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Gender Gaps in Employment, Wages, and Work Hours:

Assessment of COVID-19 Implications

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Assessment of COVID-19 Implications

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The main data source used in this paper is Estonian national Labour Force Survey data (2009-2020) obtained from the Estonian Statistical Office. The author would like to thank Estonian Statistical Office for collaboration and proving an access to the Labour Force Survey database, which allowed to carry out this research.

Abstract

The COVID-19 pandemic has highly asymmetric effects on labour market outcomes of men and women. In this paper, we empirically investigate the dynamics and drivers of gender gaps in employment rates, wages and workhours during the pandemic. Relying on Estonian Labour Force Survey data, we document that the pandemic has, if anything, reduced gender inequality in all three domains. Our results suggest that, while the evolution of inequalities mirrored the infection rate development – rising as infections mounted and declining as the first wave flattened – overall, the pandemic did not exacerbate gender gaps in 2020. The cyclical increases in gender disparities were largely driven by parenthood, as child-rearing women experienced a major decline in their employment rate and workhours, as well as gender segregation in the most affected industries. The higher propensity to work from home and better educational attainments of women deterred gender wage gap expansion, as wage returns to telework and education rose during the pandemic. Our results suggest no systematic expansion of gender gaps, but rather short-term fluctuations. However, labour market penalties for women with young children and women employed in those industries most affected by COVID-19 may last longer than the pandemic, threatening to widen gender inequality in the long run.

Keywords: COVID-19, employment, gender, inequalities, wage gap

JEL classification: J16, J21, J31

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1. Introduction

With the escalation of the pandemic, the implications of economic recession for gender equality has attracted substantial research attention. The economic downturn induced by COVID-19 is not just another recession. Unlike a "regular" recession, the pandemic crisis has not only undermined economic activity, but also brought about fundamental changes in work and childcare organization. Disruption of economic activity, teleworking, and the closure of day-care facilities and home schooling have disproportional effects on the employment, work hours and wages of men and women, reflecting on pre-existing gender inequalities.

The question of utmost importance is how the pandemic will affect gender equality in various domains, including the labour market, family, and society. The potential consequences of COVID-19 on gender equality in a labour market are ambiguous. A strand of emerging literature reports female employment being more affected by COVID-19 than male employment (Alon et al., 2020; Baylis et al., 2020; Cortes and Forsythe, 2020; Moen et al., 2020; Fana et al., 2020), with decreased work hours (Collins et al., 2021) and increased pay inequality (Blaskó et al., 2020). A smaller strand of literature suggests that the pandemic hit male and female employment similarly and that the long-term implications of the pandemic-induced recession are ambiguous (Beland et al., 2020; Belot et al., 2020; Blundel et al., 2020).

What we know about the COVID-19 consequences for gender disparities to date are mostly the short-term effects that were documented after the first wave flattened (Beland et al., 2020; Lemieux et al., 2020; Forsythe et al., 2020). While it is an important snapshot of labour market distortions after the first pandemic wave, the gradual economic revival in the second half of 2020 might have moderated the exacerbated inequalities and the subsequent second wave may have different implications than the first one, as it was less unexpected and allowed for gradual and anticipatory labour market adjustments.

This paper provides a comprehensive summary of employment, wage, and work hours resilience during the pandemic across men and women in Estonia. We follow a twofold objective. Firstly, we investigate the dynamics of gender gaps in the employment rates, hourly wage, and work hours over the last decade with a focus on quarterly development in 2020, relying on Estonian Labour Force Survey data. The latter allows us to explore the changes in inequality measures in response to the pandemic cycles – from the first wave on the borderline between the first and second quarters, to a moderate recovery in the second half of the second and throughout the third quarter and to another escalation of the infection rate in the fourth quarter.[1] This study focuses on gender inequalities in three major labour market

[1] Our analysis covers the first wave of the pandemic and associated economic shut-down in March-May 2020, followed by a period of economic revival in June-October 2020 and the second wave of the infections mounting since November 2020. The second wave resulted in another lockdown introduced in March 2021. However, the Labour Force Survey data for this period is not yet available. We acknowledge that the labour market effects of the second economic shut-down may differ from the first one, however, if anything, the effects should be on average comparable, but milder as the second lockdown was foreseen and anticipated, unlike the first one. As a result, advance measures were taken, which may be partly captured in the data from the last quarter of 2020.

outcomes, as the pandemic may accelerate or shrink gender inequalities in employment, wages, and work hours to different extents and at different times.[2]

Secondly, this paper draws on the earlier literature on major drivers of gender disparities during the pandemic and conducts an empirical exercise to test which forces determine the dynamics of gender gaps in employment, wages and work hours and in which direction. There are several channels through which the pandemic recession could exacerbate or shrink gender inequalities and we focus mainly on: (i) increased childcare demands due to day-care and school closures; (ii) the asymmetric effect of the pandemic on different occupations, sectors, and types of firms; and (iii) the rise of teleworking. Given earlier evidence on the heterogeneous effects of the pandemic on people with different educational attainments (Blundell et al., 2020; Qian and Fuller, 2020), we additionally explore the role of education in shaping gender inequalities during the pandemic.

Fundamental changes in childcare due to day-care and school closures is the first major driver of gender inequalities in labour market and household production. Despite telework and home schooling providing opportunities for the equalization of parents' contributions to household chores and childcare, a growing strand of literature proves the opposite. Qian and Fuller (2020) document that in Canada, gender gaps in employment widened in February-March 2020 for parents of young children, especially those of elementary-school aged children. Childcare and home-schooling responsibilities were disproportionately allocated among parents, with women taking a leading role (Chung et al., 2021; Fodor et al., 2021; Blundell et al., 2020; Özkazanç-Pan and Pullen, 2020; Manzo and Minello, 2020). The findings by Collins et al. (2021) provide further empirical evidence that in the United States in dual-earning families, mothers are more likely to reduce work hours in response to the closure of day-care facilities and schools. These findings generally suggest that increased childcare demands demoted female employment and work hours and may leave a potential trace on gender inequality that outlasts day-care and school closures.

The underlying reason for gender inequality in childcare and home-schooling contributions during the pandemic remains an open debate. The crisis may exacerbate gender norms, assuming that women should take on the core caregiving responsibilities, thus reducing their labour force participation to provide childcare and facilitate home-schooling (Collins et al., 2021; Fisher and Ryan, 2021; Hjálmsdóttir and Bjarnadóttir, 2020). The crisis may reinforce the gender norms in the household division of labour, making female employment more vulnerable and placing employment recovery under threat, as the stringent norms may persist even when the pandemic is over. Unequal participation in childcare may also stem from a labour market in which female employment is more flexible and adjustable to teleworking, while male employment is more rigid and requires physical presence at the workplace (Craig and Churchill, 2021). As a result, women may temporarily reduce their worktime to provide childcare or assist home-schooling, yielding a short-term employment distortion, as women will resume their normal worktime upon the day-care and schools' opening. Furthermore, the gendered division of childcare in the time of the pandemic may be an outcome of disproportional job distortions experienced

[2] Flexibility of employment contracts and employment protection matters in this respect. As a short-term response to the pandemic, work hours or wages may be temporarily reduced. In some jobs and industries employment contracts can be easily terminated due to a high share of fix-term or service contracts and unofficial employment (e.g. in construction and agriculture), while in other sectors workers are on average more protected, and should experience less job loss. Moreover, the pandemic may affect employment, wage and work hours unequally across time. Work hours and wage impacts may precede employment distortions, as employers reduce labour costs gradually and lay off employees only if the crisis persists.

by men and women. If this is the case, women's prevailing caregiving role is reinforced by labour market disruptions and may endure even in post-pandemic times, threatening to widen gender employment gaps at the cost of women's employment in the long run.

The second potential driver of gender inequalities – the asymmetric effect of COVID-19 on jobs and industries – stems from economic distortions, characteristic for a "regular" recession, as well as from the pandemic-specific alterations in employment and wages due to increased health risks and higher demand for particular workers, especially in "essential" industries. The latter results in different employment and wage effects across occupations and industries (Beland et al., 2020). While leisure, hospitality, and non-essential retail sectors collapsed, essential trade and "front line" jobs remained relatively unaffected (Forsythe et al., 2020; Cortes and Forsythe, 2020). Furthermore, workers in low-paying jobs, particularly in the service industry, were hit the most (Cortes and Forsythe, 2020). Substantial gender segregation in occupations and industries had heterogeneous implications of COVID-19 for the employment and wages of men and women (Wiswall and Zafar, 2018; Blau and Kahn, 2017). However, the consequences of the pandemic are ambiguous. In line with this, Blundell et al. (2020) find that in Great Britain women are more likely to work in shut-down sectors but also more likely to hold jobs that can be done from home or to be key workers, which makes assessment of the pandemic implications most challenging.

Telework is the third crucial factor reflecting on employment and wages in times of COVID-19. With a lockdown and strict social distancing measures, telework capability appeared to be a crucial job characteristic, which primarily levelled employment and wage decline in certain occupations and industries (Forsythe et al., 2020). The findings of Dingel and Neiman (2020) indicate that workers in jobs which can be performed from home earn systematically more in the United States. Adaptability to remote work is largely determined by the features of a job and these seem asymmetric across men and women, reflecting gender wage and employment inequalities (Blundell et al., 2020; Brynjolfsson et al., 2020). Additionally, Raišienė et al. (2020) document that in Lithuania, women tended to appreciate teleworking more than men at the time of the pandemic.

Our results indicate that in Estonia, our sample country, the pandemic has if anything reduced all three gender inequality measures in 2020. However, the cyclical dynamics of gender inequalities were highly sensitive to the introduction of restrictions aiming to contain the virus. Gender gaps in wages and work hours revealed a U-shaped development, with an increase in the first and last quarters of 2020 as the virus spiked, and a decline in the middle of 2020, coinciding with a period of economic recovery. The employment response to COVID-19 was delayed to the second quarter when male and, to a greater extent, female employment collapsed and the gender employment gap widened. The removal of lockdown measures and economic revival narrowed the gender gap in employment in the subsequent quarters.

We document that parenthood was the major driver accelerating gender inequalities in employment, work hours and, to a lesser degree, wages. The persistently high employment penalty of child-rearing women throughout 2020, even when day-care and schools were re-opened, signals potential long-run employment distortions and slow employment recovery for women, who lost or quit their jobs in 2020. Gender industry segregation appeared most crucial in exacerbating the gender gap in work hours and wages. Surprisingly, occupation segregation favoured women, indicating stronger within-occupation resilience of female wages, as compared to male. Moreover, our results give suggestive evidence of a thinning of the "glass ceiling" as the gender wage gap shrank most drastically in high-level occupations.

Telework was relevant only for wage inequality and indicated somewhat higher wage returns for women who worked from home.

Thus, while overall gender inequalities on the labour market appeared, if anything, to have narrowed during the pandemic in our sample country, some trends are alarming. Child-rearing women and women working in the economically most affected sectors appeared particularly vulnerable to pandemic-induced labour market distortions. They may face long-term employment and wage penalties, which may result in permanently amplified gender inequalities, due to high labour market returns to experience (Costa Dias et al., 2020) and the difficulty of re-entering the labour market in post-recession times.

The rest of the paper is structured as follows. Section 2 provides a brief overview of the COVID-19 pandemic in our sample country. Section 3 discusses the data and the empirical strategy. Section 4 presents the results in four sub-sections. We start with descriptive evidence of key labour market indicators across men and women over our sample period (Section 4.1), followed by the analysis of dynamics and drivers of gender gaps in employment (Section 4.2), hourly wage (Section 4.3) and work hours (Section 4.4). Section 5 concludes.

2. COVID-19 in Estonia: stylized facts

The development of the COVID-19 pandemic in Estonia is largely comparable to other European Union (EU) member states. As the infections started to rise in March 2020, a state of emergency was imposed on March 12 and lasted until May 18, 2020. A total lockdown and Estonia's well-operating healthcare system kept the mortality rate low and effectively restrained the virus (Raudla, 2021). All restrictions, excluding limited freedom of movement, particularly international, and restricted public events and gatherings were subsequently removed. Jointly with a government rescue package and substantial state, business, and private resources, the economy revived in summer-autumn 2020. However, loose restrictions fuelled the second wave of the virus, which started to mount at the end of October 2020. Despite the continuously increasing infection rate, the second lockdown was imposed only on March 12, 2021.

