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IZA DP No. 14453

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Daniela Del Boca
University of Turin, Collegio Carlo Alberto and IZA

Paola Profeta
Bocconi University and Axa Research Lab on Gender Equality

Noemi Oggero
University of Turin and Collegio Carlo Alberto

Maria Cristina Rossi
University of Turin and CeRP

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Did COVID-19 Affect the Division of Labor within the Household? Evidence from Two Waves of the Pandemic in Italy*

The COVID-19 pandemic has had a dramatic impact on families' lives, with parents all over the world struggling to meet the increased demands of housework, childcare and home-schooling. Much of the additional burden has been shouldered by women, particularly in countries with a traditionally uneven division of household labor. Yet the dramatic increase in remote work from home since the pandemic also has the potential to increase paternal involvement in family life and thus to redress persistent domestic gender role inequalities. This effect depends on the working arrangements of each partner, whether working remotely, working at their usual workplace or ceasing work altogether. We examine the role of working arrangements during the pandemic on the traditional division of household labor in Italy using survey data from interviews with a representative sample of working women conducted during the two waves of COVID-19 (April and November 2020). Our data show that the gender gap in household care related activities was widest during the first wave of the pandemic, and although it was less pronounced during the second wave, it was still higher than pre-COVID-19. The time spent by women on housework, childcare, and assisting their children with distance learning did not depend on their partners' working arrangements. Conversely, men spent fewer hours helping with the housework and distance learning when their partners were at home. It is interesting, however, that although men who worked remotely or not at all did devote more time to domestic chores and child care, the increased time they spent at home did not seem to lead to a reallocation of couples' roles in housework and child care. Finally, we find that working arrangements are linked to women's feelings of uncertainty, with heterogeneous effects by level of education.

JEL Classification: J13, J16, J21

Keywords: COVID-19, work arrangements, housework, childcare, distance learning

Corresponding author:
Paola Profeta
Bocconi University
Dondena, Milan
Italy
E-mail: paola.profeta@unibocconi.it

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1. Introduction

The COVID-19 crisis has affected the lives of millions of people around the world, with devastating consequences on economic, health and educational outcomes. Lockdowns have forced people to adapt to new working arrangements, emptying offices as employees started working from home. School closures mean more time must be spent on housework, childcare and helping students with distance learning. But how is this increased burden of work shared between men and women? Did the pandemic have any effect on the pre-COVID division of labor within the household? What role does remote work play in the reallocation of labor within the household? Do working arrangements have other consequences on women's conditions?

Before COVID-19, on average, women in OECD countries spent two hours more than men per day on unpaid work at home. If women continue to do the lion's share of work at home, then it is likely that they will take on the extra burden of work resulting from the pandemic. This aggravation in the uneven division of labor between men and women risks widening gender gaps in the economy. However, the new work arrangements and massive shift to remote work by both men and women could provide an opportunity for increasing men's involvement in family life, thus rebalancing traditional family arrangements. The division of labor within the family would become more balanced and gender gaps expected to decrease.

A new equilibrium will emerge, depending on which of these two possible scenarios prevail. We expect the first to characterize the short-run impact of COVID-19, especially in countries with conservative gender norms and a substantial asymmetry between men and women in the household. The second scenario needs more time to materialize and is strongly linked to the working arrangements of men and women within the couple. More precisely, if men work from home, their involvement in housework and childcare will likely increase. If, remote working prevails among women rather than men, instead, this change is more unlikely to take place.

Prior to COVID-19, the household division of labor in Italy was highly unbalanced. Our research shows how the situation has changed since the pandemic. Italy was the first European country to report people infected by the new coronavirus, and one of the countries with the highest number of cases and death rates. Italy went through two main periods of restrictions starting in March 2020 and October 2020 (see the Appendix for more details on the two waves of the pandemic in Italy). Thus, it represents the ideal context for studying whether the division of labor within the household changed at the outbreak of the pandemic and if it has evolved over time.

We use a unique source of datasets to run our research. A sample representative of Italian working women was surveyed during the two periods of restriction, with the first interviews conducted in April 2020 and the second in November 2020. The subjects were asked about their own working arrangements and those of their partners, especially about whether they were working from home at the time of the survey or currently not working. They were also asked to provide information about how much time they and their partner spent on housework, childcare and helping their children with distance learning.

