563	-46.341	-13.177	-34.571
n_kids_7_171	6.806	-6.523	-14.173	6.193	-45.719+
	-19.809	-22.653	-30.739	-5.325	-23.569
n_kids_7_172	23.798	-17.841	-0.125	-14.102	-58.061+
	-24.304	-33.306	-34.172	-8.713	-30.935
household_net_income_band2	209.870*	48.099+	-66.846	-64.849**	193.333**
	-83.226	-28.49	-169.949	-20.505	-61.676
household_net_income_band3	126.037	-85.542**	-78.960	-9.330	145.798*
	-81.271	-29.929	-158.619	-13.188	-57.862
household_net_income_band4	119.695	31.984	71.68	-17.001	202.983***
	-79.895	-27.193	-158.532	-11.702	-57.392
household_net_income_band5	142.195+	-6.831	4.193	-24.734*	164.805**
	-81.115	-33.088	-159.638	-11.131	-56.729
age_gap_husband_older	39.883**	-7.284	-40.193*	6.2	-17.628

	-13.747	-16.974	-19.32	-4.247	-15.94
age_gapwife_older	15.521	-36.242	6.373	0.782	42.727+
	-23.665	-25.886	-33.09	-8.335	-23.356
education_gaphusband_more_educated	4.144	-34.637	35.006	-0.253	19.777
	-21.187	-33.348	-26.378	-7.526	-23.477
education_gapwife_more_educated	10.195	-10.555	-39.433	-12.680+	14.845
	-14.652	-18.011	-25.101	-7.265	-21.499
Num.Obs.	794	634	426	3818	702
+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001					

	DE	FI	FR	LU	PL
wife	-109.958***	-8.206	-55.602***	-126.518***	-44.870***
own_age4	1.805	26.563	41.246	-38.688	-25.415
	-61.415	-112.643	-43.409	-95.387	-26.257
own_age5	34.714	43.805	6.335	-57.536	-42.914+
	-61.53	-112.914	-42.767	-95.438	-25.799
own_age6	36.172	76.139	-12.722	-40.096	-33.663
	-60.295	-111.936	-42.821	-94.3	-26.031
own_age7	33.939	65.567	-13.071	-0.183	-53.306*
	-60.364	-111.582	-42.885	-94.819	-26.285
own_age8	19.454	20.941	-48.315	-42.156	-86.034**
	-60.504	-111.653	-42.751	-95.561	-26.476
own_age9	32.459	2.539	-35.871	-6.532	-71.765**
	-60.712	-111.395	-42.537	-95.795	-26.508
own_age10	24.405	-4.500	-34.489	-44.160	-80.521**
	-61.311	-112.061	-43.129	-100.213	-27.701
own_age11	-50.634	41.24	-93.610+	-2.029	-105.067**
	-62.044	-113.218	-50.599	-170.011	-36.285
country_born_newsame_country	-26.301	98.086	0.533	-20.526	121.061
	-21.003	-69.199	-18.572	-18.463	-111.131
own_educown_educ_high	-8.532	-55.857*	8.186	-4.614	24.061
	-31.881	-28.048	-12.344	-23.693	-19.123
own_educown_educ_medium	-15.416	-71.385**	-8.571	-46.312*	39.336*
	-31.505	-26.304	-9.62	-20.915	-18.222
full_timeboth_part_time	-97.525***	-114.792	47.900*	-16.910	-11.008
	-25.423	-136.574	-21.966	-54.92	-42.869
full_timehusband_full_time	-30.209**	-0.196	-16.189*	-54.217**	0.849

me					
	-9.972	-28.436	-7.858	-17.848	-11.545
full_timewife_full_time	-44.824	-92.316	1.084	-164.465	-30.773
	-30.337	-77.963	-18.817	-103.109	-25.059
household_size3	-27.148*	34.455	4.579	-41.641	-20.285+
	-13.09	-28.211	-11.264	-28.776	-10.745
household_size4	-11.494	42.631	-29.315+	-55.210+	23.737+
	-18.306	-39.124	-15.078	-31.517	-12.913
n_kids_0_61	-37.625*	-28.386	-53.688***	-29.342	-31.093***
	-15.196	-26.969	-11.124	-24.112	-9.423
n_kids_0_62	-71.214**	-108.314*	-60.550**	-23.790	-79.690***
	-24.04	-44.011	-19.054	-36.259	-15.907
n_kids_7_171	-19.739	-30.820	14.531	-3.391	-13.704
	-14.644	-28.296	-11.181	-21.477	-9.037
n_kids_7_172	-35.709+	-84.157*	23.661	-14.149	-33.775*
	-20.019	-37.554	-14.84	-28.209	-13.324
household_net_income_band2				27.955	20.091
				-47.481	-38.199
household_net_income_band3	-129.177*	-285.641*	55.715	-17.603	13.949
	-55.158	-140.393	-44.365	-46.393	-37.291
household_net_income_band4	-101.410+	-238.959+	31.706	40.558	19.702
	-52.144	-129.006	-43.672	-46.663	-37.321
household_net_income_band5	-88.428+	-243.603+	58.965	41.13	21.936
	-52.189	-131.368	-43.832	-47.679	-37.577
age_gaphusband_older	5.794	-12.651	-3.036	-18.594	-1.373
	-9.446	-16.442	-7.232	-16.941	-6.638
age_gapwife_older	-15.050	49.025*	-41.276***	37.833	-0.519
	-12.59	-23.218	-11.579	-27.263	-11.972
education_gaphusband_more_educated	6.689	-50.259*	7.658	-24.851	42.961**
	-10.226	-24.891	-9.424	-25.919	-13.235
education_gapwife_more_educated	-11.915	2.905	-12.226	-46.251*	10.958
	-12.002	-17.796	-9.221	-20.79	-7.413
Num.Obs.	1644	600	3054	432	3154

Note: All models additionally control for year, month, and week day fixed effects. All estimates account for individual response and day weight.