Estonia's COVID-19 response was quite comparable to Nordic, Balkan and other Baltic states, with a stringency index ranging below the EU average right from the start of the pandemic.[3] As a result, Estonia experienced a rather moderate overall economic downturn.[4] However, the local labour market was heavily disrupted, similarly to the majority of EU member states. The overall unemployment rate almost doubled compared to 2019, reaching 6.8% in 2020, and remained just slightly below the EU-average of 7.1%[5]. Male employment was hit harder than female and reached 7.0% as compared to 6.6% among females. The first drop in employment was documented during the state of emergency and shortly afterwards and the second started at the end of October, coinciding with the escalation of the second pandemic wave. Accommodation and food service activities, manufacturing and wholesale and retail trade were among the most affected sectors. All types of employment relations were affected similarly, with a proportional decrease in permanent and temporary employment relations.[6] Similarly to the overall EU trends, youth and the less educated experienced the sharpest employment decline throughout 2020.[7] The aforementioned trends are rather similar to the EU-average labour market distortions, suggesting that our findings for Estonia may be relevant for other EU member states. However, to draw broader conclusions and generalize the results further research is needed.

[3] For more details, please, refer to: https://ourworldindata.org/grapher/covid-stringency-index?time=2021-03-28

[4] For more details, please, refer to: https://ec.europa.eu/eurostat/databrowser/view/tec00115/default/table?lang=en

[5] For more details, please, refer to: https://ec.europa.eu/eurostat/databrowser/view/une_rt_a/default/table?lang=en

[6] For more details, please, refer to: https://www.stat.ee/en/find-statistics/covid-19-impact-estonia/short-term-labour-market-statistics

[7] For more details, please, refer to: https://ec.europa.eu/eurostat/databrowser/view/UNE_RT_M__custom_953858/default/table?lang=en

https://ec.europa.eu/eurostat/databrowser/view/tps00066/default/table?lang=en

3. Data and methodology

We analyse gender inequality in employment, hourly wage and work hours relying on Estonian Labour Force Survey (hereinafter EE-LFS) data for the years 2009 to 2020. The choice of the time frame is not arbitrary. The last financial crisis caused a major economic decline and labour market deterioration. However, the economy revived in the consecutive decade, up until the pandemic-induced recession struck in 2020. This time frame enables us to better visualize the implications of COVID-19 relative to the consequences of the last financial crisis in 2009-2010 and to the pre-pandemic developments of gender inequality indicators. Along with yearly estimates, we look at quarterly dynamics in 2020. The latter relates to the swings in the infection rate, governmental restrictive measures, and upturns in economic activity in 2020, which eventually reflect on labour market outcomes and, potentially, gender inequalities.

The EE-LFS data follow the International Labour Organization (ILO) methodology and are the major source of labour market statistics in Estonia. The data are collected via face-to-face or telephone interviews throughout the year. The reference period is the week preceding the survey.[8] The survey covers a representative sample of respondents aged 15-74. Employment data is collected for all respondents. For those currently unemployed or inactive, employment data concern the last occupied job. Since employment and wage data are collected directly from individuals, LFS data also capture unofficial employment, unlike the national registry data, which obtains employment-related information from firms.

Our sample includes both full- and part-time workers. Main dependent variables are being currently employed, net hourly wage and weekly work hours. Appendix I.A. provides average estimates for all dependent and control variables used in the analysis by gender for the years 2009, 2014, 2019 and 2020.

We conduct a number of empirical exercises to investigate the dynamics and drivers of gender inequalities during the pre- and in-pandemic period. Firstly, we employ a standard non-linear probit regression to analyse the gender employment gap on a yearly basis for the years 2009-2020 and on a quarterly basis for the year 2020, relying on the following specification:

$$\Pr\left(e_i = 1 \mid Female_i, D_i', LM_i', R_i'\right) = \alpha + \beta_1 \cdot Female_i + \gamma \cdot D_i' + \theta \cdot LM_i' + \vartheta \cdot R_i' + \varepsilon_i, \quad (1)$$

where e_i is a realization of random variable E_i taking value 1 if respondent i is employed in the reference period and 0 if not; $Female_i$ is a female indicator variable, thus, coefficient β_1 captures the residual gender gap in employment; D_i' is a vector of demographic controls, including age, marital status, number of children under 18 years, being born in Estonia, Estonian language command and education level; a vector LM_i' incorporates major labour market controls, including occupation (ISCO 1-digit level),

[8] For more details, please, refer to: https://www.stat.ee/en/find-statistics/methodology-and-quality/esms-metadata/40013

sector of economic activity (6 broad categories); R_i' is a vector of region dummies (5 broad regions); vectors γ, θ and ϑ capture respective coefficients; ε_i is a residual term.[9]

Next, we use linear regression analysis to explore gender gaps in wage and work hours. We estimate the following model:

$$lnX_i = \alpha + \beta_2 \cdot Female_i + \mu \cdot D_i' + \rho \cdot LM_i' + \tau \cdot R_i' + u_i, \quad (2)$$

where, $X_i \in \{W_i, H_i\}$ with W_i standing for an hourly wage and H_i for weekly work hours of respondent i; $Female_i$ is a female indicator variable, thus, coefficient β_2 captures the residual gender wage or work hours gap; vectors D_i' and $R_i'$are identical to equation (1), while vector LM_i' includes occupation (ISCO 1-digit level), industry (14 detailed NACE categories), firm size and foreign ownership, working from home; vectors μ, ρ and τ capture respective regression coefficients; u_i is a residual term.

To analyse the factors driving gender inequalities during the pandemic we employ a standard Oaxaca-Blinder decomposition by Oaxaca (1973):

$$\overline{lnX_m} - \overline{lnX_f} = \beta_m\left(\overline{Y_m} - \overline{Y_f}\right)' + \overline{Y_f}'\left(\beta_m - \beta_f\right), \quad (3)$$

where $\overline{lnX_f}$ and $\overline{lnX_m}$ are means of logarithms of a respondent's outcome $X_i \in \{W_i, H_i\}$ with W_i standing for an hourly wage and H_i for weekly work hours of females and males, respectively; $\overline{Y_f}$ and $\overline{Y_m}$ are vectors of mean values of explanatory variables, including all controls of regression equation (2) for females and males, correspondingly; vectors β_f and β_m are vectors of corresponding coefficients of explanatory variables for females and males, respectively. The first term on the right hand side captures the explained fraction of the gender gap, which stems from the different characteristics observed for men and women. The second term indicates an unexplained gender gap resulting from the difference in yields of men and women. To decompose the gender difference in the employment rate, we employ a non-linear decomposition, which extends the classical Oaxaca-Blinder technique and relies on the weighting method developed by Yun (2005).

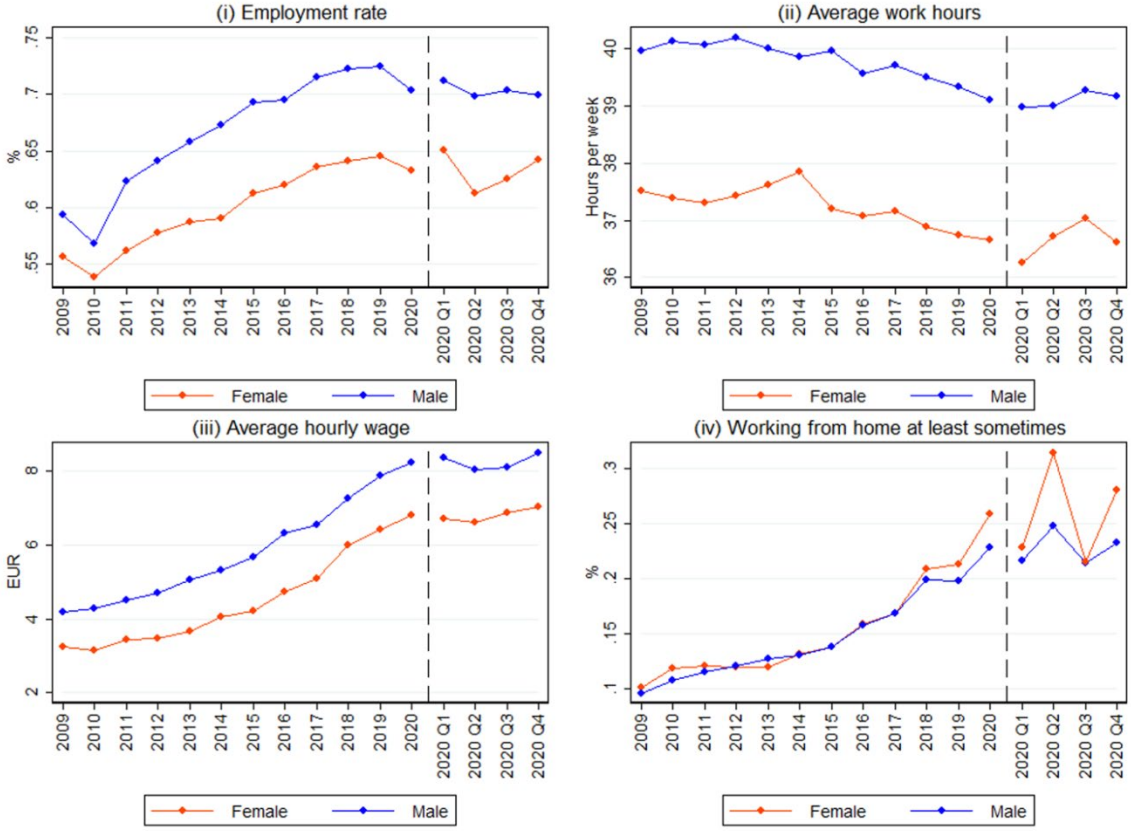
[9] Due to data limitations we cannot control for details of industry, firm ownership and size, or for respondents' propensity to work from home. The latter characteristics are included in the analysis of gender wage and work hours inequalities.

4. Empirical results

4.1. LABOUR MARKET

Figure 1 presents the dynamics of employment rate, weekly work hours, hourly wage and working from home for men and women over the sample period.

Figure 1 / Average employment rate, work hours, hourly wage, and share of respondents working from home by gender



Note: The estimates are based on EE-LFS data and account for population weights in the respective year or quarter.

In line with earlier studies, we document a substantial average employment loss in 2020, however men experienced a greater absolute decline (72.5% in 2019 vs. 70.3% in 2020) than women (64.6% in 2019 vs. 63.2% in 2020), as documented on panel (i). This evidence contradicts earlier findings on greater employment distortions faced by women in the pandemic (Baylis et al., 2020). However, the dynamics of the employment rate throughout 2020 differ drastically for men and women with women being more affected at the onset of the pandemic. As a result of the economic shut-down in March-May, the share of employed females slipped to 61.2% in the second quarter with a subsequent increase to 64.2% in the fourth quarter. The male employment rate remained relatively stable with a mild gradual decline from

71.2% in the first quarter to 70% at the end of the year, quite the opposite of a U-shaped female employment rate trend.

Surprisingly, average work hours exhibit an insignificant average decline in 2020 for both men and women (panel (ii) of Figure 1). For the latter, average work hours dropped in the first quarter (to 36.2 hours in the first quarter 2020 as compared to 36.7 hours in 2019) with a subsequent increase in the third and fourth quarters. Thus, the effect of the economic lockdown, day-care and school closures on female work hours was rather short-term and females resumed normal worktime once restrictions were lifted. The average hourly wage kept growing in 2020 at a slightly slower pace for men (panel (iii) of Figure 1). Both male and female wages exhibited a mild dip in the second, first and second quarters correspondingly, but recovered in subsequent quarters.

These results indicate an overall short-term labour market effect of restrictions imposed to contain the virus. A notably quick recovery of female employment in the third and fourth quarters and work hours in the second and third quarters as well as a minor effect on wages suggests that female labour market outcomes were at least as resilient as those of males.

