Gender gaps in housework activities in Europe before and after Covid-19

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Gender gaps in housework activities in Europe before and after Covid-19

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Abstract

We use data from the European working condition survey to describe the frequency of housework activities by men and women before and after the Covid-19 pandemic in European countries. We find that, although women continue to spend more time than men in housework activities, men increase housework activities after the pandemic and the gender gaps narrow. The result is driven by countries initially characterized by larger gender gaps in housework activities.

1 Introduction

Narrowing gender inequalities in the labor market remains a significant challenge. As the Covid-19 pandemic exacerbated existing gender differences in the labor market, at least in the short term (see Alon et al. (2020), Profeta (2020)) the consequences of the pandemic on gender equality are under investigation.

Gender gaps in the labor market are strictly related to gender gaps at home, where traditional gender norms are still substantial (see Fanelli and Profeta (2021)). In fact, as long as women assume the primary caregiving responsibilities for children, household duties, and care of the elderly, their role in the labor market remains limited (see Profeta (2020b)). The Covid-19 pandemic, with lockdown measures and the widespread adoption of remote work, provided the opportunity to change gender norms and the division of domestic work. When men and women work from home, they may decide to allocate housework and childcare activities in a more balanced way and this new allocation may persist after the pandemic (Alon et al. (2020)). However, gender norms are C and difficult to change, making this shift difficult.

Several studies have investigated the short-term consequences of Covid-19 on the division of housework and childcare between men and women in different countries (see the pioneering paper by Del Boca et al. (2020) for Italy and, among others, Sevilla and Smith (2020) for the UK, Farré et al. (2022) for Spain). They overall suggest that while men slightly increased their participation in home production, most of the extra work caused by the crisis has fallen on women.

This paper relies on a cross-sectional survey of European workers from the European working condition survey to investigate gender gaps in housework activities before and after the pandemic. [1].

Our outcome variable is the frequency of engagement in household chores and cooking reported on a scale ranging from 1 (never) to 5 (daily). Thus, we compare responses obtained from the 2015 survey wave with those from the 2021 wave for both female and male participants. We observe that prior to the pandemic, women consistently scored 1.3 points higher on the scale from 1 to 5 compared to men. This indicates that the baseline gender disparity in time allocated to housework is estimated to be 26%. After the hit of the Covid-19 pandemic, we document a reduction in the pre-existing gender disparity in housework. Notably, this decrease in inequality is predominantly propelled by men, who augmented their average engagement in housework from 3.161 (in 2015) to 3.862 (in 2021).

Our regression analysis suggests that over the two waves, men increased housework frequency by about 0.7 points on the 1-5 scale, which is a 14% increase. Instead, women seem to maintain the same level of housework before and after Covid-19 crisis. The observed trend remains robust even after accounting for various demographic covariates, controlling for education levels, sector

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[1]We focus on housework, where, according to existing studies, the more interesting dynamics take place (see Fanelli and Profeta (2021))

fixed effects, household composition, and work-from-home arrangements. Additionally, our analysis presents separate results for countries exhibiting varying pre-Covid gender gaps in housework. Specifically, we aggregate the pre-Covid gap in housework frequency at country level, segmenting the variable into quartiles, and subsequently categorize countries based on these quartiles. The heterogeneity analysis indicates that men's participation in household chores increased predominantly in countries initially characterized by large gender gaps in housework activities. Interestingly, the result is confirmed in all age groups.

2   The Data

This paper relies on the European Working Condition Survey, a cross-sectional dataset of European employees assembled and distributed by Eurofound (European Foundation for the Improvement of Living and Working Conditions). We use two waves: 2015 (pre covid) and 2021 (post covid). Given the cross-sectional structure of the data, we do not observe the same individuals across the two waves. Thus, our results are descriptive and do not claim causality. In order to mitigate potential confounding factors, we include individual covariates in all the performed regressions.

The primary objective of the survey questionnaire is to offer a thorough description of the daily experiences of both men and women in the workplace. The questionnaire comprehensively addresses a range of themes, including employment status, duration and organization of working hours, work organization, learning and training opportunities, exposure to physical and psycho-social risk factors, health and safety considerations, work-life balance, participation in decision-making processes, earnings and financial security, as well as the intersection of work and health.

For our research objectives, we focus on individuals engaged in full-time employment, thereby excluding part-time workers from our analysis. This decision stems from the premise that part-time employment implies a certain degree of flexibility, potentially affording individuals more time for achieving work-life balance due to the reduced number of hours worked.

Additionally, given our interest in examining time allocation, we have further restricted our sample to include only individuals who provided responses to questions on time use. Consequently, our final sample counts 64,242 individuals, comprising 34,064 respondents from the 2015 wave and 28,178 respondents from the 2021 wave.

To analyze gender gaps in housework activities we use the following question:
"In general, how often are you involved in any of the following activities outside work? Cooking and housework." Respondents can select an option from a scale ranging from 1 to 5, representing frequencies of engagement (Never, Less often, Several times a month, Several times a week, Daily). This variable serves as our dependent variable.

In our regression model, we add several control variables: *Female* is a dummy variable that has value 1 if the individual is a female and 0 otherwise.

Age has been categorized into groups spanning 10-year intervals. The age groups are defined as follows: individuals aged 16 to 24 constitute the first class, followed by individuals aged 25 to 34 in the second class, individuals aged 35 to 44 in the third class, individuals aged 45 to 55 in the fourth class, and finally, individuals aged 56 or older in the fifth class. *Education* level is measured using ISCED (International Standard Classification of Education), which offers a harmonized metric accounting for variations across education systems in different countries. ISCED classifies education levels into nine categories, ranging from early childhood education to doctoral studies. Additionally, we include the variable *Sector (NACE)* to control for sectoral differences. NACE, the Statistical Classification of Economic Activities in the European Community, categorizes economic activities at the EU level. This variable is derived from the question "What is the main activity of the company or organization where you work?" and is classified at the highest level of the NACE hierarchy, comprising 21 sections differentiated by a single digit. Integrating this variable into our analysis allows us to account for variations across different sectors of economic activity. Furthermore, we control for occupational roles using the variable *Role (ISCO)*, which corresponds to the International Standard Classification of Occupations provided by the International Labour Office. This classification system facilitates the aggregation and categorization of occupational information. Information for this variable was derived from responses to questions regarding job titles and main job responsibilities. We utilize the 1-digit level classification, resulting in nine categories. Additionally, we include *Country* fixed effects, and we only keep those countries that were surveyed in both 2015 and 2021. The variable *Any children* captures whether there is at least one child under the age of 16 in the household, assigning a value of 1 if present and 0 otherwise. Lastly, *WFH (Working From Home)* indicates whether the individual works from home or another location outside the office at least a few times per month, with a value of 1 denoting yes and 0 denoting no.