Source: Linear regression estimates based on HETUS data, wave 2010.

Table A3

Time devoted to household by personal and household characteristics - tobit regression results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	BE	DE	EE	EL	FI	FR	LU	PL	RO	UK
time_housework										
female	81.595***	48.583***	72.599***	144.666** *	28.117***	66.833***	103.407** *	68.314***	105.028** *	55.225***
	(10.681)	(7.326)	(11.020)	(10.376)	(9.267)	(5.145)	(11.955)	(4.238)	(3.217)	(9.504)
3.age_group	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
4.age_group	-0.034	-27.211	8.214	110.432	64.764	36.270	73.821	-8.967	6.445	70.385
	(45.688)	(41.079)	(48.631)	(74.662)	(71.358)	(30.772)	(63.352)	(16.620)	(16.976)	(108.074)
5.age_group	-21.271	-58.691	89.536*	63.119	60.771	43.155	84.744	-4.919	-5.965	102.870
	(47.372)	(41.302)	(48.130)	(61.472)	(71.430)	(30.356)	(62.898)	(16.331)	(16.548)	(107.325)
6.age_group	8.931	-40.303	65.545	48.906	65.635	64.522**	96.701	6.839	-7.036	102.189
	(46.580)	(40.469)	(47.581)	(61.628)	(70.776)	(30.405)	(62.335)	(16.504)	(16.721)	(107.680)
7.age_group	20.103	-44.938	105.841**	71.374	61.386	53.622*	81.213	12.138	-2.325	89.798
	(46.506)	(40.505)	(47.560)	(61.701)	(70.413)	(30.374)	(62.903)	(16.644)	(16.669)	(107.174)
8.age_group	60.130	-31.049	100.843**	21.605	82.268	79.562***	87.189	27.851*	5.075	119.598
	(46.730)	(40.645)	(48.088)	(62.098)	(70.642)	(30.296)	(63.527)	(16.790)	(16.916)	(107.262)
9.age_group	55.296	-43.814	88.167*	50.187	88.241	73.910**	89.489	21.128	0.294	134.075
	(46.230)	(40.741)	(48.053)	(62.498)	(70.315)	(30.122)	(63.528)	(16.801)	(16.992)	(107.525)
10.age_group	24.592	-53.725	68.570	-2.031	97.514	76.244**	117.137*	19.461	5.235	112.406
	(46.984)	(41.202)	(48.810)	(65.261)	(71.058)	(30.583)	(66.701)	(17.475)	(17.545)	(107.119)
11.age_group	-34.941	-22.847	40.392	84.461	52.353	88.406**	-423.132	14.986	36.343	157.991
	(61.509)	(41.646)	(55.074)	(139.859)	(71.055)	(35.649)	(17757.911)	(22.902)	(24.740)	(108.654)
born_in_country	43.310**	36.594***	10.902	-39.151**	-65.268	13.959	15.970	43.141	41.827	24.230
	(19.951)	(14.145)	(14.798)	(17.846)	(43.110)	(13.488)	(12.281)	(72.808)	(46.702)	(18.048)
full_time	-18.337	-61.416***	-23.078	-0.004	-58.195***	-31.324***	-33.008**	-23.695**	-77.456***	-25.363**
	(11.274)	(7.817)	(21.604)	(18.307)	(21.964)	(6.761)	(14.836)	(9.583)	(16.725)	(12.009)
educ_medium	19.413	-25.489	12.944	-12.157	1.545	-2.383	1.880	-6.280	-1.987	24.670
	(12.904)	(21.055)	(31.571)	(17.005)	(16.454)	(6.951)	(14.370)	(11.446)	(8.283)	(29.954)