One reason for this is the disproportional propensity to work from home between men and women. Earlier studies refer to teleworking as one of the key factors safeguarding employment during the pandemic (Belzunegui-Eraso and Erro-Garcés, 2020). We show the shares of females and males working at least sometimes from home on panel (iv) of Figure 1. Two stark observations can be made. Firstly, women systematically worked from home more than men in 2020 overall (25.9% compared to 22.7%). Secondly, the spikes in teleworking coinciding with the first lockdown and the escalation of the second wave of the infection (fourth quarter) are much higher for women (31.6% vs. 24.7% in the second quarter and 28.1% vs. 23.3% in the fourth quarter). A number of recent studies report a higher propensity to telework in times of COVID-19 for women (Blundell et al., 2020; Brynjolfsson et al., 2020). Our results provide further support to these findings and indicate that the teleworking capability of female jobs may be one of the key factors which deterred the exacerbation of gender inequalities. We provide further disaggregation of the propensity to work from home by gender and occupation in Appendix I.B and gender and economic sector in Appendix I.C.

4.2. THE GENDER GAP IN EMPLOYMENT

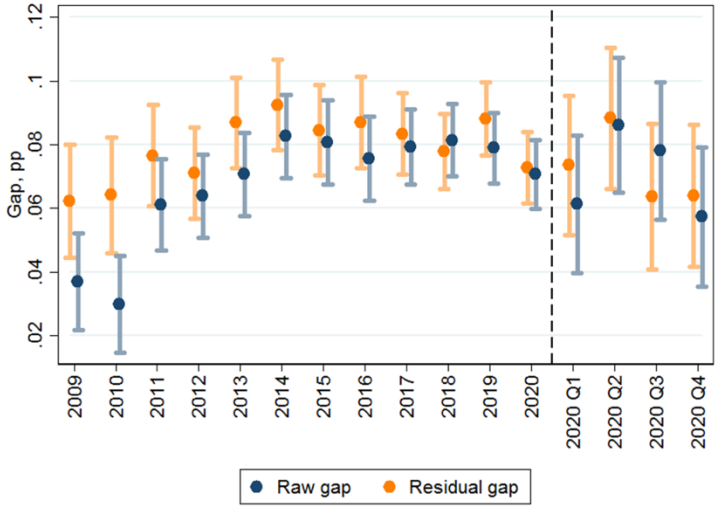
We start by analysing how the rate of gender inequality in employment varied over the last decade and how it changed during the course of the pandemic (Figure 2). The raw gap stems from a univariate model controlling for gender only. The residual gap is a gender difference in the employment rate which remains when controlling for a set of characteristics considered in the regression equation (1).

Following a relatively steady level of 8 pp to 9 pp in 2015-2019, the residual employment gap declined to 7.2 pp in 2020, suggesting that overall employment disparity narrowed in 2020. Panel (i) of Figure 1 illustrates that the male employment rate dropped more substantially in 2020, largely explaining a decline in the raw gender gap in 2020.

Notably, we document an inverse U-shaped employment gap trend over the four quarters of 2020. The highest gap of 8.8 pp was recorded in the second quarter, which mirrors a one-off drop in female

employment (panel (i) of Figure 1). This indicates that a short-term employment distortion, driven by the lockdown in March-May, was stronger among females. This short-term decline in employment was widely documented in the studies published in mid-2020 (among others, Beland et al., 2020, Lemieux et al., 2020). However, our estimates show that the female employment rate recovered in subsequent quarters, reaching a 6.3 pp residual gap in the third and fourth quarters as economic activity intensified, and schools were re-opened.

Figure 2 / Total gender gap in employment across years



Note: The point estimates are reported with 90% confidence intervals and rely on EE-LFS data. The estimates are based on a probit model, accounting for population weights in the respective year or quarter. The residual gap is a gap which remains upon controlling for age, marital status, the presence of children under 18 years of age, nationality, Estonian language command, education level, occupation, industry and region.

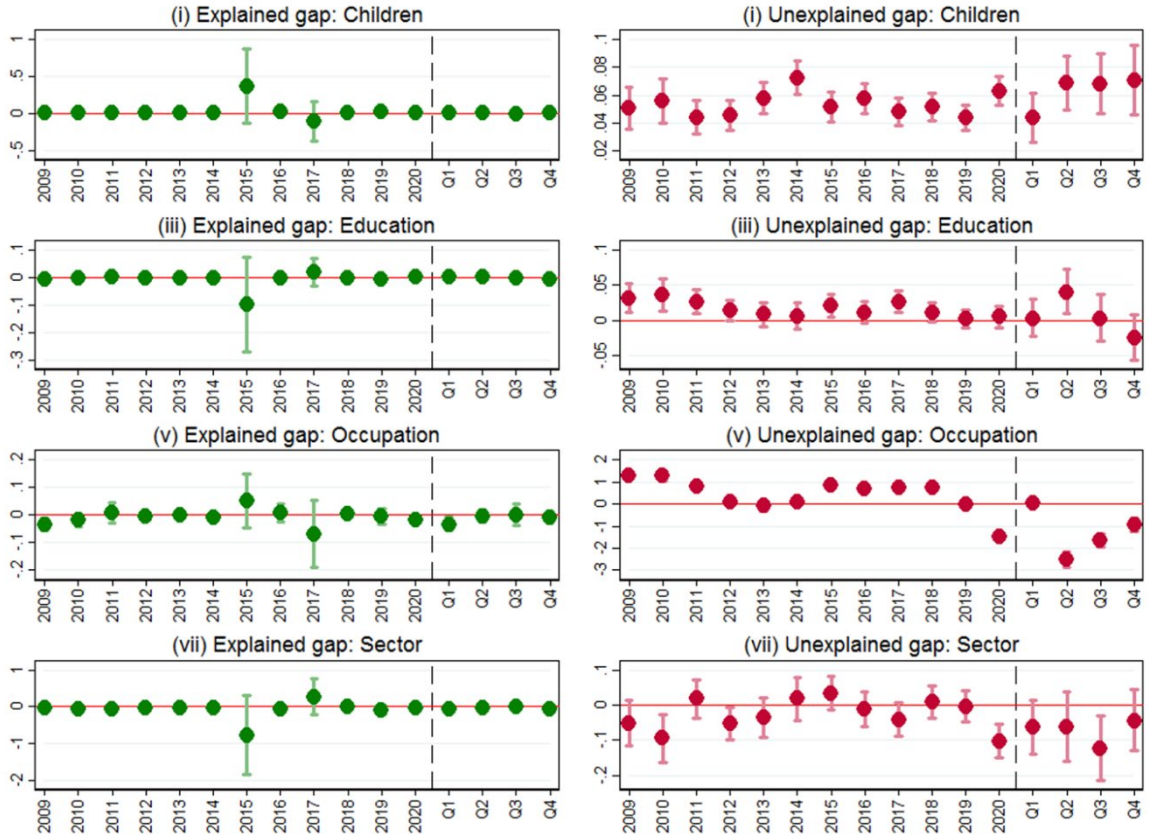
Residual gender gaps are systematically higher than explained ones for most of the years, indicating that characteristics possessed by females associate with a higher employment propensity than the actual propensity observed in our sample. This empirical observation signals the potential underemployment of women. Notably, the raw gap substantially exceeds the residual gap in the third quarter of 2020 marking the largest positive difference in the sample period and suggesting that an increase in female employment in the third quarter reduced gender inequality.

Next, we analyse contributions of individual groups of factors to the gender employment gap variation using the Oaxaca-Blinder technique, following equation (3). Figure 3 presents explained and unexplained contributions of selected groups of controls. We document no systematic gender differences in parenthood, education, occupation or industry profile, which reflect on the differential propensity to be employed across men and women (panels (i), (iii), (v) and (vii) of Figure 3). Thus, the higher employment rate of men does not stem from males possessing characteristics yielding higher employment, as compared to women. This statement holds true for our entire sample period and it remained so during the pandemic.

However, child-rearing women are systematically less likely to be employed than child-rearing men, provided they have comparable demographic, education, and employment characteristics (panel (ii) of Figure 4). A disproportionally higher employment penalty of child-rearing women is particularly high in

the second, third and fourth quarters of 2020. It implies that women with minor children were even less likely to be employed in the middle and end of 2020 than they were before the pandemic, as compared to men with children. The dynamics of the unexplained parenthood contribution in the second through fourth quarters of 2020 reveals employment withdrawals of mothers as a major force driving a sharp decline in female employment in the second quarter (panel (i) of Figure 1). Day-care facilities and school closures fuelled gender disparity in the employment rate, as females assumed greater responsibility in home-schooling and childcare. This result complements the earlier findings of Collins et al. (2021), Fisher and Ryan (2021), Hjálmsdóttir and Bjarnadóttir (2020) and adds that parenthood has been the major factor exacerbating gender employment gap in 2020.

Figure 3 / Selected contributions to the gender employment gap



Note: The point estimates are reported with 90% confidence intervals. The estimates are based on EE-LFS data and account for population weights in the respective year or quarter. Decomposition is performed using the Oaxaca-Blinder technique specified in eq. (3) and additionally extracts contributions of demographics and region, which are negligible.

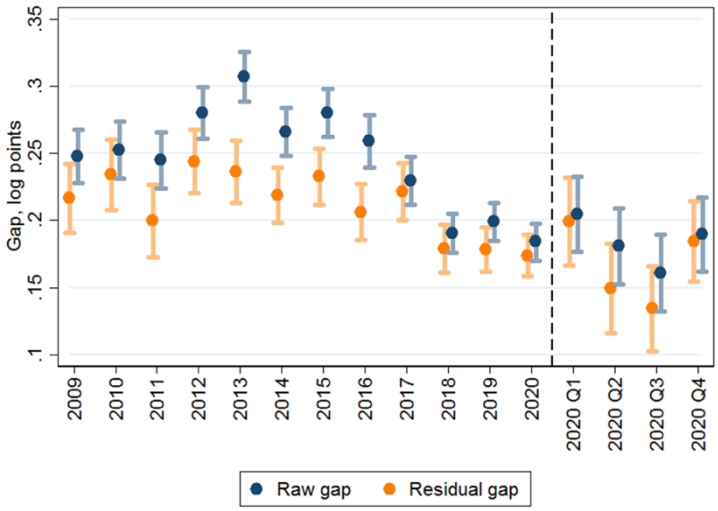
We also document a disproportional returns to employment of women, given that they hold the same occupation as men (panel (vi) of Figure 4) or are employed in the same sector as men (panel (viii) of Figure 4) in 2020 as a whole. This signals that women were less likely to terminate employment relations than men, provided they are working on the same occupational level or in the same economic sector. This finding indicates stronger within-occupation and within-industry resilience of female employment in the course of the pandemic.

A detailed look at gender employment gaps across occupations (Appendix II.A) reveals that if anything, the pandemic has decreased the gender gap in employment among professionals (ISCO 2) and technicians and associate professionals (ISCO 3). No significant effect of the pandemic was reported for other occupations. Cross-sectoral variations in employment gaps (Appendix II.B) reveal that gender gaps actually declined in all sectors except construction during the pandemic, with the most pronounced reductions in financial, real-estate and business activities, particularly in the first quarter, as well as in industry, including energy. [10]

4.3. THE GENDER GAP IN HOURLY WAGES

Figure 4 depicts the evolution of the gender gap in hourly wages, both raw and residual, following the regression equation (2).

Figure 4 / Total gender wage gap across years



Note: Hourly wage is considered. The point estimates are reported with 90% confidence intervals and rely on EE-LFS data. The estimates are based on a linear regression model, accounting for population weights in the respective year or quarter. The residual gap is a gap which remains upon controlling for age, marital status, the presence of children under 18 years, nationality, Estonian language command, education level, occupation, industry, firm size, firm ownership, telework and region.

Two stark observations can be made. Firstly, the overall wage gap declined in 2020, reaching 18.4 pp in raw and 17.4 pp in residual terms, as compared to correspondingly 19.9 pp and 17.8 pp in 2019. Despite earlier forecasts, the pandemic did not accelerate gender disparity in wages and has actually reduced it in 2020 overall.

Secondly, the gender wage gap revealed a distinct U-shaped development over four quarters. The wage gap jumped to 20.5 pp in raw and 19.9 pp in residual terms in the first quarter of 2020, when the first wave of infection hit. An increase was followed by a gradual decline to 16.1 pp in raw and 13.4 pp in residual gaps in the third quarter of 2020 with a subsequent rise to 18.9 pp and 18.5 pp correspondingly

[10] Due to the data limitations, we look at aggregated sectors only.

in the fourth quarter. The dynamics of the raw gap in the second and third quarters are largely explained by males experiencing a stronger decline and a slower recovery of wage levels (panel (iii) of Figure 1).