Descriptive statistics are presented in Table 1, separately for the 2015 and 2021 survey waves. In total, the analysis includes 62242 individuals. 34064 individuals replied to the survey in 2015, while 28178 individuals replied to the survey in 2021. Women are slightly less than men (0.46), and more numerous in the post-Covid wave. The most represented age classes are 45-55 in 2015, and 35-55 in 2021. The proportion of subjects with at least one child is 30% in 2015, and it increases to 37% in 2021. As expected, the likelihood of working from home exhibited a substantial increase post-Covid, rising from 24% from the pre-pandemic level to 97%. Finally, the outcome variable, which measures the frequency of engaging in housework and cooking on a scale from 1 (never) to 5 (daily), exhibits average values of 3.7 in 2015 and 4.1 in 2021. All the covariates listed in the table are added as controls in our analysis, together with job sector fixed effects.

Table 1: Summary statistics, by period

Variable	No.Obs	Before Mean	Std.Err	No.Obs	After Mean	Std.Err	Diff. in Means P-Value
Female	34,064	0.464	0.499	28,178	0.447	0.497	0.00
Age 16-24	34,064	0.0587	0.235	28,178	0.0589	0.235	0.9167
Age 25-34	34,064	0.201	0.401	28,178	0.237	0.425	0.00
Age 35-44	34,064	0.256	0.436	28,178	0.276	0.447	0.00
Age 45-55	34,064	0.300	0.458	28,178	0.276	0.447	0.00
Age Over55	34,064	0.184	0.387	28,178	0.151	0.358	0.00
Early childhood	34,064	.00484	0.0694	28,178	0.00174	0.0416	0.00
Primary	34,064	0.0328	0.178	28,178	0.0101	0.100	0.00
Lower secondary	34,064	0.122	0.327	28,178	0.0541	0.226	0.00
Upper secondary	34,064	0.426	0.495	28,178	0.291	0.4540	0.00
Post-secondary	34,064	0.072	0.259	28,178	0.0614	0.240	0.00
Short-cycle tertiary	34,064	0.0946	0.293	28,178	0.0851	0.279	0.00
Bachelor	34,064	0.132	0.339	28,178	0.223	0.416	0.00
Master	34,064	0.101	0.301	28,178	0.246	0.431	0.00
Doctorate	34,064	0.0103	0.101	28,178	0.026	0.161	0.00
WFH (Working From Home)	34,064	0.245	0.429	28,178	0.977	0.149	0.00
Any Children	34,064	0.303	0.459	28,178	0.379	0.485	0.00
Time to housework	34,064	3.797	1.405	28,178	4.186	1.154	0.00

Notes. The table reports summary statistics for control variables and for the outcome variable. *Female* is a dummy equal to one if the individual is a female and 0 otherwise. Dummies for age groups are the following: *Age 16-24*, *Age 25-34*, *Age 35-44*, *Age 45-55* , *Age over55* individuals are dummies. Education is measured using the following dummies: Early childhood, Primary, Lower secondary, upper secondary, post-secondary, short-cycle tertiary, Bachelor, Master, Doctorate. *WFH* is a dummy equal to one if the individual works from home or another public place other than the office at least a few times during the month, and zero otherwise. *Any children* is a dummy one if in the household is present of at least one child under 16, and zero otherwise. *Time to Housework*, our outcome of interest, is the frequency of tasks such as housework and cooking, on a scale from 1 (never) to 5 (daily).

3 Analysis and Results

We perform a regression analysis by estimating the following equation:

$$y_{it} = \alpha + \beta FEMALE_i + \Upsilon POST_t + \delta FEMALE_i * POST_t + \iota X_i + \varepsilon_{it} \quad (1)$$

where y_{it} is the specific measured outcome for individual i "time devoted to housework" at time t, $POST_t*FEMALE_i$ is the interaction term of our interest, made up by a dummy variable $POST_t$, that has the value of 1 if individual i has been interviewed in the wave of 2021 and is 0 if he/she belongs to the group of individuals interviewed in the wave of 2015 and $FEMALE_i$ is a dummy variable that has value 1 if the individual is a female and 0 otherwise. X_i are individual control variables (Age groups, Education, Sector (Nace), Role (Isco), Country, Any children, WFH), and finally, ε_i is an error term. Equation 1 is equivalent to a difference-in-differences model, but in this specific case it is not on the same individuals.

We are interested in understanding the sign and significance of the interaction between pre-post Covid and gender, specifically whether the gap between

men and women has been closed or at least narrowed. Table 2 reports the results.