educ_high	6.608	-33.908	43.917	12.436	-9.640	-31.694***	-6.864	-11.614	-11.410	9.659
	(14.259)	(21.319)	(32.057)	(17.504)	(17.525)	(9.015)	(16.496)	(12.061)	(8.691)	(29.892)
2.household_size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
3.household_size	-20.195	-0.090	-84.373***	19.859	-28.811	-0.804	33.173	13.169*	14.482***	-3.645
	(16.118)	(8.726)	(17.867)	(22.458)	(19.061)	(8.225)	(20.549)	(6.795)	(5.034)	(14.742)
4.household_size	-25.557	-1.981	-49.437**	45.661*	-42.791	12.293	43.537**	6.789	22.039***	-22.425
	(17.923)	(12.223)	(21.097)	(26.728)	(25.984)	(10.944)	(21.474)	(8.237)	(5.746)	(18.004)
5.household_size	-16.301	25.072	-61.066**	67.382*	-29.959	27.060*	77.147**	21.255**	11.067	-53.770**
	(22.875)	(16.375)	(28.981)	(38.058)	(35.411)	(13.955)	(29.875)	(9.948)	(7.328)	(25.849)
n_kids_0_6_1	10.438	-10.393	-13.479	-83.356***	11.966	-29.737***	-18.489	-12.753**	5.525	6.694
	(18.604)	(10.222)	(19.116)	(19.873)	(18.712)	(8.191)	(17.106)	(6.022)	(5.269)	(15.628)
n_kids_0_6_2plus	-5.089	-13.914	-130.490** *	-58.002*	19.443	-11.134	-28.133	-25.770**	1.667	24.656
	(24.180)	(16.149)	(44.273)	(31.577)	(30.811)	(14.320)	(25.835)	(10.170)	(10.649)	(21.679)
n_kids_7_17_1	6.508	2.378	-13.052	15.754	41.156**	-8.759	-7.062	-2.378	-2.785	20.162
	(15.188)	(9.831)	(16.149)	(19.112)	(18.777)	(8.173)	(15.842)	(5.733)	(4.254)	(14.601)
n_kids_7_17_2plus	-0.889	3.978	5.281	-21.841	46.388*	-20.469*	-3.110	0.276	4.677	37.302*
	(18.979)	(13.725)	(24.149)	(24.692)	(27.163)	(11.573)	(23.230)	(8.673)	(6.965)	(21.195)
household_net_income_b and_2	-33.522	-58.221*	0.197	-45.361	-74.829	55.075*	4.768	1.156	68.992***	-35.087
	(60.059)	(34.328)	(20.993)	(96.754)	(67.951)	(30.503)	(33.340)	(23.851)	(16.277)	(38.746)
household_net_income_b and_3	-19.506	8.468	40.491*	-22.671	8.099	3.831	-0.422	-6.589	12.413	-33.024
	(58.871)	(14.224)	(22.137)	(74.363)	(35.941)	(9.323)	(32.091)	(23.151)	(10.549)	(36.926)
household_net_income_b and_4	9.511	4.289	-18.357	-65.001	-3.585	12.149**	0.187	-9.484	17.412*	-23.868
	(58.149)	(6.378)	(20.784)	(73.607)	(12.198)	(5.527)	(32.559)	(23.126)	(9.398)	(36.878)
household_net_income_b and_5	-10.729	0.000	-34.628	-56.662	0.000	0.000	-17.926	-9.762	11.609	-9.963
	(58.848)	(.)	(25.225)	(74.473)	(.)	(.)	(32.549)	(23.278)	(8.963)	(36.074)
husband_older	-22.779**	5.202	9.034	2.415	8.998	-11.423**	27.451**	5.503	-2.003	16.837*
	(9.872)	(6.381)	(12.097)	(12.930)	(10.567)	(5.192)	(11.754)	(4.193)	(3.384)	(9.755)
husband_younger	-13.505	7.316	21.628	-11.259	8.664	29.952***	19.717	6.924	-0.645	-0.552
	(17.272)	(8.521)	(17.924)	(24.495)	(15.349)	(8.361)	(19.409)	(7.615)	(6.580)	(14.750)
husb_more_educated	-20.618	5.694	36.813	-16.844	-10.473	-9.766	22.113	-28.274***	0.074	1.694

	(15.530)	(6.947)	(23.546)	(18.628)	(16.307)	(6.741)	(18.301)	(8.431)	(5.939)	(14.546)
wife_more_educated	-7.300	3.078	0.381	42.952***	-7.508	4.950	7.717	0.528	15.693***	-18.268
	(10.630)	(8.084)	(12.927)	(16.142)	(11.715)	(6.694)	(14.232)	(4.678)	(5.831)	(13.367)
N	790	1632	632	420	600	2992	426	3132	3752	694
Standard errors in parentheses										
* p<0.1	** p<0.05	*** p<0.01"								

Note: All models additionally control for year, month, and week day fixed effects. All estimates account for individual response and day weight.

Source: Tobit regression estimates based on HETUS data, wave 2010.

Table A4

Time devoted to childcare by personal and household characteristics - tobit regression results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	BE	DE	EE	EL	FI	FR	LU	PL	RO	UK
time_childcare										
female	25.077***	69.309***	24.863*	13.774	1.468	34.811***	41.166**	23.392***	53.855***	60.493***
	(9.147)	(8.599)	(12.976)	(10.828)	(15.088)	(4.867)	(18.571)	(5.868)	(7.561)	(11.449)
3.age_group	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)		(.)	(.)	(.)	(.)	(.)
4.age_group	454.180	15.008	-97.300**	15.828	0.000	61.050*	-67.213	-16.544	-71.098**	657.409
	(13357.189)	(41.724)	(47.372)	(65.988)	(.)	(33.360)	(140.091)	(24.218)	(35.495)	(21912.817)
5.age_group	468.844	10.870	-229.148**	-32.278	-45.999	72.157**	-60.339	-28.359	-101.001**	697.852
	(13357.189)	(41.630)	(47.885)	(55.624)	(39.248)	(33.003)	(138.557)	(23.752)	(34.946)	(21912.814)
6.age_group	458.332	-4.876	-258.863**	36.413	-57.823	71.431**	-60.232	-35.771	-147.988**	675.188
	(13357.188)	(41.463)	(50.680)	(54.257)	(37.570)	(33.328)	(138.303)	(24.174)	(35.593)	(21912.815)
7.age_group	436.335	5.404	-258.781**	-14.081	-67.373*	53.263	-79.253	-58.759**	-173.181**	661.994
	(13357.189)	(41.347)	(50.057)	(54.636)	(40.058)	(33.617)	(139.504)	(24.729)	(36.187)	(21912.816)
8.age_group	452.797	-29.972	-262.254**	-47.911	-80.112*	42.814	-138.445	-80.095***	-199.112**	648.905
	(13357.193)	(42.236)	(52.030)	(55.589)	(45.297)	(33.911)	(141.006)	(25.993)	(39.349)	(21912.815)