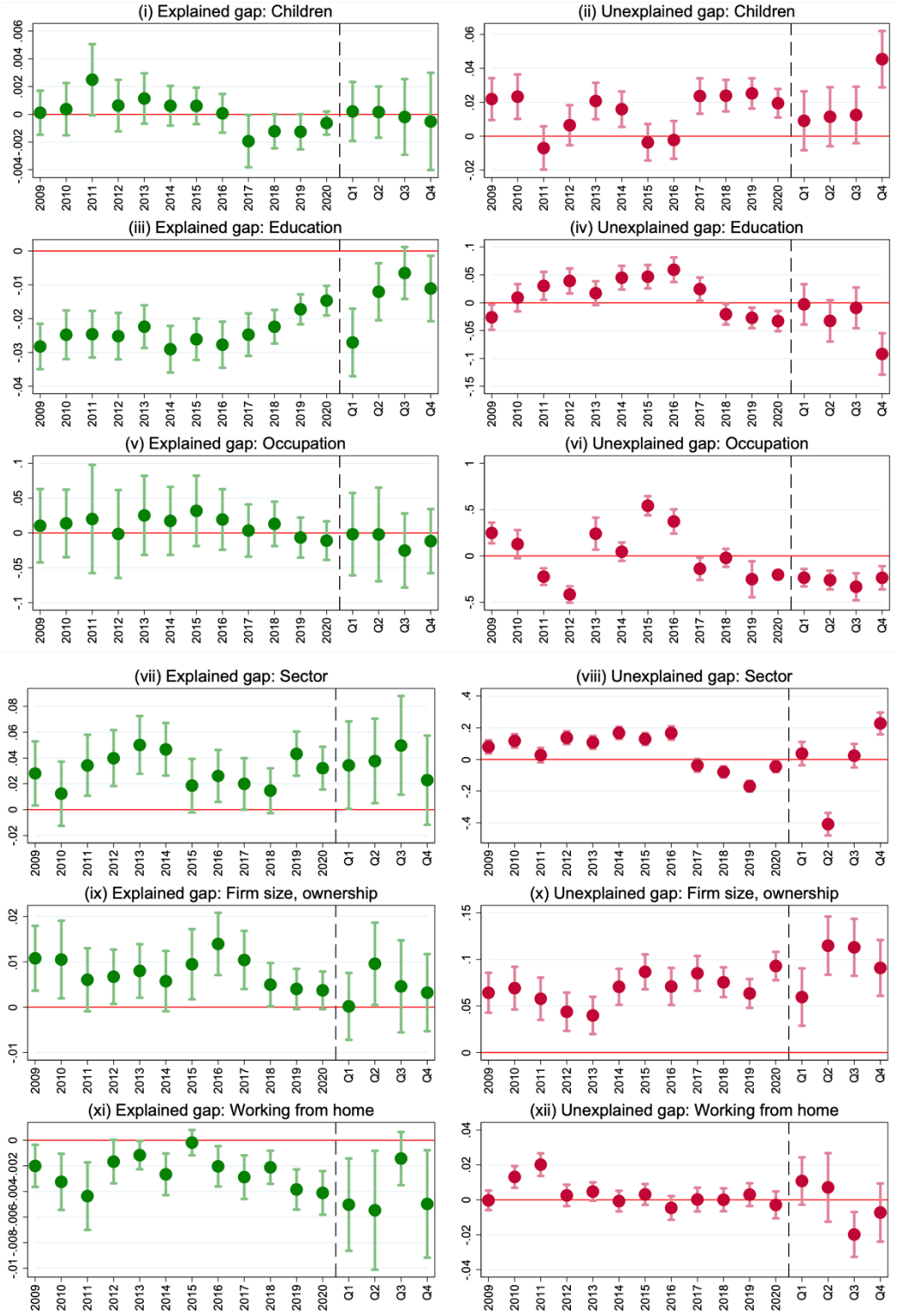
An increase in the gender wage gap as the pandemic unfolded is consistent with earlier evidence reporting a widening of gender inequalities and documenting labour market disadvantages related to COVID-19 as being stronger among females (Baylis et al. 2020; Cortes and Forsythe 2020). However, a decline of both raw and residual gaps in the third quarter to the lowest level in our sample period indicate that the revival of economic activity and the removal of restrictions favoured female wages, which is also reflected in the overall dynamics of male and female hourly wages on panel (iii) of Figure 1.

Figure 5 presents the results of the Oaxaca-Blinder decomposition following the equation (3). The role of parenthood in gender wage gap dynamics throughout 2020 appeared of utmost importance. While we find no significant gender difference in the propensity to have children under 18 years old (panel (i) of Figure 5), child-rearing women had drastically lower wage returns than child-rearing men and particularly at the end of 2020 (panel (ii) of Figure 5). A significant unexplained contribution in 2020 overall was mainly driven by the fourth quarter reaching 4.5 pp – the highest recorded in our sample period. These findings provide further support to the earlier evidence on disproportionally stronger labour market distortions among mothers with young children (Chung et al. 2021; Fodor et al. 2021; Qian and Fuller 2020).

Education was a persistently relevant factor explaining the gender gap. We document that women systematically have a better education profile than men in our sample (panel (iii) of Figure 5). A sharp increase in the absolute value of an explained education contribution in the first quarter of 2020 signals higher than ever wage returns to better educational attainments at the start of the pandemic. Wages were disproportionally altered at the onset of the pandemic, with less educated workers being most affected. A stark absolute increase in the unexplained contribution in the fourth quarter implies that wage returns to education were higher among women at the end of 2020, provided that men had the same education profile (panel (iv) of Figure 5). This result is in line with earlier evidence on systematically stronger employment and wage distortions among people with a low level of education (Baylis et al. 2020). We add evidence of potentially stronger wage distortions among low-educated men.

We document no significant segregation of men into high-paying occupations throughout our sample period (panel (v) of Figure 5). However, the unexplained contribution remained consistently and significantly negative during 2020 (panel (vi) of Figure 5). The latter observation indicates stronger resilience of female wages compared to male earnings, given the same occupational level. This empirical observation is likely related to the narrowing of the gender wage gap in top-level occupations, i.e. among managers (ISCO 1) and professionals (ISCO 2), as documented in Appendix III.A, suggesting a thinning of the “glass ceiling” (Cohen and Huffman, 2007; Christofides et al., 2013). However, a relative increase in wage gaps in middle-level occupations, i.e., among technical and associate professionals (ISCO 3), clerical support workers (ISCO 4), service and sales workers (ISCO 5), as well as in low-level elementary occupations (ISCO 9) indicates a potential widening of the wage gap in the middle of the wage distribution and a thickening of the “sticky floor” (Christofides et al., 2013).

Figure 5 / Selected contributions to the gender wage gap



Note: The point estimates are reported with 90% confidence intervals. The estimates are based on EE-LFS data and account for population weights in the respective year or quarter. Decomposition is performed using the Oaxaca-Blinder technique specified in eq. (3) and additionally extracts contributions of demographics and region, which are negligible.

Gender industry segregation ppears to be the major factor explaining the gender wage gap throughout the pandemic. While the overall explained contribution of industry was lower in 2020 compared to 2019, a drastic increase in the role of segregation by industry during the first three quarters of 2020 largely explains the substantial decline in the residual gender wage gap. This result suggests that men are more likely to be employed in economic sectors which sustained higher wage rates throughout 2020 and even more so in the second and third quarters of 2020 (panel (vii) of Figure 5). Notably, the role of segregation by industry declined sharply in the fourth quarter and inflated the residual wage gap (Figure 5). Unexplained contributions revealed a surprising trend (panel (viii) of Figure 5). An outstandingly high negative contribution in the second quarter signals that, in the same industry, female wages underwent less of a wage decline as compared to male wages as the first wave of the pandemic hit. This trend may be largely driven by a sharp decline in wage disparity in the financial and insurance services sector (Appendix III.B). The one-off nature indicates that a substantial negative contribution was driven by female wage resilience in the first pandemic wave, rather than a faster wage recovery as the first wave flattened, although these two are impossible to empirically distinguish with the quarterly data.[11] Importantly, the gender wage gap increased in those sectors most affected by the pandemic and declined in the least affected industries in our sample country (Appendix III.B).

We document no significant gender segregation in higher-paying firms depending on their size and ownership, except in the second quarter of 2020 (panel (ix) of Figure 5). However, we reveal persistently significant unexplained contributions, particularly in the second and third quarters of 2020, ranging higher than ever in our sample period (panel (x) of Figure 5). This observation signals that men's wages recovered faster as the first wave of the pandemic flattened, as compared to female wages in firms of the same size and ownership type. Appendix III.C disaggregates the gender wage gap by firm ownership, recording a substantial difference in wage gap dynamics across Estonian and foreign owned firms. The former exhibit a U-shaped dynamic identical to the overall wage gap (Figure 4), whereas residual gender inequality in foreign owned firms rose in the first quarter and gradually decreased by the end of 2020.

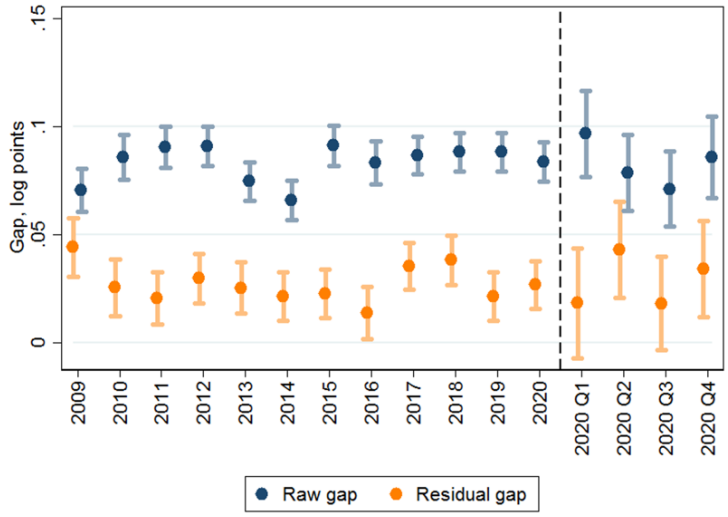
As expected, telework had a non-negligible effect on wages throughout 2020. The role of telework is somewhat similar to education – women are more likely to work from home (panel (iv) of Figure 1) and telework was positively associated with wages during the pandemic (panel (xi) of Figure 5). The telework capacity of a job has been documented as a core factor safeguarding employment and wages when social distancing is encouraged (Dingel and Neiman, 2020). Our results suggest that this was one of the important factors explaining gender wage inequality.

4.4. THE GENDER GAP IN WORK HOURS

Next, we turn to the development of the gender gap in work hours. Figure 6 depicts raw gaps and gaps unexplained by demographic and employment characteristics following the regression equation (2) over our sample period.

[11] The first wave of the pandemic and the lockdown measures cover the end of the first quarter and the beginning of the second quarter of 2020. Economic recovery followed in the second quarter. Thus, we cannot clearly distinguish between the effect of the lockdown and the effect of the post-lockdown recovery when analysing our results for the second quarter of 2020.