Table 2: Time devoted to Housework

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female (β)	1.370***	1.368***	1.347***	1.303***	1.282***	1.305***	1.305***	1.308***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Post (γ)	0.701***	0.700***	0.650***	0.643***	0.633***	0.653***	0.647***	0.599***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.016)
Female*Post (δ)	-0.645***	-0.651***	-0.657***	-0.649***	-0.640***	-0.659***	-0.658***	-0.661***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.018)	(0.018)	(0.018)
β + δ	0.725***	0.717***	0.690 ***	0.653***	0.641***	0.645***	0.647***	0.647***
	(0.01)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
R-squared	0.205	0.212	0.219	0.225	0.227	0.266	0.266	0.267
N	62242	62230	62230	62230	61945	61945	61945	61945
Age groups	no	yes	yes	yes	yes	yes	yes	yes
Education	no	no	yes	yes	yes	yes	yes	yes
Sector(NACE) FE	no	no	no	yes	yes	yes	yes	yes
Role (ISCO) FE	no	no	no	no	yes	yes	yes	yes
Country FE	no	no	no	no	no	yes	yes	yes
Any children	no	no	no	no	no	no	yes	yes
WFH	no	no	no	no	no	no	no	yes

Notes. The table reports results from several regressions. The outcome variable is *Time to Housework*, the frequency of tasks such as housework and cooking, measured on a scale from 1 (never) to 5 (daily). *Female* is a dummy equal to one if the individual is a female and 0 otherwise. *Post* is a dummy taking value one for the answers given in the 2015 wave (before Covid-19), and value zero for the answers given in the 2021 wave (after Covid-19). The interaction term *FemaleXPost* is also included in the model. The linear combination of the coefficients β + δ, measuring the gender gap after Covid-19, is reported in the table. Each column reports a different specification. Precisely, we add the following control variables. Dummies for age groups are the following: *Age 16-24*, *Age 25-34*, *Age 35-44*, *Age 45-55*. Education is measured using the following dummies: Early childhood, Primary, Lower secondary, upper secondary, post-secondary, short-cycle tertiary, Bachelor, Master, Doctorate. Sector (coded according to NACE classification), Role (coded according to ISCO classification) and Country fixed effects are added to the model. *Any children* is a dummy one if in the household is present of at least one child under 16, and zero otherwise. *WFH* is a dummy equal to one if the individual works from home or another public place other than the office at least a few times during the month, and zero otherwise. * p < 0.10, ** p < 0.05, *** p < 0.01, †p = 0.1.

A baseline gender gap in time allocated to housework emerges consistently across all specifications. The coefficient β indicates that women report a 1.3 higher score than men, which translates into a 26% time increase. After the Covid-19 pandemic however, men increased their workload at home substantially by 0.7 as signaled by γ coefficient (i.e. 14% increase), whereas women experienced a modest yet significant reduction of -0.062, as evidenced by the combined effect of γ and δ coefficients. As a result, the coefficient $POSTXFEMALE$ turns negative and significant.

Figure 1 provides a visualization of the results. Since the interaction term between pre-post and gender is significant, we report the marginal effects of our interest (corresponding to those in Table 2): female pre-post versus male pre-post. Figure 1 reports the graph for all the countries together. We clearly observe that the score representing the time devoted to housework for men increases from 3.1 pre-Covid to 3.9 post-Covid. This indicates that, on average, men transitioned from engaging in housework "several times a month" to nearing "several times a week". Conversely, women display minimal change, moving from "several times a week" and "daily" involvement. Women exhibited minimal downward change, consistently maintaining their workload within the range of "several times a week" and "daily".

Figure 1: Time used for housework
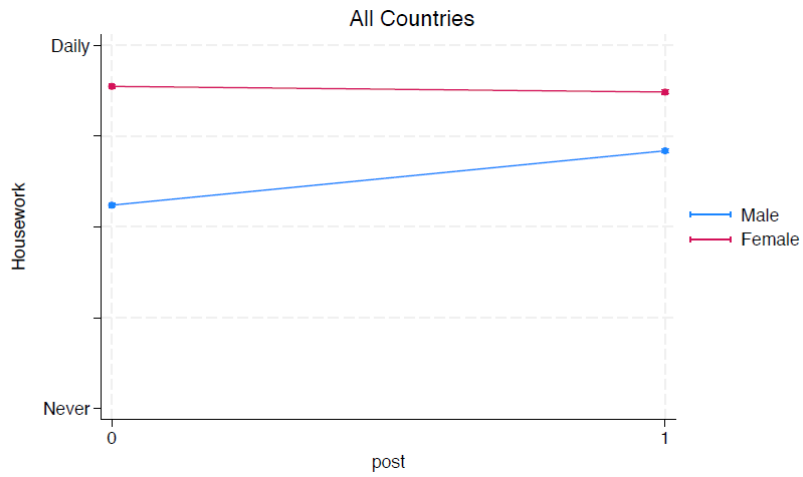
Notes. The figure displays the marginal effects of the interaction term *FemaleXPost* from the regression of equation 1.

3.1 Heterogeneity by groups of countries

How do gender dynamics change post-Covid across diverse contexts? In order to answer this question, we rank countries based on their pre-Covid gender gap in time spent on household chores and we divide them into quartiles accordingly. Highest quartiles group the less egalitarian countries. Then we run Equation 1 separately for each quartile, while controlling for all the relevant covariates mentioned in column (8) of Table 2. Table 3 reports the results.

Table 3: Gender gap : Quartiles of distribution by countries

	Quartile 1 (1)	Quartile 2 (2)	Quartile 3 (3)	Quartile 4 (4)
Female (β)	0.563***	1.036***	1.475***	2.154***
	(0.028)	(0.022)	(0.028)	(0.028)
Post (γ)	-0.155***	0.578***	0.958***	1.086***
	(0.030)	(0.027)	(0.035)	(0.036)
Female*Post (δ)	0.013	-0.526***	-0.834***	-1.264***
	(0.038)	(0.031)	(0.037)	(0.040)
β + δ	0.575***	0.509***	0.640***	0.890***
	(0.028)	(0.023)	(0.027)	(0.031)
R-squared	0.137	0.201	0.299	0.418
N	12220	21230	14239	14256
Age-groups	yes	yes	yes	yes
Education	yes	yes	yes	yes
Sector(NACE) FE	yes	yes	yes	yes
Role (ISCO) FE	yes	yes	yes	yes
Any children	yes	yes	yes	yes
WFH	yes	yes	yes	yes