9.age_group	438.615	-37.183	-252.140** *	-27.450	-134.674**	45.744	-83.708	-105.762** *	-211.270** *	666.666
	(13357.195)	(42.862)	(54.101)	(59.418)	(56.163)	(35.075)	(142.618)	(28.092)	(46.983)	(21912.827)
10.age_group	389.654	-50.300	-834.140	-9.057	-202.261**	-2.214	-510.042	-107.622** *	-149.028** *	630.068
	(13357.260)	(51.769)	(20467.297)	(76.516)	(82.650)	(47.764)	(17548.340)	(35.774)	(49.185)	(21912.843)
11.age_group	-70.682	-59.955	-373.520** *	202.780	-644.004	-1321.044		0.280	-1460.725	641.195
	(24372.176)	(56.267)	(84.147)	(148.259)	(22402.487)	(51611.229)		(61.769)	(121852.47 7)	(21912.995)
born_in_country	-2.094	34.788**	-58.085***	-30.967	54.043	-9.070	-11.457	34.051	846.704	-11.159
	(16.198)	(15.484)	(20.782)	(22.048)	(80.430)	(15.585)	(20.124)	(74.834)	(27745.975)	(18.024)
full_time	-12.156	-2.410	-21.225	-38.411*	-77.839**	-22.732***	-21.575	-9.677	-63.314**	15.795
	(9.294)	(8.500)	(24.267)	(21.210)	(32.715)	(5.845)	(22.032)	(13.049)	(31.890)	(12.822)
educ_medium	5.820	10.215	6.426	63.909***	53.123	1.154	54.101**	-17.279	42.497**	25.111
	(12.702)	(25.175)	(33.127)	(21.957)	(48.392)	(7.414)	(24.322)	(15.219)	(21.298)	(29.966)
educ_high	-5.731	23.298	52.769	67.816***	59.335	10.158	42.743	3.203	75.874***	23.050
	(13.401)	(25.441)	(33.350)	(23.546)	(48.868)	(8.671)	(29.909)	(16.074)	(22.159)	(29.567)
3.household_size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
4.household_size	-12.968	-29.844**	-2.821	-1.594	-30.857	-20.447**	-14.227	-23.669***	-0.035	17.906
	(17.618)	(12.161)	(22.668)	(26.012)	(30.439)	(8.087)	(26.586)	(8.666)	(10.545)	(19.986)
5.household_size	-16.219	-32.489*	-39.267	-11.649	-72.338	-29.184***	-14.045	-27.845**	-1.776	1.075
	(20.692)	(16.973)	(29.800)	(36.730)	(44.049)	(11.041)	(39.713)	(11.306)	(12.281)	(31.111)
n_kids_0_6_1	87.787***	104.876***	93.163***	95.336***	138.404***	67.825***	73.897***	102.333***	89.427***	107.786***
	(15.806)	(11.877)	(21.357)	(22.889)	(28.607)	(7.687)	(27.177)	(9.579)	(13.666)	(19.278)
n_kids_0_6_2plus	115.377***	153.038***	230.146***	148.428***	232.503***	107.278***	91.396**	148.764***	91.617***	111.820***
	(25.626)	(22.250)	(44.842)	(46.050)	(50.088)	(13.390)	(41.655)	(15.724)	(22.053)	(31.498)
n_kids_7_17_1	-3.559	-5.016	53.553*	-29.320	15.495	-17.637**	-18.939	-25.945***	-34.891**	-52.817**
	(18.919)	(13.882)	(28.930)	(28.329)	(32.180)	(8.939)	(31.391)	(9.610)	(14.096)	(22.917)
n_kids_7_17_2plus	32.735	39.495*	67.053*	-31.762	51.895	18.779	-12.759	11.166	3.660	-17.670
	(24.594)	(21.474)	(38.391)	(42.633)	(49.051)	(12.817)	(44.252)	(14.906)	(20.279)	(33.763)
household_net_income_band_2	55.652	-622.236	31.376	0.339	0.000	-26.779	-14.721	26.619	-42.267	-72.117*
	(80.875)	(16720.060)	(20.776)	(44.450)	(.)	(32.734)	(74.765)	(31.499)	(42.060)	(41.078)