The timing of the two surveys allowed us to identify any short- and longer-run changes to working arrangements and the household division of labor as a result of the pandemic and to compare how the working arrangements of women and their partners were shaped by the pandemic during the first and second waves. We then looked at how the working arrangements during the two lockdowns affected the number of hours each partner spent on housework and childcare. We wanted to see whether the time spent on family-related responsibilities correlated to the amount of time spent at home due to the emergency restrictions. We found that the gender gap in household care related activities increased during the first wave of COVID-19 pandemic. Although the gap was less pronounced during the second wave, the distribution of time spent on housework and childcare within the couple remained highly unbalanced against women, even after accounting for the two partners' working arrangements. Time spent on housework, childcare, and supporting distance learning by women does not depend on their partners' working arrangements. Conversely, men spent fewer hours helping with housework and home schooling when their partners were at home. However, even if men were working remotely from home or not at all and thus spent more hours on family work during the second wave of COVID-19, the increased time they spent at home did not seem to lead to a full reallocation of couples' roles in housework and children care.

We also found that working arrangements may also directly affect women's living conditions and their perception of it. In times of uncertain economic conditions due to the pandemic, economic insecurity is a crucial issue. We thus explored the emergence of women's feelings of economic insecurity and dissatisfaction in the areas of job insecurity, earnings loss, and their expected levels of future pensions. Our results show that women who were not working several months after the outbreak of COVID-19 and those with a non-working partner were more concerned about losing their jobs or closing their businesses. Our results also show that education is important in reducing women's feeling of insecurity.

The sharing of housework and childcare affects women's participation in the labor market (Matysiak and Mynarska, 2020; Fanelli and Profeta, 2021). Assessment of whether and how the

pandemic altered the division of labor within the household is thus crucial to understanding the evolution of gender gaps. Whereas past economic crises had a greater negative effect on men's than on women's employment, COVID-19 has hit women equally or even harder than men, as many of the jobs lost have been in service sectors with large female workforces, such as retail, restaurants and hospitality (ILO, 2020; Hupkau and Petrongolo, 2020; Alon et al., 2020).[1] The unbalanced division of labor within the household risks amplifying the negative consequences of COVID-19 on gender gaps. Many working mothers are struggling to make things work, since somebody has to stay home and mind the children (Queisser et al., 2020). A growing body of research is thus focusing on the impact that COVID-19 has had on the division of labor within the household in specific countries. Evidence from Spain (Farré and Gonzalez, 2020), the UK (Sevilla and Smith, 2020), and Italy (Del Boca et al., 2020; Mangiavacchi et al., 2020) shows that there was an initial shift towards a more equal distribution of household and childcare between men and women in the first months of the pandemic, although most of the extra work caused by the crisis has fallen on women. A comparative analysis of a novel data set including Italy, the UK, and the US confirms these results (Biroli et al., 2020). D'Ambrosio et al. (2020) collected and analyzed a new data set of 1,700 partners cohabiting during 2020[2] and compared the impact of COVID-19 and the severity of measures adopted on the time allocation and well-being of couples in several European countries including Italy, Spain, France, Belgium, Germany, Luxembourg and Sweden. They found that Italy's longer school closures led to a greater increase in women's childcare time than in Spain or Germany, where the measures adopted do not appear to have exacerbated the gender gap within the family.[3] In a previous work (Del Boca et al., 2020), we also focused on the outbreak of the pandemic in Italy. Using the first wave of the survey, we show that most of the additional housework and childcare associated to COVID-19 fell on women, even though childcare activities were more equally shared within the couple than housework activities. The emergence of a possible new equilibrium passes through the working arrangements of each partner, i.e., whether they work from home, continue working at the usual place of work or cease working. However, first wave data

[1] Albanesi and Kim (2021) analyzed US data during and after the pandemic and concluded that the adverse impact of the pandemic on employment, unemployment and non-participation rates has mostly regarded women, particularly mothers. In their analysis of the US case, Béland et al. (2020) and Gupta et al. (2020) show that significant short-term employment effects characterized states that implemented tighter stay-at-home orders. The length of school closures also negatively affects labor supply, especially of mothers (Amuedo Dorantes et al., 2020).

[2] https://humanities.uni.lu/virtual-faculty/how-do-different-confinement-measures-affect-people-across-europe

[3] Interestingly, the disaggregation of household activities shows that when both partners share more housework as a consequence of COVID-19, there are differences in the tasks performed. Carlson et al. (2020) report that in the US, in housework activities, men contribute more to grocery shopping, and, in childcare activities, men spend more time playing with children, while women are more involved with supervising school-related activities.

alone does not allow us to identify the two possible sides of the relationship between COVID-19 and the division of labor within the household, since more time is needed to see if there is a change in family arrangements. Analyzing the two waves of the pandemic, this paper is the first to explore how and to what extent family roles changed between the first wave and second waves of COVID-19 in Italy and thus to assess whether a new equilibrium in the intra-family division of work and family work has emerged. Moreover, we are able to link working conditions to outcomes which are important for women's status, such as their feeling of insecurity and dissatisfaction.