Notes. The table reports regressions separately for countries having different levels of baseline gender gap in household frequency. We ranked countries according to their pre-Covid gender gap in housework. Then we split the household frequencies in quartiles, and allocated countries in 4 groups. Countries in the first quartile are those with the most balanced division of tasks within the household. On the contrary, countries in the last quartile are those with least balanced division of tasks. The outcome variable is *Time to Housework*, the frequency of tasks such as housework and cooking, measured on a scale from 1 (never) to 5 (daily). *Female* is a dummy equal to one if the individual is a female and 0 otherwise. *Post* is a dummy taking value one for the answers given in the 2015 wave (before Covid-19), and value zero for the answers given in the 2021 wave (after Covid-19). The interaction term *FEMALE X POST* is also included in the model. The linear combination of the coefficients β + δ, measuring the gender gap after Covid-19, is reported in the table. In each column, we include all the following covariates. Dummies for age groups are the following: *Age 16-24*, *Age 25- 34*, *Age 35-44*, *Age 45-55*. Education is measured using the following dummies: Early childhood, Primary, Lower secondary, upper secondary, post-secondary, short-cycle tertiary, Bachelor, Master, Doctorate. Sector (coded according to NACE classification) and Role (coded according to ISCO classification) fixed effects are added to the model. *Any children* is a dummy one if in the household is present of at least one child under 16, and zero otherwise. *WFH* is a dummy equal to one if the individual works from home or another public place other than the office at least a few times during the month, and zero otherwise.

*p < 0.10, ** p < 0.05, *** p < 0.01, †p =0.1.

The table documents that men significantly increase time spent on housework post-pandemic compared to women in the 2nd, 3rd, and 4th quartiles, whereas this does not happen in the first quartile. The magnitude of the ϒ coefficient increases moving to the 4th quartile. This suggests that the observed increase in housework among men is primarily driven by countries with a pre-existing imbalance in household labor division. Table 4 reports the results of regressions performed separately for each country. Figures 2, 3, 4, and 5 display the marginal effect of Equation 1 for countries grouped into quartiles based on the pre-Covid gender gap in housework.

Upon examining specific countries, while the majority exhibit a negative and significant coefficient for the *POSTXFEMALE* interaction term, exceptions include Denmark, Netherlands, and Latvia, where the value is not significant. Additionally, Finland stands out with a significant positive coefficient.

Table 4: Countries

	Female (β)	Post (γ)	Female*Post (δ)	Female + Female*Post ($\beta + \delta$)
		Q1		
Denmark	0.252***(0.065)	-0.117*(0.070)	0.129 (0.092)	0.381***(0.070)
Sweden	0.268***(0.068)	-0.613***(0.078)	0.443*** (0.093)	0.711***(0.069)
UK	0.510***(0.073)	0.185** 079)	-0.288***(0.105)	0.222***(0.082)
Norway	0.624***(0.079)	0.094 (0.092)	-0.251*(0.132)	0.373***(0.114)
Netherlands	0.627***(0.112)	-0.198*(0.109)	0.107 (0.143)	0.735***(0.099)
Finland	0.532***(0.088)	-0.938***(0.093)	0.470*** (0.118)	1.002***(0.087)
Estonia	0.867***(0.068)	0.350***(0.087)	-0.440*** (0.089)	0.427***(0.069)
Ireland	0.783***(0.090)	0.154*(0.092)	-0.218* (0.113)	0.381***(0.070)
		Q2		
France	0.857***(0.066)	0.450***(0.079)	-0.643*** (0.088)	0.215***(0.064)
Luxemburg	0.906***(0.090)	0.531***(0.100)	-0.531*** (0.131)	0.376***(0.102)
Belgium	0.911***(0.065)	0.403***(0.064)	-0.361*** (0.080)	0.550***(0.062)
Spain	0.962***(0.051)	0.249***(0.078)	-0.190**(0.085)	0.772***(0.073)
Latvia	0.984***(0.094)	0.044(0.119)	-0.023 (0.115)	0.961***(0.075)
Germany	1.069***(0.057)	1.096***(0.081)	-0.906*** (0.087)	0.163**(0.072)
Slovenia	1.162***(0.054)	0.966***(0.076)	-1.068*** (0.090)	0.093(0.076)
Switzerland	1.231***(0.086)	1.394***(0.094)	-0.893*** (0.102)	0.338***(0.060)
Slovakia	1.225***(0.065)	0.604***(0.105)	-0.436*** (0.094)	0.789***(0.070)
		Q3		
Czech Republic	1.283***(0.081)	0.902***(0.090)	-0.710*** (0.098)	0.572***(0.064)
Lituania	1.391***(0.073)	0.636***(0.100)	-0.735*** (0.095)	0.656***(0.070)
Malta	1.319***(0.089)	1.074***(0.120)	-0.793*** (0.126)	0.526***(0.095)
Romania	1.470***(0.073)	0.804***(0.098)	-0.730*** (0.099)	0.740***(0.074)
Poland	1.460***(0.085)	1.002***(0.114)	-0.780*** (0.137)	0.680***(0.117)
Austria	1.549***(0.096)	1.125***(0.112)	-0.950*** (0.135)	0.599***(0.107)
Hungary	1.570***(0.076)	1.088***(0.099)	-0.696*** (0.102)	0.874***(0.078)
Portugal	1.665***(0.080)	0.969***(0.113)	-1.115*** (0.100)	0.549***(0.067)
		Q4		
Bulgaria	1.783***(0.085)	0.572***(0.122)	-0.737***(0.116)	1.046***(0.089)
Cyprus	1.834***(0.081)	1.481*** (0.108)	-1.179*** (0.107)	0.655***(0.079)
Serbia	1.946***(0.0.079)	0.369***(0.113)	-0.705*** (0.128)	1.242***(0.109)
Croatia	1.998***(0.091)	0.665***(0.123)	-1.029*** (0.137)	0.969***(0.110)
Italy	2.074***(0.080)	1.662***(0.112)	-1.644***(0.122)	0.429***(0.098)
Greece	2.085***(0.077)	1.862*** (0.090)	-1.815*** (0.094)	0.269***(0.059)
Albania	2.361***(0.092)	0.534***(0.121)	-0.371** (0.145)	1.990***(0.121)
Montenegro	2.510***(0.088)	0.761***(0.113)	-1.010*** (0.137)	1.500***(0.114)
FYROM	2.599***(0.084)	1.023***(0.114)	-1.200*** (0.133)	1.399***(0.109)