Figure 6 / Total gender gap in weekly work hours across years



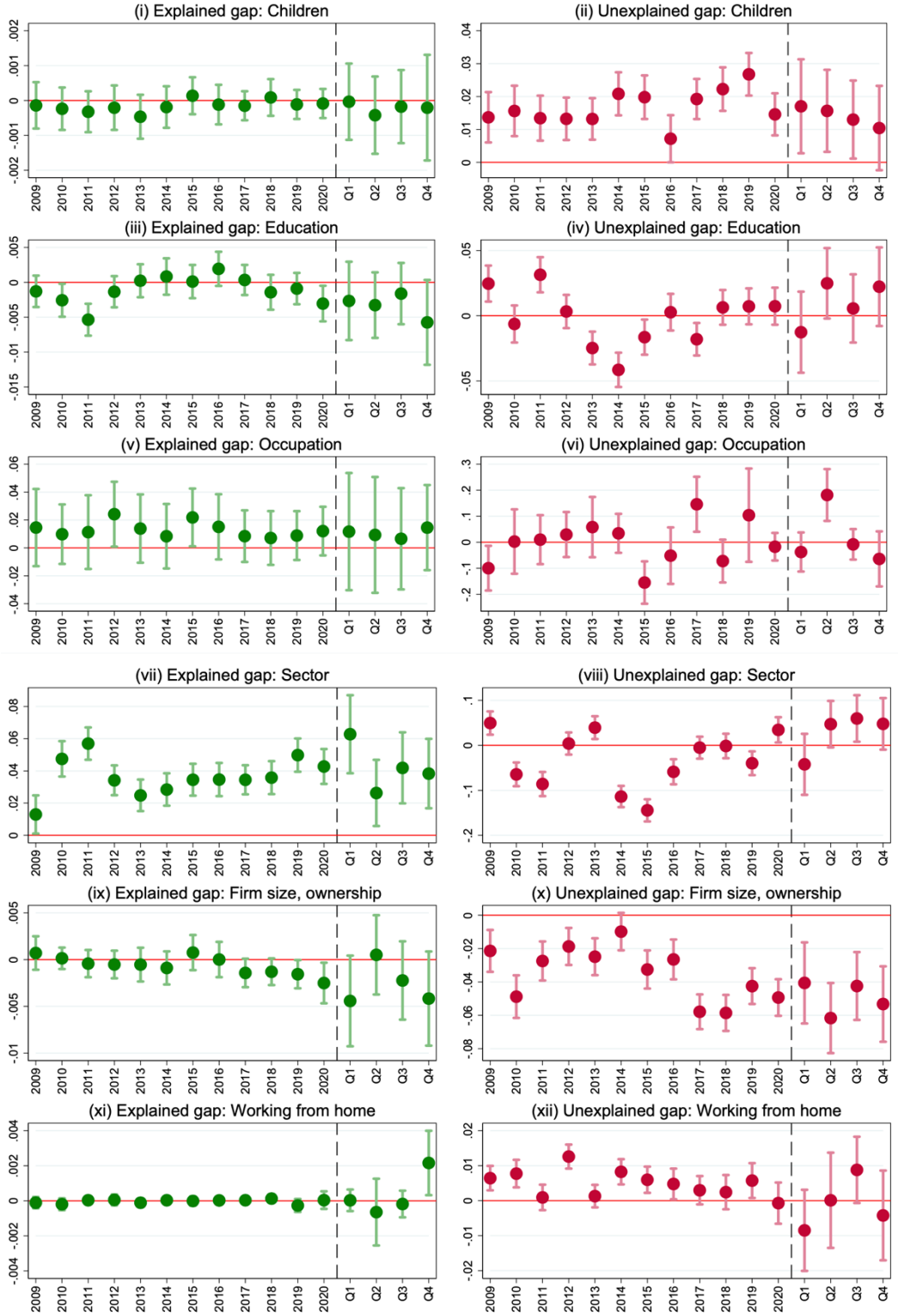
Note: The point estimates are reported with 90% confidence intervals and rely on EE-LFS data. The estimates are based on a linear regression model, accounting for population weights in the respective year or quarter. A residual gap is a gap which remains upon controlling for age, marital status, presence of children under 18 years, nationality, Estonian language command, education level, occupation, industry, firm size, firm ownership, telework and region.

Similarly to the employment and wage gaps, raw gender disparity in work hours shrank in 2020 overall, with the raw gap reaching 8.3 pp vs. 8.8 pp in 2019. A positive dynamic in the gap in raw work hours is largely attributed to female work hours being on average less affected by the pandemic than male work hours (panel (ii) Figure 1). The residual gap increased to 3.8 pp in 2020, topping the 3.3 pp gap in 2019, but still remaining below the levels recorded in 2017 and 2018.

The evolution of the gender gap in work hours across the quarters reveals a U-shaped evolution of the raw gap and a switching trend of the residual gap. The raw gap jumped to 9.7 pp in the first quarter, reaching the highest level in the analysed decade. However, controlling for socio-demographic, education and employment profiles reduced the gender gap by more than one half and made it statistically insignificant. The raw gap declined in the two subsequent quarters to 7.1 pp and grew to 8.6 pp by the end of the year. This trend coincides with the infection rate dynamics. The residual gap swung from 1.8 pp in the first quarter to 4.3 pp in the second, then back to 1.8 in the third and to 3.4 pp in the last quarter of 2020.

Figure 7 shows the Oaxaca-Blinder decomposition results. Similarly to the gender wage gap, the gap in work hours is largely driven by the unexplained contribution of parenthood (panel (ii) of Figure 7). Women with children under 18 years of age were working significantly less than men with children throughout 2020, however, the gap had declined by the end of 2020. This result is consistent with earlier findings on the disproportional reduction in work hours for men and women in response to the growing childcare and home-schooling demands of the pandemic (Collins et al., 2021).

Figure 7 / Selected contributions to the gender work hours gap



Note: The point estimates are reported with 90% confidence intervals. The estimates are based on EE-LFS data and account for population weights in the respective year or quarter. Decomposition is performed using the Oaxaca-Blinder technique specified in eq. (3) and additionally extracts contributions of demographics and region, which are negligible.

We find no male segregation in occupations with longer work hours throughout 2020 (panel (v) of Figure 7). However, the unexplained contribution was strikingly high in the second quarter of 2020 (panel (vi) of Figure 7), suggesting that women experienced more severe declines in work hours than men in the same occupation, as the pandemic unfolded. Subsequently insignificant unexplained contributions indicate the temporary nature of disproportional worktime yields for both men and women. This trend is likely driven by elementary jobs (ISCO 9), which are the only ones with a persistently significant gender gap in work hours, which spiked in the first quarter and gradually declined back to pre-crisis level in the subsequent quarters (Appendix IV.A).

The declining residual wage gap in the first quarter of 2020 is mainly explained by the contribution of the economic sector, which spiked to its highest level recorded in our sample period (panel (vii) of Figure 7). This is associated with male segregation in industries with the most resilient work hours during the pandemic, and particularly at the beginning of 2020. A sharp drop in female work hours observed in the first quarter (panel (ii) of Figure 1) in the overall sample is likely linked to females being employed in sectors which experienced the sharpest drop in work hours as the pandemic unfolded. The role of industry declined in the second quarter and, coupled with an overall increase in female work hours (panel (ii) of Figure 1), suggests the relative recovery of female work hours in the most affected industries.

Appendix IV.B disaggregates the gap in gender work hours by industry, finding that the gender gap in work hours rose in manufacturing and other service activities due to mounting inequality in the third and fourth quarters, as well as in real estate activities, due to steadily high inequality in work hours in the first two quarters of the year. The latter may have largely driven the spike in the role of industry segregation (panel (vii) of Figure 7). Notably, industry segregation is even more important in explaining the gender gap in work hours, as compared to the wage gap. The latter implies even greater differences in cross-industry work hours, with female employees dominating in the most affected sectors.

We document that gender segregation in firms of different sizes and ownership types did not reflect on the gender gap in work hours throughout 2020 (panel (ix) of Figure 7). However, we find unexplained contributions of firm characteristics orthogonal to the gender wage gap (panel (x) of Figure 7). Women tend to work longer hours provided they are employed in a firm of the same size and ownership type as men. Appendix IV.C depicts a drastic difference in the magnitude and dynamics of the gap in gender work hours between Estonian and foreign owned firms. While for foreign owned firms the gap in work hours gradually became insignificant over the four quarters and declined in 2020 overall, gender inequality in work hours in home-owned firms exacerbated in the first and fourth quarters of 2020 but overall remained unaffected in 2020.

5. Conclusions

This paper tests empirically whether the COVID-19 pandemic accelerated gender inequalities in the labour market. We use Estonian Labour Force Survey data to investigate the evolution of gender gaps in employment, hourly wages and work hours over the years 2009 through 2020 and across the four quarters of 2020, focusing on fluctuations in inequality measures as the infection rate swung and restrictions were imposed. We distinguish between individual and labour market forces driving the fluctuations of inequality measures. In doing so, we employ the Oaxaca-Blinder decomposition to distinguish whether changes stem from parenthood, education level, occupation, industry, telework, or firm characteristics (size and foreign ownership).

Unlike the forecasts and earlier evidence, we find no exacerbation of gender gaps in employment, hourly wages, or work hours in 2020 overall in our sample country. If anything, overall gender inequalities narrowed in 2020. All analysed gender gaps revealed only a temporary increase in response to the infection rate fluctuations and restrictive measures imposed by the government. There was a temporary increase in the employment gap in the second quarter, but it smoothed out in subsequent quarters. Gender gaps in wages and work hours revealed slightly different dynamics over the year. Both picked up in the first quarter, with a decline during the following two quarters and a subsequent increase in the last quarter of 2020.

The evolution of gender inequalities mirrors the infection rate. The first kink coincides with the pandemic onset and the first lockdown, which implied the closure of non-essential retail, day-care facilities and schools, social distancing and mandatory teleworking. As the infection rate declined and restrictions were largely removed in the second half of May 2020, female work hours and wage gaps narrowed to the pre-crisis level. The third quarter of 2020 marked the highest speed of economic recovery, which is also reflected in all three analysed gender inequality measures. However, in the fourth quarter the infection rate topped the levels recorded in spring 2020. Despite the stringent restrictions that were imposed only in March 2021, the gender gap in work hours and wages rose at the end of 2020. This evidence is a noteworthy signal of a potential exacerbation of gender inequalities during the second lockdown in March-May 2021.

Our results suggest that upward fluctuations in all three inequality measures were largely driven by parenthood. We document that employment propensity, wages, and work hours of child-rearing women reduced relatively more than that of child-rearing men throughout 2020. Employment propensity and work hours of mothers with minor children were most affected by the pandemic. Thus, mothers were more likely to terminate employment or reduce worktime in response to day-care and school closures than fathers, given all other comparable characteristics. Importantly, while the disproportional worktime reduction of mothers who stayed on the labour market improved throughout 2020, their employment rate did not recover.

Substantial gender segregation in industries exacerbated gender inequality particularly in terms of work hours. The reduction of work hours in male-dominated sectors was likely lower than in female-dominated

sectors, particularly in the first quarter of 2020 as the pandemic unfolded. Industry gender segregation overall fuelled the gender wage gap in 2020, however in the least affected sectors – financial and insurance services and healthcare – female wages were more resilient.

Downward fluctuations in the gender wage gap are mainly driven by education, occupation and telework. Women's stronger educational profile paid off particularly at the start of the pandemic, when the first wave escalated, whereas low-educated men experienced stronger wage distortions throughout 2020. We document persistently higher employment propensity and wage returns to females, provided the structure of female occupations. A documented decline in the gender wage gap in top-level jobs indicates a potential thinning of the "glass ceiling" and decomposition analysis suggests stronger resilience of female wages in high-level occupations during the pandemic. Telework appeared relevant only for the gender wage gap, as we document a higher propensity to work from home among women and, as a result, stronger wage resilience among teleworking women. A narrowing of the gender gap in work hours was mainly driven by firm ownership and size, with women experiencing milder declines in work hours provided they work in the firm of same ownership type and size as men, particularly during spikes in the infection rate.

The upside of our findings is the rather cyclical nature of employment distortions and that fact that there is no evidence of exacerbated gender inequalities across the total population. This points towards short-terms distortions, which should not leave a long-lasting trace on average gender inequalities in the labour market. This result holds for all gender inequality measures considered in this paper.

However, the persistently high employment penalty of child-rearing women is alarming. This finding implies that once employment is terminated, re-entering the labour market may be difficult and may take longer due to high returns to work experience and overall labour market disturbances in light of the post-pandemic economic recession. The increasing gender disparity in work hours and wages at the end of 2020 is another alarming finding, which signals two potential mechanisms. The first one is a labour market factor. Employers might have perceived a potential second lockdown due to the mounting infection rate and, based on their experience from the first wave, may have taken advance measures and adjusted labour costs. A reduction in work hours and wages, as a precautionary step taken by employers to sustain their businesses, might have been disproportional across men and women with women being more affected.