household_net_income_band_3	7.111	2.900	-6.755	-21.310	143.279*	-9.959	2.869	12.476	-14.478	-110.099**
	(75.851)	(15.668)	(24.466)	(30.151)	(81.686)	(9.266)	(74.914)	(30.493)	(28.230)	(39.275)
household_net_income_band_4	-0.026	5.376	14.853	-33.705**	-0.609	-0.286	-10.461	28.026	-34.100	-96.929**
	(74.963)	(6.575)	(21.531)	(16.159)	(21.714)	(5.024)	(75.665)	(30.408)	(25.129)	(39.774)
household_net_income_band_5	12.902	0.000	-92.344***	0.000	0.000	0.000	-14.202	23.252	-20.366	-92.995**
	(75.437)	(.)	(32.096)	(.)	(.)	(.)	(73.537)	(30.630)	(24.409)	(39.812)
husband_older	-7.211	17.723***	27.298*	-27.353**	29.639*	4.144	-6.299	-6.382	-1.297	2.079
	(8.399)	(6.777)	(15.627)	(13.086)	(17.400)	(4.725)	(18.952)	(5.838)	(7.900)	(11.678)
husband_younger	10.929	17.654**	75.011***	17.465	-43.458	-5.726	-12.379	-10.063	44.937***	-9.722
	(15.987)	(8.642)	(21.425)	(25.763)	(31.921)	(8.259)	(31.283)	(10.406)	(13.854)	(18.251)
husb_more_educated	-0.412	-2.696	-69.209**	35.727*	39.134	10.156	21.192	-28.654**	23.125*	-56.283***
	(15.146)	(7.332)	(33.457)	(18.898)	(36.142)	(6.657)	(28.874)	(12.608)	(13.989)	(19.007)
wife_more_educated	-10.830	-16.830**	-7.612	13.798	5.053	13.595**	7.752	3.593	0.239	-5.207
	(9.464)	(8.456)	(14.517)	(15.150)	(20.735)	(5.866)	(21.958)	(6.120)	(12.980)	(14.553)
N	480	1072	320	292	352	1904	268	1928	1558	404
Standard errors in parentheses										
* p<0.1	** p<0.05	*** p<0.01"								

Note: For the time spent on childcare model, only data from households with one or more kids of any age was used. All models additionally control for year, month, and week day fixed effects. All estimates account for individual response and day weight.

Source: Tobit regression estimates based on HETUS data, wave 2010.

Table A5

Time devoted to paid work, housework and childcare by personal and household characteristics - linear regression and tobit results by region

Central Europe	time_employment	time_housework	time_childcare
wife	-103.587***	83.058***	66.491***
	-5.015	-0.063	-0.071
own_age4	-20.011	-7.667***	25.016***
	-32.511	-0.405	-0.431

own_age5	4.629	-39.332***	21.308***
	-32.421	-0.404	-0.427
own_age6	8.37	-20.850***	6.215***
	-31.877	-0.397	-0.427
own_age7	4.752	-21.243***	12.067***
	-31.942	-0.397	-0.427
own_age8	-12.066	-2.890***	-10.188***
	-31.978	-0.398	-0.439
own_age9	1.829	-17.119***	-14.152***
	-32.112	-0.4	-0.447
own_age10	-4.928	-29.346***	-31.553***
	-32.465	-0.404	-0.556
own_age11	-77.224*	9.922***	-26.137***
	-33.11	-0.412	-0.618
country_born_newforeign_country	28.393*	-37.153***	-40.625***
	-12.968	-0.164	-0.196
own_educown_educ_high	1.946	-35.803***	17.284***
	-18.074	-0.225	-0.272
own_educown_educ_medium	-4.728	-22.954***	4.693***
	-17.816	-0.222	-0.268
full_timeboth_part_time	-91.572***	48.763***	-13.111***
	-15.334	-0.191	-0.191
full_timehusband_full_time	-27.003***	23.452***	-12.388***
	-5.572	-0.07	-0.079
full_timewife_full_time	-35.008*	10.969***	-11.570***
	-17.675	-0.222	-0.308
household_size3	-29.069***	8.017***	
	-7.643	-0.096	
household_size4	-8.989	7.733***	-25.787***
	-10.423	-0.131	-0.131
n_kids_0_61	-36.481***	-8.921***	100.342***
	-8.672	-0.109	-0.13
n_kids_0_62	-74.059***	-2.990***	144.043***
	-13.841	-0.174	-0.233
n_kids_7_171	-20.303*	6.435***	-9.762***

	-8.359	-0.105	-0.148
n_kids_7_172	-37.331**	13.699***	32.002***
	-11.526	-0.144	-0.219
household_net_income_band2	35.646	-7.403***	-31.922***
	-87.841	-1.106	-1.066
household_net_income_band3	-29.192	20.342***	-21.188***
	-85.916	-1.081	-1.03
household_net_income_band4	-11.048	12.411***	-21.745***
	-85.525	-1.076	-1.024
household_net_income_band5	1.659	11.909***	-28.107***
	-85.555	-1.077	-1.024
age_gaphusband_older	5.071	4.416***	13.451***
	-5.47	-0.069	-0.077
age_gapwife_older	-13.971+	8.323***	10.078***
	-7.481	-0.094	-0.101
education_gaphusband_more_educated	8.539	3.364***	-3.529***
	-6.166	-0.077	-0.088
education_gapwife_more_educated	-8.018	1.044***	-11.906***
	-6.857	-0.086	-0.095
Num.Obs.	4798	4798	3010
+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001			