Notes. The table reports regressions separately for countries having different levels of baseline gender gap in household frequency. We ranked countries according to their pre-Covid gender gap in housework. Then we split the household frequencies in quartiles, and allocated countries in 4 groups. Countries in the first quartile are those with the most balanced division of tasks within the household. On the contrary, countries in the last quartile are those with least balanced division of tasks. The outcome variable is *Time to Housework*, the frequency of tasks such as housework and cooking, measured on a scale from 1 (never) to 5 (daily). *Female* is a dummy equal to one if the individual is a female and 0 otherwise. *Post* is a dummy taking value one for the answers given in the 2015 wave (before Covid-19), and value zero for the answers given in the 2021 wave (after Covid-19). The interaction term *FEMALEXPOST* is also included in the model. The linear combination of the coefficients $\beta + \delta$, measuring the gender gap after Covid-19, is reported in the table. In each column, we include all the following covariates. Dummies for age groups are the following: *Age 16-24*, *Age 25-34*, *Age 35-44*, *Age 45-55*. Education is measured using the following dummies: Early childhood, Primary, Lower secondary, upper secondary, post-secondary, short-cycle tertiary, Bachelor, Master, Doctorate. Sector (coded according to NACE classification) and Role (coded according to ISCO classification) fixed effects are added to the model. *Any children* is a dummy one if in the household is present of at least one child under 16, and zero otherwise. *WFH* is a dummy equal to one if the individual works from home or another public place other than the office at least a few times during the month, and zero otherwise.
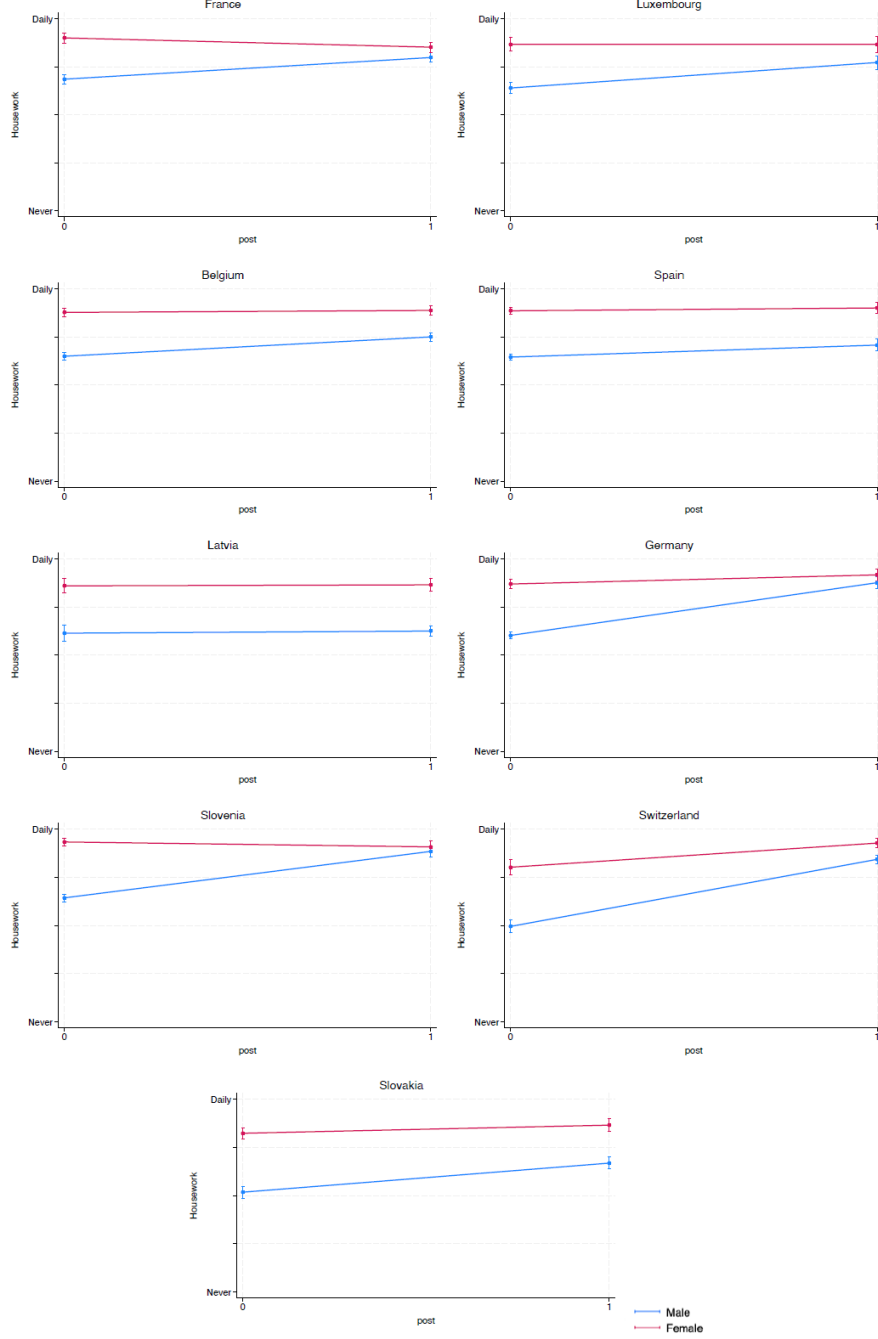
*p < 0.10, ** p < 0.05, *** p < 0.01, †p =0.1.