The second factor may stem from the family. Like employers, employees might have anticipated the second lockdown and particularly the closure of day-care and schools, which re-opened the question of home schooling and childcare. Similarly to the first wave of the pandemic, mothers were likely to take the major responsibility in facilitating home schooling of older children and caring for the smaller ones. Perceiving this, women might have deliberately reduced their worktime in advance, increasing the residual gap in work hours. An increase in the residual gender gap in wages can be explained by informal arrangements between child-rearing mothers and their employers. Negotiated wage reductions as compensation for lower job commitment is particularly relevant for unofficial employment, which is largely captured by the LFS data. The latter explanation is particularly valid in times of the pandemic, as employment flexibility increased dramatically in response to persistent uncertainties and looming financial stability issues.

Whichever mechanism underlines an increase in gender work hours and wage gaps at the end of 2020, the major takeaway is that there may be another spike in gender inequality in the first half of 2021. Our evidence on the dynamics of gender gaps in 2020 suggests that female employment, wages, and work hours were resilient in the face of the pandemic-induced crisis, and they may remain so throughout the second wave.

However, the above-mentioned conclusions rely on average statistics. While average inequalities may narrow or remain unaffected, certain demographic or labour market groups may experience a long-run expansion of gender inequalities at the cost of female employment, wages or worktime. This is particularly relevant for child-rearing women, women employed in male-dominated industries and industries most affected by the pandemic, as well as low-level occupations. However, to draw conclusions on the long-term implications of the pandemic for overall gender inequality and to identify the most vulnerable groups, a longer post-pandemic sample period and better data granularity is needed. Furthermore, one has to acknowledge that our findings are country-specific, similarly to the majority of recent empirical studies on the labour market implication of the COVID-19 pandemic. To draw general conclusions a meta-analysis relying on the emerging literature is needed. These questions remain open for future study.

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Appendix

Appendix I.A / Descriptive statistics by gender in selected years

	2009		2014		2019		2020	
	Female	Male	Female	Male	Female	Male	Female	Male
Demographics								
Age	44.08	41.16	45.00	42.35	45.63	43.24	45.78	43.42
	(16.93)	(16.23)	(16.56)	(15.89)	(16.45)	(15.74)	(16.51)	(15.81)
Speaks Estonian	0.923	0.882	0.925	0.900	0.935	0.912	0.935	0.906
	(0.267)	(0.322)	(0.264)	(0.300)	(0.247)	(0.284)	(0.246)	(0.292)
Born in Estonia	0.844	0.857	0.853	0.880	0.852	0.885	0.853	0.872
	(0.363)	(0.350)	(0.354)	(0.325)	(0.355)	(0.319)	(0.354)	(0.334)
1 child under 18	0.174	0.148	0.174	0.142	0.159	0.131	0.152	0.130
	(0.379)	(0.356)	(0.379)	(0.349)	(0.366)	(0.337)	(0.359)	(0.336)
2 children under 18	0.109	0.0944	0.106	0.0980	0.123	0.109	0.122	0.104
	(0.311)	(0.292)	(0.308)	(0.297)	(0.328)	(0.312)	(0.327)	(0.305)
3 children under 18	0.0369	0.0301	0.0375	0.0303	0.0398	0.0338	0.0441	0.0354
	(0.189)	(0.171)	(0.190)	(0.171)	(0.196)	(0.181)	(0.205)	(0.185)
Education								
Basic education	0.402	0.452	0.347	0.402	0.303	0.382	0.299	0.371
	(0.490)	(0.498)	(0.476)	(0.490)	(0.459)	(0.486)	(0.458)	(0.483)
Secondary education	0.344	0.383	0.340	0.396	0.336	0.380	0.337	0.384
	(0.475)	(0.486)	(0.474)	(0.489)	(0.472)	(0.485)	(0.473)	(0.486)
Higher education	0.254	0.166	0.313	0.203	0.361	0.238	0.364	0.245
	(0.435)	(0.372)	(0.464)	(0.402)	(0.480)	(0.426)	(0.481)	(0.430)
Employment status								
Employed	0.557	0.594	0.591	0.673	0.646	0.725	0.633	0.703
	(0.497)	(0.491)	(0.492)	(0.469)	(0.478)	(0.447)	(0.482)	(0.457)
Unemployed	0.0640	0.119	0.0432	0.0574	0.0329	0.0308	0.0449	0.0527
	(0.245)	(0.324)	(0.203)	(0.233)	(0.178)	(0.173)	(0.207)	(0.223)
Inactive	0.379	0.288	0.366	0.269	0.321	0.244	0.323	0.244
	(0.485)	(0.453)	(0.482)	(0.444)	(0.467)	(0.430)	(0.467)	(0.429)
Occupation								
Managers (ISCO 1)	0.0745	0.134	0.0658	0.121	0.0717	0.113	0.0698	0.109
	(0.263)	(0.340)	(0.248)	(0.326)	(0.258)	(0.317)	(0.255)	(0.311)
Professionals (ISCO 2)	0.194	0.0850	0.207	0.102	0.248	0.127	0.247	0.138
	(0.395)	(0.279)	(0.405)	(0.303)	(0.432)	(0.333)	(0.431)	(0.345)
Technicians, associate professionals (ISCO 3)	0.183	0.0766	0.140	0.107	0.150	0.122	0.157	0.131
	(0.387)	(0.266)	(0.347)	(0.309)	(0.357)	(0.327)	(0.364)	(0.337)
Clerical support workers (ISCO 4)	0.0873	0.0257	0.0962	0.0371	0.0777	0.0359	0.0784	0.0375
	(0.282)	(0.158)	(0.295)	(0.189)	(0.268)	(0.186)	(0.269)	(0.190)
Service, sales workers (ISCO 5)	0.193	0.0497	0.215	0.0673	0.207	0.0687	0.205	0.0609
	(0.395)	(0.217)	(0.411)	(0.251)	(0.405)	(0.253)	(0.404)	(0.239)
Skilled agricultural, forestry, fishery workers (ISCO 6)	0.0163	0.0182	0.0210	0.0227	0.0109	0.0181	0.0108	0.0176
	(0.127)	(0.134)	(0.143)	(0.149)	(0.104)	(0.133)	(0.103)	(0.131)
Craft and related trades workers (ISCO 7)	0.0324	0.292	0.0462	0.264	0.0341	0.236	0.0304	0.232
	(0.177)	(0.455)	(0.210)	(0.441)	(0.182)	(0.425)	(0.172)	(0.422)
Plant and machine operators, assemblers (ISCO 8)	0.0847	0.217	0.0721	0.185	0.0695	0.189	0.0654	0.181
	(0.278)	(0.412)	(0.259)	(0.388)	(0.254)	(0.392)	(0.247)	(0.385)
Elementary occupations (ISCO 9)	0.134	0.0956	0.136	0.0886	0.130	0.0820	0.136	0.0859
	(0.341)	(0.294)	(0.343)	(0.284)	(0.337)	(0.274)	(0.343)	(0.280)

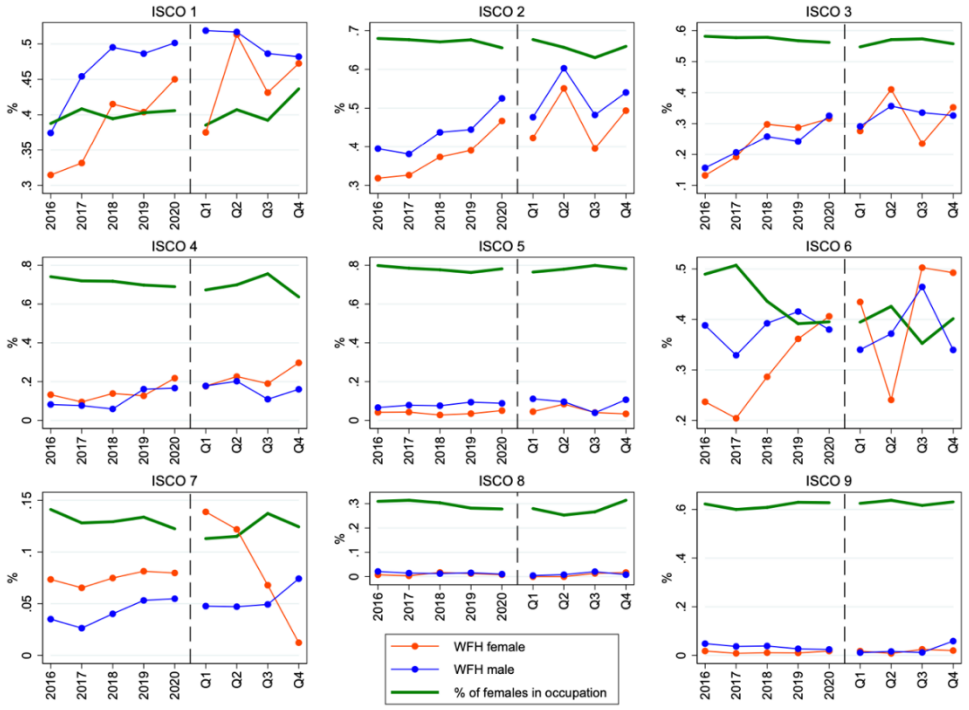
contd.

Appendix I.A / Contd.

	2009		2014		2019		2020	
	Female	Male	Female	Male	Female	Male	Female	Male
Sector								
Agriculture and fishery	0.0262	0.0555	0.0224	0.0540	0.0152	0.0473	0.0155	0.0433
	(0.160)	(0.229)	(0.148)	(0.226)	(0.122)	(0.212)	(0.124)	(0.203)
Mining	0.00262	0.0189	0.000964	0.0122	0.00212	0.0115	0.00165	0.0104
	(0.0512)	(0.136)	(0.0310)	(0.110)	(0.0460)	(0.107)	(0.0406)	(0.101)
Manufacturing	0.159	0.220	0.152	0.212	0.150	0.211	0.145	0.216
	(0.366)	(0.415)	(0.359)	(0.409)	(0.357)	(0.408)	(0.352)	(0.412)
Electricity, heating, water supply	0.0117	0.0215	0.00905	0.0266	0.00707	0.0179	0.00597	0.0193
	(0.108)	(0.145)	(0.0947)	(0.161)	(0.0838)	(0.133)	(0.0771)	(0.138)
Construction	0.0205	0.179	0.0131	0.171	0.0131	0.157	0.0120	0.168
	(0.142)	(0.383)	(0.114)	(0.377)	(0.114)	(0.364)	(0.109)	(0.374)
Retail and wholesale trade	0.167	0.112	0.154	0.108	0.149	0.109	0.150	0.104
	(0.373)	(0.316)	(0.361)	(0.310)	(0.356)	(0.312)	(0.357)	(0.305)
Hotels and restaurants	0.0469	0.0178	0.0625	0.0213	0.0625	0.0267	0.0520	0.0216
	(0.211)	(0.132)	(0.242)	(0.144)	(0.242)	(0.161)	(0.222)	(0.145)
Transport and communication	0.0644	0.158	0.0706	0.161	0.0693	0.174	0.0698	0.163
	(0.245)	(0.365)	(0.256)	(0.367)	(0.254)	(0.379)	(0.255)	(0.369)
Finance and insurance services	0.0280	0.0101	0.0182	0.00828	0.0246	0.0126	0.0220	0.0134
	(0.165)	(0.100)	(0.134)	(0.0906)	(0.155)	(0.112)	(0.147)	(0.115)
Real estate, renting, other business activities	0.0821	0.0768	0.0964	0.0862	0.107	0.0933	0.115	0.0876
	(0.275)	(0.266)	(0.295)	(0.281)	(0.309)	(0.291)	(0.319)	(0.283)
Public administration	0.0739	0.0506	0.0811	0.0642	0.0672	0.0558	0.0745	0.0616
	(0.262)	(0.219)	(0.273)	(0.245)	(0.250)	(0.229)	(0.263)	(0.241)
Education	0.163	0.0427	0.149	0.0301	0.153	0.0346	0.158	0.0412
	(0.370)	(0.202)	(0.356)	(0.171)	(0.360)	(0.183)	(0.365)	(0.199)
Healthcare	0.0999	0.00923	0.110	0.0165	0.113	0.0164	0.107	0.0170
	(0.300)	(0.0957)	(0.312)	(0.127)	(0.317)	(0.127)	(0.309)	(0.129)
Other service activities	0.0543	0.0274	0.0608	0.0295	0.0668	0.0330	0.0724	0.0338
	(0.227)	(0.163)	(0.239)	(0.169)	(0.250)	(0.179)	(0.259)	(0.181)
Firm characteristics								
Foreign owned	0.198	0.231	0.193	0.204	0.188	0.202	0.181	0.210
	(0.398)	(0.422)	(0.395)	(0.403)	(0.391)	(0.402)	(0.385)	(0.407)
Less than 10 employees	0.230	0.252	0.235	0.248	0.262	0.301	0.254	0.292
	(0.421)	(0.434)	(0.424)	(0.432)	(0.440)	(0.459)	(0.435)	(0.455)
11-19 employees	0.163	0.167	0.164	0.191	0.120	0.140	0.122	0.152
	(0.369)	(0.373)	(0.370)	(0.393)	(0.325)	(0.347)	(0.327)	(0.359)
20-49 employees	0.215	0.224	0.206	0.201	0.200	0.186	0.202	0.181
	(0.411)	(0.417)	(0.405)	(0.401)	(0.400)	(0.389)	(0.402)	(0.385)
50-99 employees	0.152	0.138	0.144	0.141	0.152	0.127	0.147	0.122
	(0.359)	(0.345)	(0.351)	(0.348)	(0.359)	(0.334)	(0.354)	(0.327)
100-199 employees	0.0843	0.0863	0.0908	0.0882	0.0928	0.0952	0.0956	0.101
	(0.278)	(0.281)	(0.287)	(0.284)	(0.290)	(0.294)	(0.294)	(0.302)
More than 200 employees	0.0861	0.0778	0.0945	0.0872	0.112	0.109	0.113	0.106
	(0.280)	(0.268)	(0.293)	(0.282)	(0.315)	(0.311)	(0.317)	(0.308)
Employment characteristics								
Parttime work	0.203	0.0908	0.183	0.0734	0.235	0.0929	0.235	0.101
	(0.402)	(0.287)	(0.387)	(0.261)	(0.424)	(0.290)	(0.424)	(0.301)
Working from home at least sometimes	0.101	0.0961	0.131	0.130	0.213	0.197	0.259	0.228
	(0.301)	(0.295)	(0.338)	(0.336)	(0.410)	(0.398)	(0.438)	(0.419)
Hourly net wage	3.23	4.19	4.05	5.34	6.41	7.89	6.82	8.25
	(2.08)	(2.57)	(2.33)	(3.06)	(4.32)	(4.65)	(4.46)	(4.71)
Workhours	37.52	39.97	37.85	39.87	36.74	39.34	36.66	39.11
	(7.762)	(7.534)	(7.891)	(7.043)	(8.537)	(7.137)	(8.486)	(7.398)
N	8537	7709	10059	9408	11777	10596	12466	11413