Nothern Europe	time_employ ment	time_housewor k	time_childcare
wife	-11.663	41.708***	17.910***
	-10.545	-0.418	-0.556
own_age4	30.415	18.264***	9.669*
	-66.779	-2.667	-4.204
own_age5	44.326	30.911***	-75.332***
	-65.935	-2.632	-4.186
own_age6	56.775	35.730***	-82.699***
	-65.425	-2.612	-4.186
own_age7	37.989	49.632***	-71.096***

	-65.3	-2.606	-4.201
own_age8	-5.298	65.857***	-90.908***
	-65.396	-2.61	-4.259
own_age9	-3.967	65.444***	-111.462***
	-65.22	-2.603	-4.355
own_age10	-10.311	61.606***	-168.604***
	-65.494	-2.614	-4.944
own_age11	18.396	18.906***	-229.956***
	-69.002	-2.754	-7.373
country_born_newforeign_country	5.402	14.748***	18.401***
	-25.721	-1.019	-1.574
own_educown_educ_high	-60.130**	-5.402***	72.968***
	-20.668	-0.819	-1.609
own_educown_educ_medium	-55.298**	-4.790***	54.342***
	-19.784	-0.784	-1.589
full_timeboth_part_time	-37.887	70.880***	-26.536***
	-84.757	-3.336	-7.242
full_timehusband_full_time	-6.712	15.244***	13.267***
	-19.022	-0.753	-0.913
full_timewife_full_time	-54.805	76.182***	30.219***
	-44.284	-1.744	-2.691
household_size3	32.196+	-34.447***	
	-18.117	-0.72	
household_size4	48.435*	-36.376***	2.847**
	-24.554	-0.976	-0.946
n_kids_0_61	-41.085*	10.416***	116.081***
	-18.081	-0.718	-0.84
n_kids_0_62	-109.640***	43.673***	149.745***
	-30.453	-1.207	-1.414
n_kids_7_171	-28.301	31.613***	-27.846***
	-18.031	-0.717	-0.986
n_kids_7_172	-75.525**	46.437***	-24.848***
	-24.324	-0.966	-1.314
household_net_income_band2	37.158	3.599*	52.845***
	-40.015	-1.6	-1.921

household_net_income_band3	-108.391**	72.797***	47.418***
	-40.319	-1.606	-1.985
household_net_income_band4	-43.158	38.339***	17.616***
	-33.865	-1.354	-1.582
household_net_income_band5	-47.463	38.204***	21.822***
	-33.485	-1.339	-1.561
age_gaphusband_older	-12.192	7.627***	22.973***
	-11.528	-0.457	-0.599
age_gapwife_older	24.746	9.548***	11.260***
	-16.414	-0.65	-0.93
education_gaphusband_more_educated	-51.207**	4.172***	42.216***
	-17.988	-0.712	-1.099
education_gapwife_more_educated	-2.748	-6.139***	-10.958***
	-12.239	-0.485	-0.639
Num.Obs.	1234	1234	672
+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001			

Southern Europe	time_employment	time_housework	time_childcare
wife	-55.400***	112.056***	52.704***
	-4.005	-0.13	-0.253
own_age4	34.097	4.422***	-78.192***
	-22.156	-0.704	-1.187
own_age5	62.141**	-6.346***	-106.419***
	-21.511	-0.683	-1.165
own_age6	77.030***	-11.173***	-127.366***
	-21.657	-0.688	-1.179
own_age7	68.839**	-2.182**	-162.746***
	-21.662	-0.688	-1.203
own_age8	60.559**	8.870***	-176.428***
	-21.948	-0.697	-1.274
own_age9	57.855**	5.340***	-187.950***
	-22.072	-0.702	-1.471

own_age10	57.956*	9.121***	-137.390***
	-22.763	-0.725	-1.648
own_age11	-11.407	40.536***	-43.677***
	-32.375	-1.034	-6.173
country_born_newforeign_country	-29.632	30.626***	5.384***
	-18.843	-0.598	-1.204
own_educown_educ_high	9.122	-15.376***	53.599***
	-9.796	-0.314	-0.672
own_educown_educ_medium	8.898	-7.136***	28.965***
	-9.337	-0.298	-0.647
full_timeboth_part_time	-144.164***	69.461***	93.263***
	-43.422	-1.369	-1.908
full_timehusband_full_time	-49.425***	15.883***	33.381***
	-13.255	-0.423	-0.803
full_timewife_full_time	8.843	-17.714***	-68.878***
	-25.972	-0.843	-1.967
household_size3	-25.389***	12.440***	
	-6.319	-0.205	
household_size4	-3.277	12.000***	-31.382***
	-7.084	-0.229	-0.331
n_kids_0_61	-48.059***	1.601***	118.635***
	-6.462	-0.209	-0.448
n_kids_0_62	-68.657***	-9.234***	169.464***
	-12.03	-0.391	-0.704
n_kids_7_171	1.631	2.019***	0.405
	-5.325	-0.172	-0.457
n_kids_7_172	-22.549**	14.481***	42.097***
	-8.304	-0.267	-0.654
household_net_income_band2	-66.985**	71.706***	2.639*
	-20.892	-0.667	-1.332
household_net_income_band3	-20.887	23.192***	3.999***
	-13.412	-0.436	-0.95
household_net_income_band4	-12.501	22.342***	-7.640***
	-12.013	-0.391	-0.846
household_net_income_band5	-24.962*	16.718***	9.390***