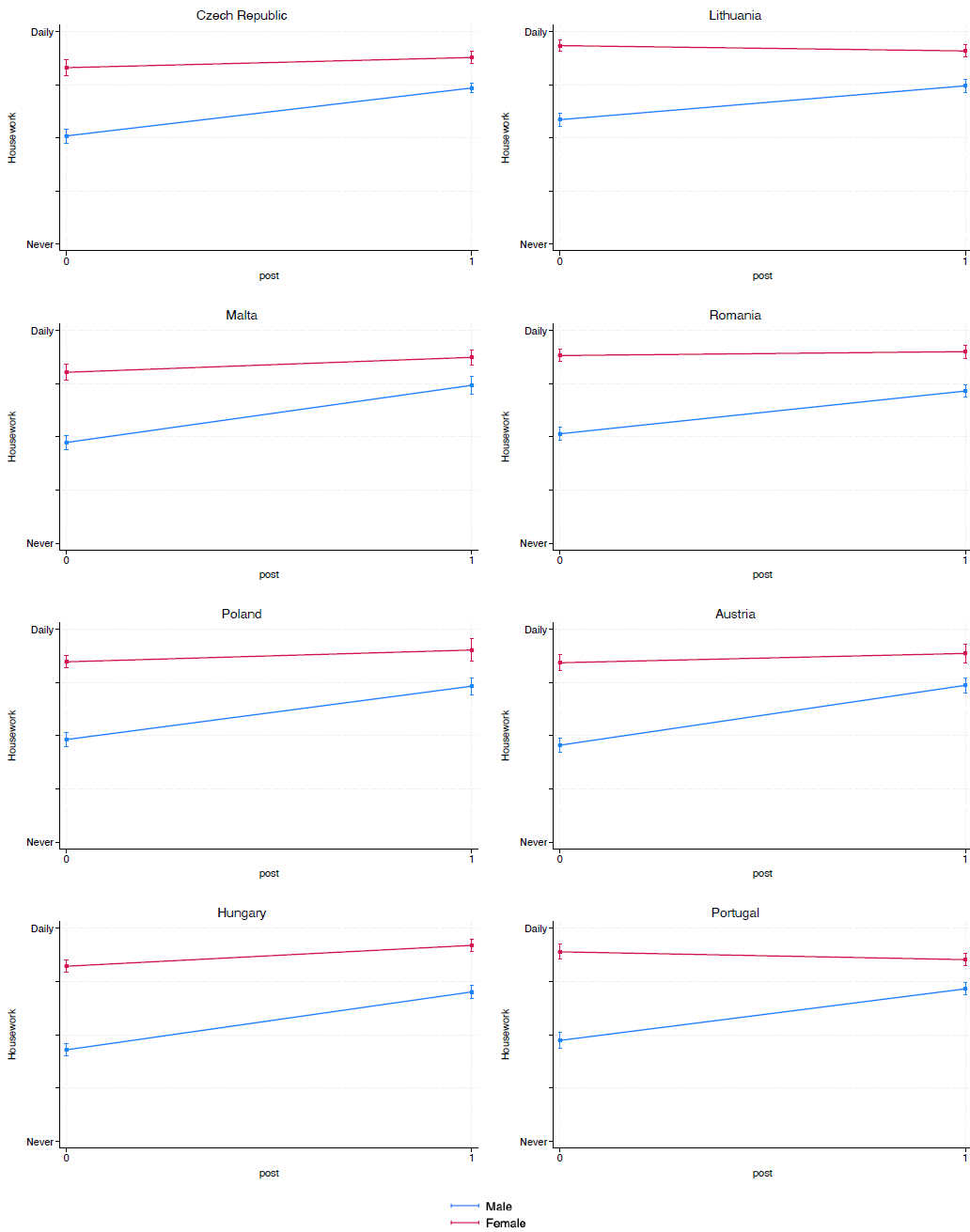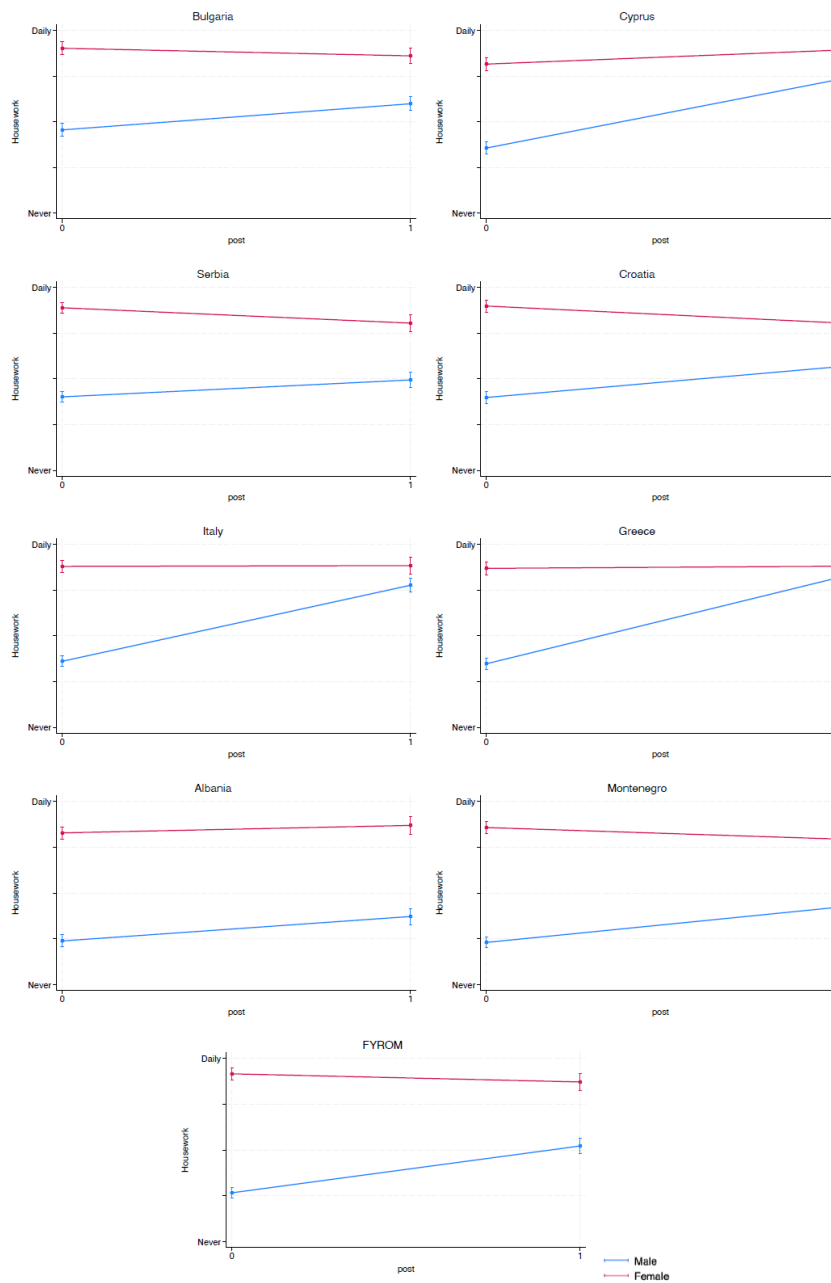# Figure 2: Time used for housework - Countries in Quartile 1
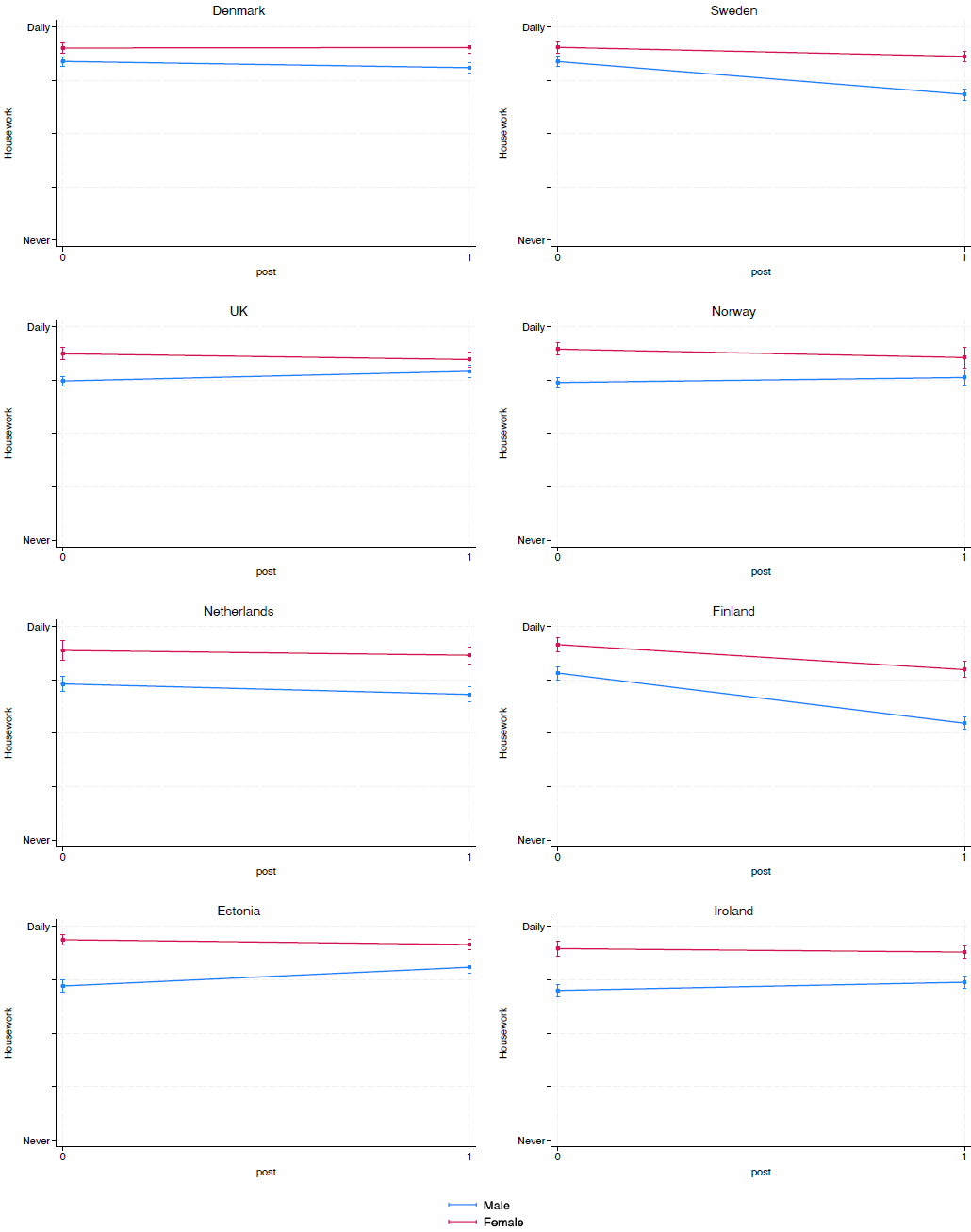
Notes. The figure displays the marginal effects of the interaction term *FemaleXPost* from the regression of equation 1, performed for separate countries. Countries included are those belonging to the first quartile of the distribution: the less egalitarian.