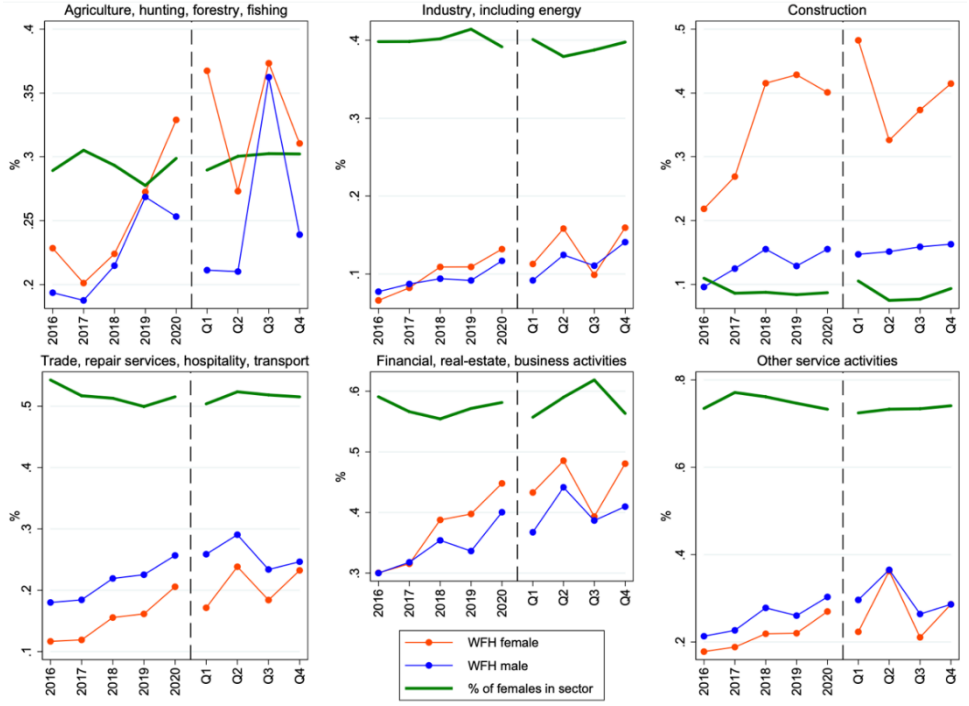
Note: Mean coefficients are reported. Standard errors in parentheses. The estimates are based on EE-LFS data and account for population weights in respective year or quarter.

Appendix I.B / Share of respondents working from home at least sometimes by gender and occupation



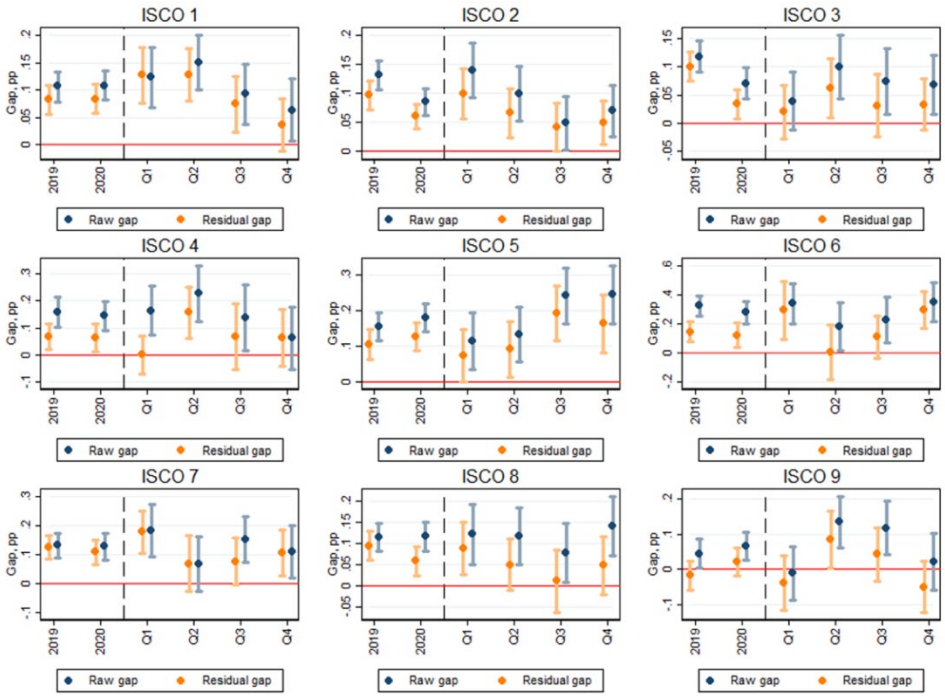
Note: The estimates are based on EE-LFS data and account for population weights in respective year or quarter.

Appendix I.C / Share of respondents working from home at least sometimes by gender and economic sector



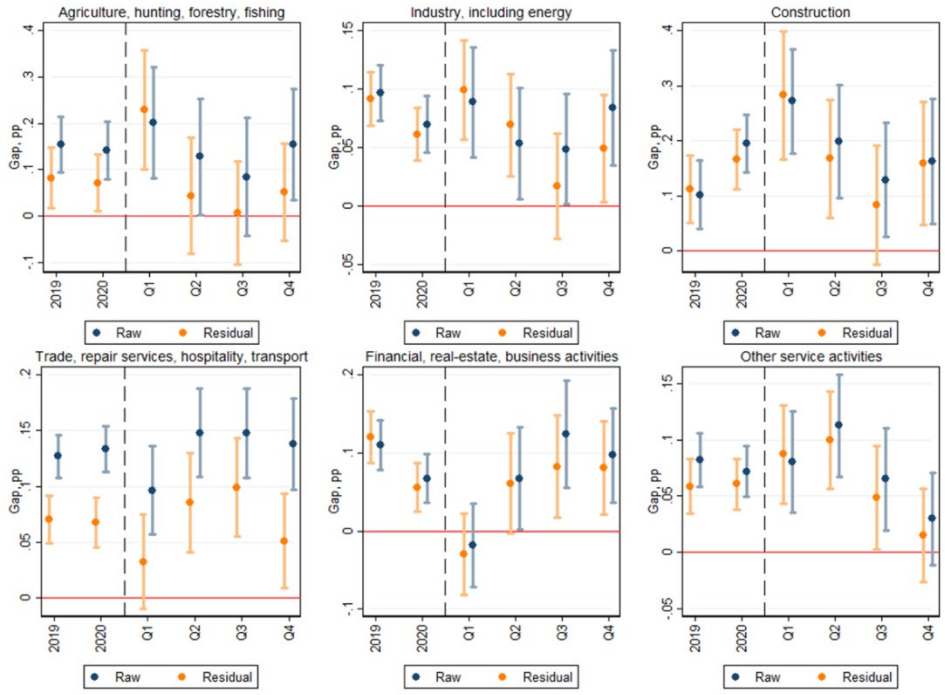
Note: The estimates are based on EE-LFS data and account for population weights in respective year or quarter.

Appendix II.A Gender gap in employment across occupations



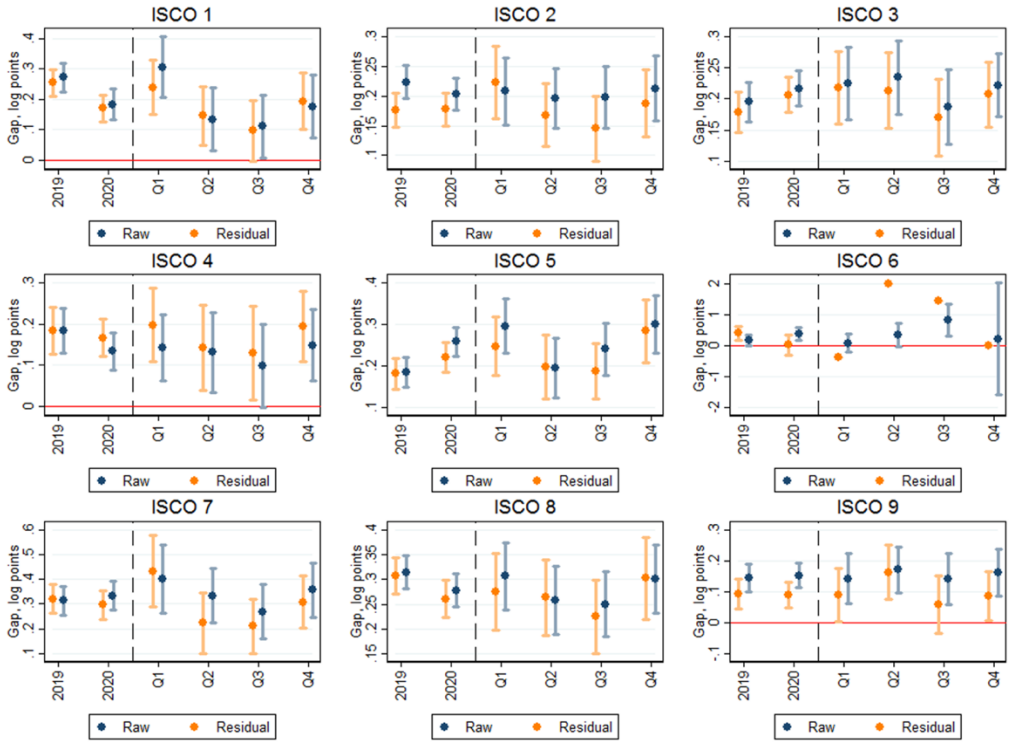
Note: The estimates are based on EE-LFS data and account for population weights in respective year or quarter. The point estimates are reported with 90% confidence intervals.