	-11.475	-0.374	-0.825
age_gaphusband_older	1.433	-0.472***	-4.557***
	-4.211	-0.136	-0.259
age_gapwife_older	-1.761	-1.525***	33.600***
	-8.204	-0.265	-0.459
education_gaphusband_more_educated	0.843	-2.638***	28.309***
	-7.18	-0.233	-0.449
education_gapwife_more_educated	-20.999**	18.816***	12.726***
	-6.968	-0.223	-0.391
Num.Obs.	4244	4244	1884
+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001			

Western Europe	time_employment	time_housework	time_childcare
wife	-55.407***	78.684***	48.114***
	-5.273	-0.089	-0.085
own_age4	41.059	12.096***	68.167***
	-35.051	-0.599	-0.75
own_age5	2.881	24.256***	85.539***
	-34.434	-0.589	-0.743
own_age6	-13.667	41.402***	76.607***
	-34.544	-0.59	-0.746
own_age7	-0.626	38.727***	50.823***
	-34.48	-0.589	-0.749
own_age8	-35.594	64.124***	45.412***
	-34.315	-0.586	-0.753
own_age9	-31.166	71.306***	45.940***
	-34.299	-0.586	-0.768
own_age10	-36.452	62.155***	7.264***
	-34.624	-0.592	-0.858
own_age11	-93.729*	96.022***	0.426
	-38.529	-0.656	-1.672
country_born_newforeign_country	36.936**	-24.753***	10.651***

	-12.114	-0.207	-0.203
own_educown_educ_high	7.686	-14.253***	13.207***
	-9.571	-0.162	-0.161
own_educown_educ_medium	3.505	1.508***	5.699***
	-8.061	-0.136	-0.143
full_timeboth_part_time	7.952	7.705***	-4.991***
	-15.688	-0.265	-0.252
full_timehusband_full_time	-17.834**	19.493***	10.078***
	-5.912	-0.1	-0.091
full_timewife_full_time	5.952	-12.755***	-5.191***
	-14.721	-0.251	-0.247
household_size3	10.775	-6.797***	
	-8.637	-0.146	
household_size4	-7.010	7.713***	-12.752***
	-10.922	-0.184	-0.146
n_kids_0_61	-47.427***	-11.042***	72.967***
	-8.719	-0.148	-0.134
n_kids_0_62	-45.196***	-15.033***	107.490***
	-13.618	-0.231	-0.223
n_kids_7_171	-3.473	-7.148***	-24.082***
	-8.502	-0.144	-0.161
n_kids_7_172	0.9	-13.479***	9.498***
	-11.08	-0.187	-0.207
household_net_income_band2	163.601***	-20.729***	-48.266***
	-39.346	-0.669	-0.601
household_net_income_band3	133.118***	-5.796***	-68.093***
	-36.87	-0.627	-0.552
household_net_income_band4	131.157***	3.913***	-61.620***
	-36.562	-0.621	-0.546
household_net_income_band5	146.090***	-6.405***	-58.390***
	-36.638	-0.623	-0.547
age_gaphusband_older	1.261	-4.023***	2.115***
	-5.643	-0.096	-0.089
age_gapwife_older	-10.058	16.605***	-8.508***
	-8.943	-0.151	-0.149

education_gaphusband_more_educated	15.242*	-13.119***	-6.598***
	-7.69	-0.131	-0.129
education_gapwife_more_educated	-0.783	4.624***	5.983***
	-7.056	-0.119	-0.108
Num.Obs.	4982	4982	3106
+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001			

Note: For the time spent on childcare model, only data from households with one or more kids of any age was used. All models additionally control for year, month, week day and country fixed effects. All estimates account for individual response and day weight.

Source: Linear regression estimates (employment time) and tobit regression estimates (housework and childcare) based on HETUS data, wave 2010.

Table A6

GDP per capita, Purchasing Power Standards (PPS)

country / year	2011	2015	2022	group
BE	119	121	120	GDP_100plus
DE	124	124	117	GDP_100plus
EE	71	76	85	GDP_0-100
EL	75	70	67	GDP_0-100
FI	119	111	110	GDP_100plus
FR	109	107	100	GDP_100plus
LU	274	282	256	GDP_100plus
PL	65	69	79	GDP_0-100
RO	55	57	76	GDP_0-100
UK	108	111	100	GDP_100plus

Source: Eurostat, <https://ec.europa.eu/eurostat/web/purchasing-power-parities/database>