Figure 3: Time used for housework - Countries in Quartile 2

Notes. The figure displays the marginal effects of the interaction term *FemaleXPost* from the regression of equation 1, performed for separate countries. Countries included are those belonging to the second quartile of the distribution of gender gap.

Figure 4: Time used for housework - Countries in Quartile 3

Figure 5: Time used for housework - Countries in Quartile 4

Notes. The figure displays the marginal effects of the interaction term *FemaleXPost* from the regression of equation 1, performed for separate countries. Countries included are those belonging to the forth quartile of the distribution of gender gap.

3.2   Heterogeneity by age groups

In this subsection, we investigate whether the increase of men's housework activities is peculiar to specific cohorts or is a more widespread phenomenon. We split individuals based on their age into five ranges: 16-24, 25-34, 35-34, 45-55, and 56-plus. We conduct regressions separately for each age group, incorporating all relevant controls as detailed in column (8) of Table 2.

Table 5 reports the results.
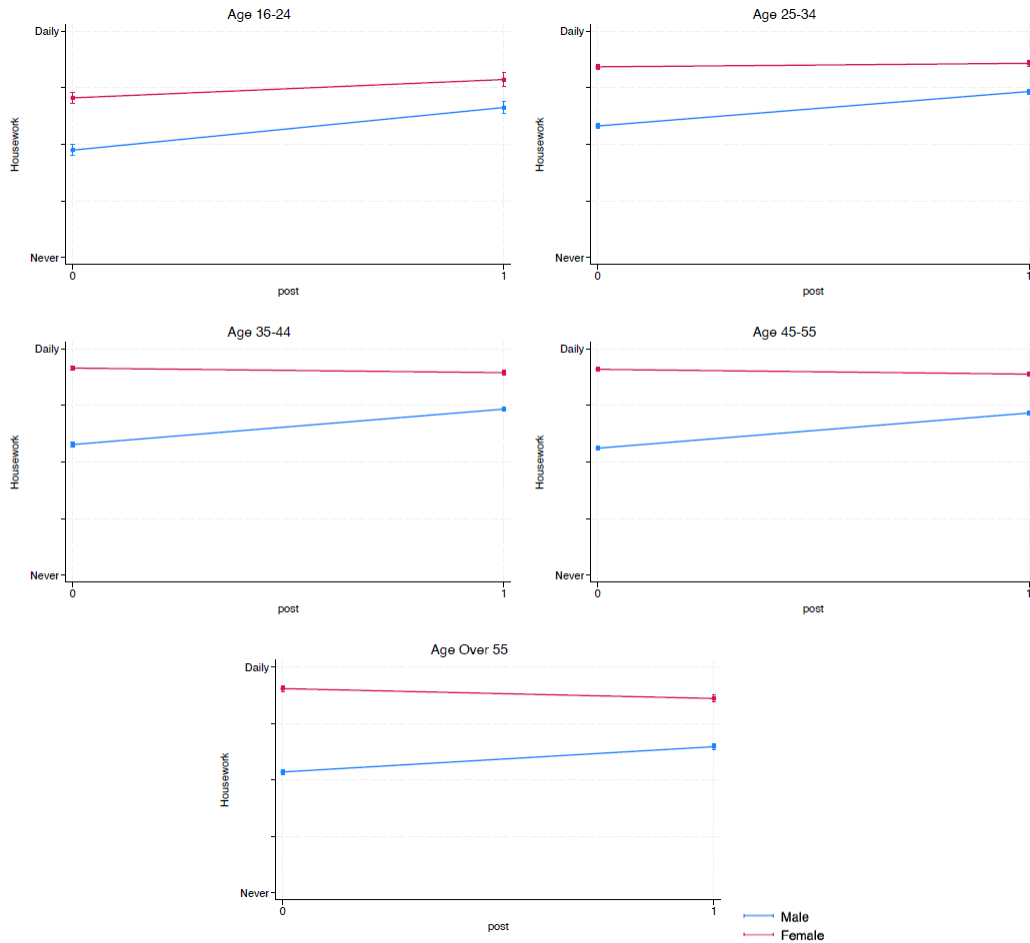
Table 5: Age groups splitted

	16-24	25-34	35-44	45-55	Over 55
	(1)	(2)	(3)	(4)	(5)
Female (β)	0.924***	1.046***	1.350***	1.394***	1.473***
	(0.062)	(0.029)	(0.025)	(0.024)	(0.033)
Post (γ)	0.754***	0.610***	0.626***	0.621***	0.447***
	(0.083)	(0.036)	(0.030)	(0.029)	(0.040)
Female*Post (δ)	-0.430***	-0.547***	-0.707***	-0.706***	-0.621***
	(0.088)	(0.039)	(0.034)	(0.034)	(0.048)
$\beta + \delta$	0.495***	0.498***	0.643***	0.688***	0.851***
	(0.068)	(0.029)	(0.025)	(0.026)	(0.038)
R-squared	0.200	0.234	0.283	0.284	0.299
N	3634	13477	16475	17949	10410
Education	yes	yes	yes	yes	yes
Sector(NACE) FE	yes	yes	yes	yes	yes
Role (ISCO) FE	yes	yes	yes	yes	yes
Country FE	yes	yes	yes	yes	yes
Any children	yes	yes	yes	yes	yes
WFH	yes	yes	yes	yes	yes

Notes. Regression analysis are reported separately for individuals belonging to the following age groups (16-24, 25-34, 35-34, 45-55, and over 55). The outcome variable is *Time to Housework*, the frequency of tasks such as housework and cooking, measured on a scale from 1 (never) to 5 (daily). *Female* is a dummy equal to one if the individual is a female and 0 otherwise. *Post* is a dummy taking value one for the answers given in the 2015 wave (before Covid-19), and value zero for the answers given in the 2021 wave (after Covid-19). The interaction term *FemaleXPost* is also included in the model. The linear combination of the coefficients $\beta + \delta$, measuring the gender gap after Covid-19, is reported in the table. In each column, we include all the following covariates. Education is measured using the following dummies: Early childhood, Primary, Lower secondary, upper secondary, post-secondary, short-cycle tertiary, Bachelor, Master, Doctorate. Sector (coded according to NACE classification), Role (coded according to ISCO classification), and Country fixed effects are added to the model. *Any children* is a dummy equal to one if in the household is present of at least one child under 16, and zero otherwise. *WFH* is a dummy equal to one if the individual works from home or another public place other than the office at least a few times during the month, and zero otherwise. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, †$p = 0.1$.

Pre-Covid gender disparities in housework, as indicated by the coefficient of the variable FEMALE, are evident across all age groups. Regardless of age, women consistently reported engaging in housework more frequently than men before the pandemic. Notably, these coefficients are highly statistically significant and exhibit similar magnitudes. Interestingly, gender gaps in housework exist even among the youngest individuals.

Figure 6 illustrates the marginal effect of Equation 1 for the different age groups, providing a visual representation of these trends. In line with the main findings, we observe an increase in housework for men across all age groups, while women, except those below 24 years old, do not exhibit a corresponding increase over time. Consequently, the reduction of the gender gap in housework appears to be a shared phenomenon across all generations, including the older cohorts.

Figure 6: Time used for housework - Heterogeneity by age groups

4   Conclusions

Our descriptive evidence shows that gender gaps in housework in European countries declined from 2015 (before Covid) to 2021 (after Covid), mainly because men increased the frequency of housework activities in countries with initial higher gender gaps. Although the analysis has several limitations, due to the nature of cross-sectional data and the available information, it points out an interesting trend of increasing sharing housework between men and women, common to several European countries, which may have potential important consequences on women's labor market and fertility rates (Fanelli and Profeta, 2021).

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