Appendix II.B / Gender gap in employment across economic sectors



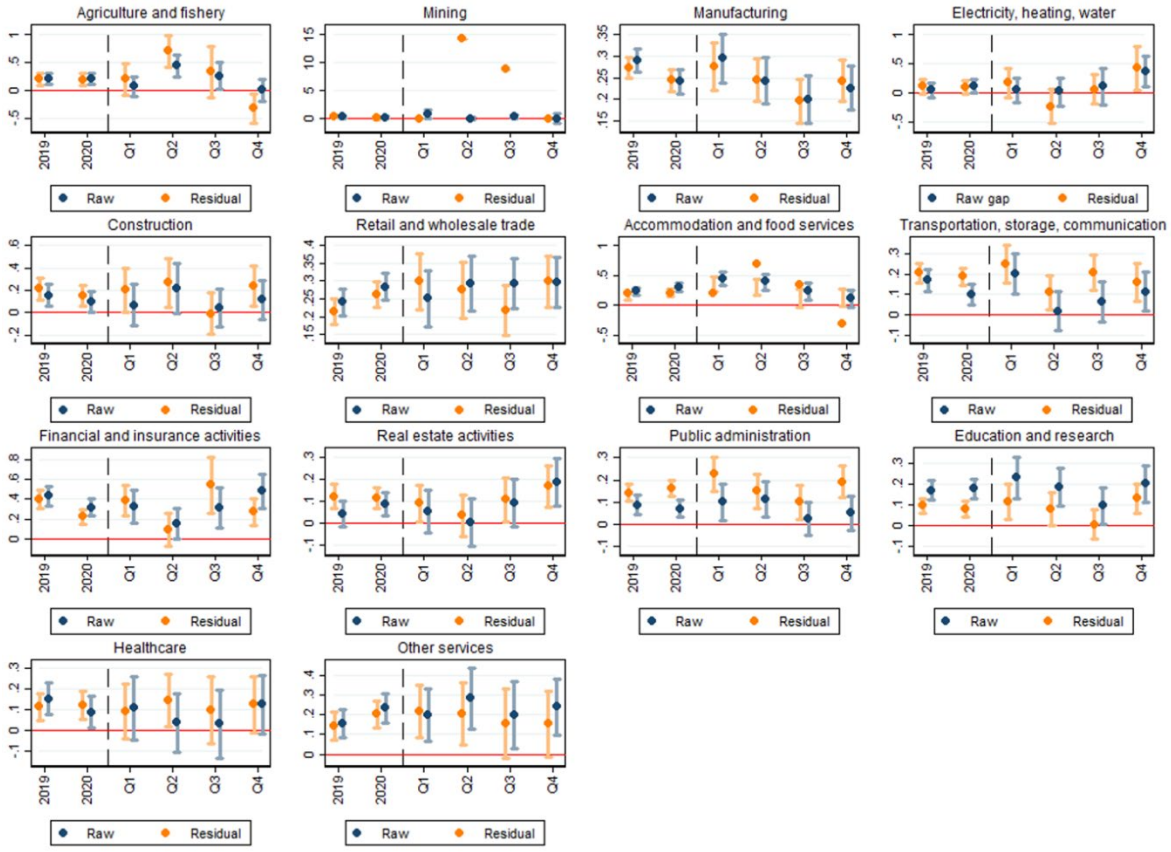
Note: The estimates are based on EE-LFS data and account for population weights in respective year or quarter. The point estimates are reported with 90% confidence intervals.

Appendix III.A / Gender wage gap across occupations



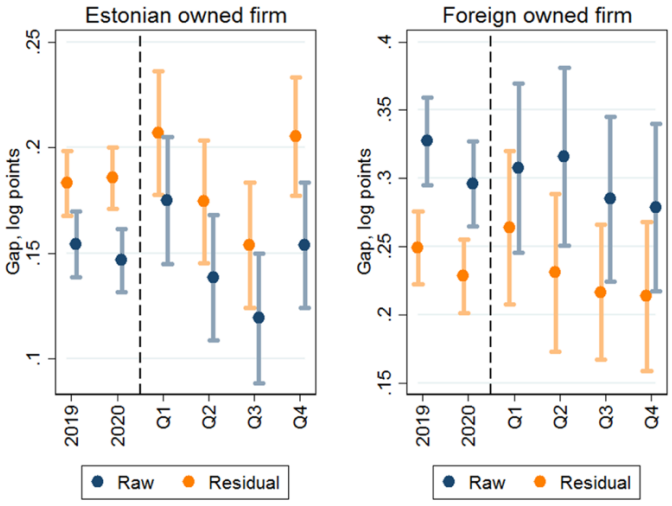
Note: The estimates are based on EE-LFS data and account for population weights in respective year or quarter. The point estimates are reported with 90% confidence intervals.

Appendix III.B / Gender wage gap across economic sectors



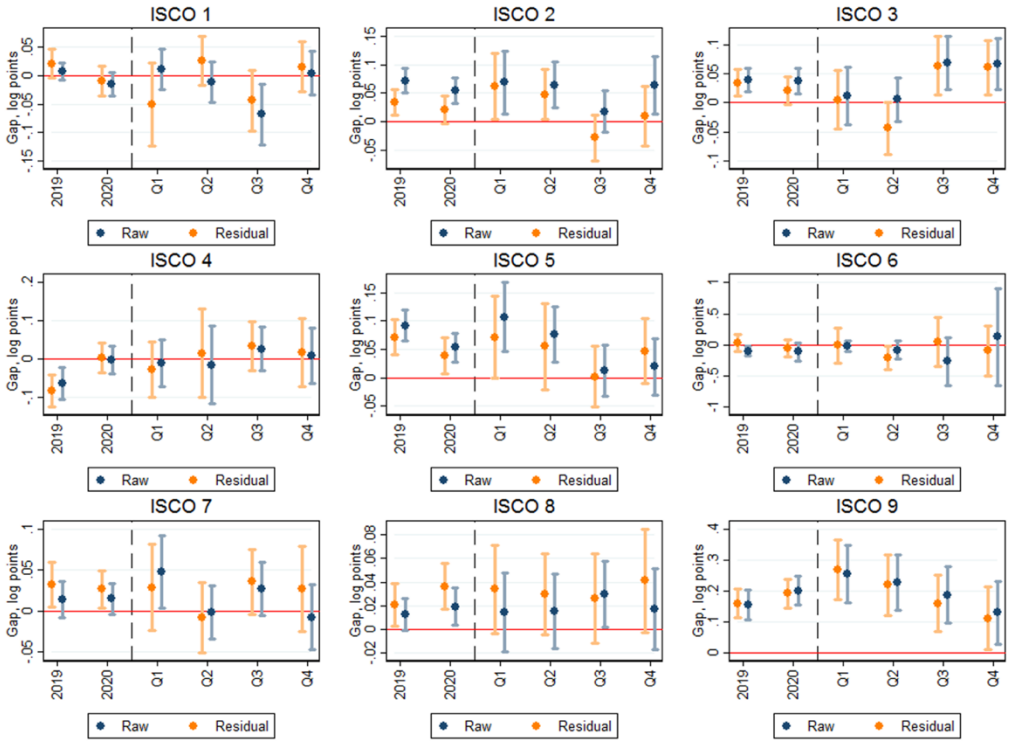
Note: The estimates are based on EE-LFS data and account for population weights in respective year or quarter. The point estimates reported in log points and with 90% confidence intervals.

Appendix III.C / Gender wage gap across domestically and foreign owned firms



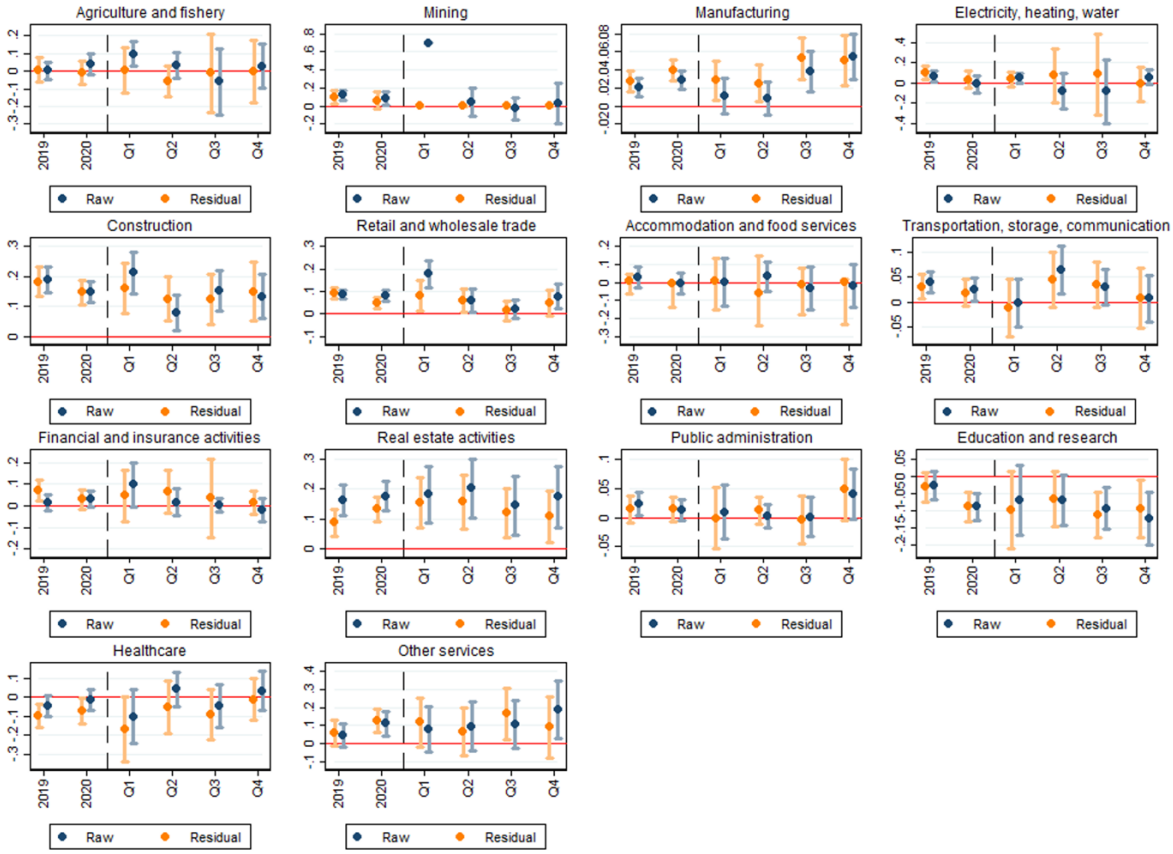
Note: The estimates are based on EE-LFS data and account for population weights in respective year or quarter. The point estimates reported in log points and with 90% confidence intervals.

Appendix IV.A / Gender gap in work hours across occupations



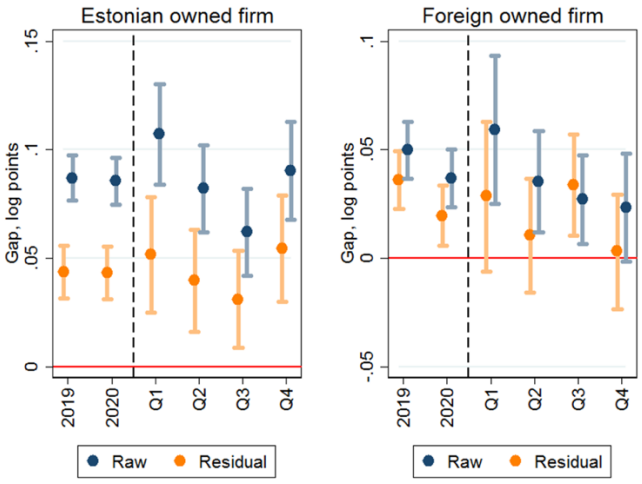
Note: The estimates are based on EE-LFS data and account for population weights in respective year or quarter. The point estimates are reported with 90% confidence intervals.

Appendix IV.B / Gender gap in work hours across economic sectors



Note: The estimates are based on EE-LFS data and account for population weights in respective year or quarter. The point estimates reported in log points and with 90% confidence intervals.

Appendix IV.C / Gender work hours gap across domestically and foreign owned firms



Note: The estimates are based on EE-LFS data and account for population weights in respective year or quarter. The point estimates reported in log points and with 90% confidence intervals.

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