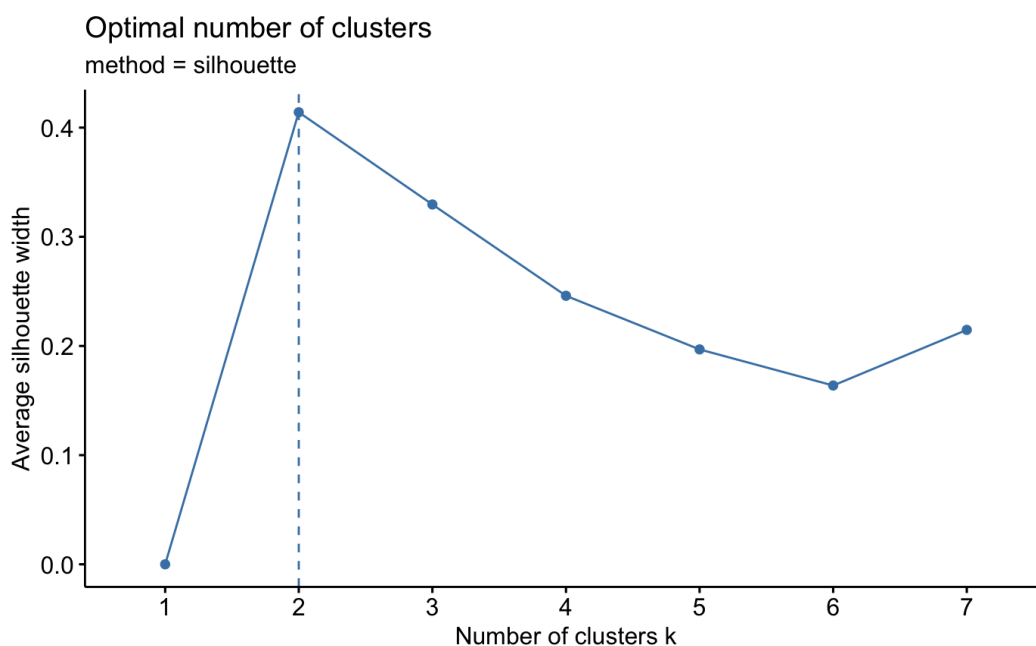


Figure A1. Hierarchical clustering, Silhouette score

Note: Countries grouped by weighted average time spent on paid work, housework and childcare by husbands and wives.

Source: Hierarchical clustering based on HETUS wave 2010 data, Silhouette score.

Table A7

Comparison of clustering models coefficients

method	average	single	complete	ward
AC coefficient	0.5263	0.4185	0.5835	0.5867

Note: Countries grouped by weighted average time spent on paid work, housework and childcare by husbands and wives.

Source: Hierarchical clustering based on HETUS wave 2010 data, comparison of four models.

Table A8

Macroe-level indicators of selected countries

Country	Year	Gap in labour market participation	Children under 3 y.o. in childcare	Women in top-management	Women in politics	Gender wage gap	Share of people with high education
BE	2013	10.20	46.00	16.70	39.70	7.50	31.50
DE	2013	9.50	28.00	21.50	35.70	22.10	25.20

EE	2009	1.10	25.00	6.40	21.80	27.60	30.20
EL	2013	19.50	14.00	8.40	21.00	15.00	24.00
FI	2009	2.20	27.00	23.60	40.00	20.80	30.90
FR	2010	7.90	43.00	12.30	20.40	15.60	26.20
LU	2014	12.90	49.00	11.70	28.30	5.40	39.60
PL	2013	13.70	5.00	12.30	22.30	7.10	22.60
RO	2012	17.20	15.00	7.80	9.90	6.90	13.50
UK	2014	9.80	28.90	24.20	23.70	20.90	36.60

Source: Eurostat, <https://ec.europa.eu/eurostat/web/main/data/database>

Resümee**PEREKONNA SISESEL TASUSTATUD TÖÖ JA KODUTÖÖ
AJAKASUTUSE NIHKUVAD MUSTRID: HETUS-ANDMETEL PÕHINEV
ÜLE-EUROOPALINE ANALÜÜS**

Aleksandra Grishechko

Käesolevas väitekirjas uuritakse soorollide püsivust ajakasutuses kahepalgaliste heteroseksuaalsete paaride seas, keskendudes tasustatud tööle, kodutööle ja lastehoiule. Kasutades Euroopa ühtlustatud ajakasutuse uuringu (ingl. Harmonised European Time Use Survey) andmeid 10 riigist, võetakse analüüsis arvesse isiklikke, partneri, leibkonna ja makrotasandi tegureid, mis mõjutavad ajakasutust. Erinevalt varasemast kirjandusest, mis toetub sageli koondandmetele või üksikute riikide analüüsidele, säilitatakse käesolevas uuringus granulaarsus, võrreldes abikaasade vahelist ajakasutust igas leibkonnas eri riikide lõikes.

Tulemused näitavad, et hoolimata soolise erinevuse vähenemisest tasustatud töö osas on kodutööde ja lastehoiu kohustuste jaotamine jätkuvalt ebavõrdses tasakaalus, kusjuures naised kannavad pidevalt ebaproportsionaalselt suurt koormust. See püsiv ebavõrdsus, mis ilmneb isegi riikides, kus on tehtud edusamme soolise võrdõiguslikkuse valdkonnas, toob esile keerulised takistused majapidamiskohustuste õiglase jaotuse saavutamisel. Selle erinevusega tegelemine ei too mitte ainult kasu üksikutele leibkondadele, vaid aitab kaasa laiemate majanduslike eeliste saavutamisele, parandades tõhusust ja edendades kaasavat ühiskonda.

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supervised by **Maryna Tverdostup (PhD)**

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