The paper is organized as follows: the next section explains the conceptual framework and formulates our hypotheses, section 3 presents our data and empirical analysis, and section 4 concludes.

2. The Division of Labor within the Household: Background and Hypotheses

Demographers have widely analyzed the relationship between the increasing role of women in the economy and society, known as the gender revolution (Goldscheider, 2000) and the division of labor within the household. During the first half of the gender revolution, women began to pursue higher levels of education and participated increasingly in the labor market, although they continued to be responsible for housework and childcare within the family. The double burden on women is difficult to sustain. A new equilibrium is expected to emerge in dual-income couples (Esping-Andersen and Billari, 2015), with men more involved in family's activities, including housework and childcare. This is called the second half of the gender revolution (Goldscheider et al., 2010, 2015). Scholars have studied the emergence of this new equilibrium and its consequences on fertility rates and maternal employment (see, among the others, Matysiak, 2009; Matysiak and Vignoli, 2013; Matysiak and Mynarska, 2020; Fanelli and Profeta, 2021). For these outcomes, men's participation in housework seems to be more important than that in childcare (Carlson et al., 2020). Moreover, policies and the cultural context play an important role for the success of the second half of the gender revolution. In countries characterized by more traditional gender culture and gender roles, such as Italy, increasing men's involvement in the family is more difficult to achieve (Aassve, Fuochi and Mencarini, 2014). In these countries, in fact, women still bear the brunt of housework and childcare activities.

While it seems quite intuitive, attention to the role of remote working as a facilitator of the emergence of the second phase of the gender revolution is very recent. Angelici and Profeta (2020) show that flexible work arrangements that allow some of working week to be spent at home, leads

to an increase in men's' contribution to housework and childcare.[4] Thus, working from home may help to rebalance the division of labor within the household (see also Schieman et al., 2009; Moen et al., 2016; Mas and Pallais, 2020).

The outbreak of COVID-19 has revived attention to both the division of labor within the household and working arrangements. Recent evidence has concentrated on how the increased amount of housework, childcare and support for distance learning caused by the pandemic was shared between men and women (see, among others, Del Boca et al., 2020; Farrè et al., 2020). In parallel, several studies have documented the spread of remote working arrangements (Angelucci et al., 2020; De Filippis et al., 2020; Dingel and Neiman, 2020). We argue that time spent at home together, due to changes in working arrangements, might play a fundamental role in the division of family tasks and we formulate the following hypothesis.

H1. Working arrangements (mainly the increase in working from home) support a more balanced allocation of family tasks (housework, childcare, support for distance learning) within the couple. Although the amount of domestic tasks increases as a consequence of COVID-19, and in the short-run it falls disproportionately on women, in the long-run it will be more equally shared among men and women, because men who are not working at their usual workplace spend more time at home.

In other words, COVID-19 and the associated spread of home-working might usher in the second shift of the gender revolution in countries where cultural barriers, lack of social policies and cultural factors were struggling to encourage the involvement of men in the family.

Several studies have emphasized that working from home has also had important consequences on subjective well-being. Workers allowed to work from home tend to report higher satisfaction with income, social life and life in general (Chung, 2011; Moen et al., 2013; Angelici and Profeta, 2020).

In times of uncertain economic conditions due to the pandemic, individuals' well-being is expected to be negatively affected. This is particularly relevant for women, who on average have more unstable economic conditions and are shown to be particularly affected by the "she-cession" (Alon et al., 2020). Again, working arrangements may play a role in moderating this negative effect. We thus formulate our second hypothesis as follows:

H2. Working arrangements (mainly the increase in working from home) moderate women's feeling of insecurity and dissatisfaction related to the pandemic.

[4] More precisely, Angelici and Profeta (2020) analyze "smart-working", which foresees the possibility of working outside the place of work (very often at home) for part of the working week, but also according to a flexible schedule.

We now take our two hypotheses to data with reference to Italy.

3. Data and Descriptive statistics

The Italian context

Our analysis focusses on Italy, which is characterized by a large gender gap both in the labor market and within the family.[5] The situation has been exacerbated by the pandemic. During 2020, female participation rates have declined from 50% to 48.6% (against an average of 62 % in the rest of the European Union). Moreover, the number of inactive women increased dramatically, and now three out of four women do not participate in the labor market.

The pandemic in Italy was characterized by two waves in 2020. The first school closures started on February 25th, 2020, and the central government and regions adopted measures to reduce the spread of the virus with a full lockdown between March 9th and May 3rd. This lockdown was the strictest in Europe and the school closures lasted longer than in other countries.[6] While the circulation of COVID-19 was very low in the summer, in October 2020 the number of cases increased again, and the virus spread more widely across regions. The lack of restrictive measures increased contagion rates, and in mid-November 2020, six times as many cases were reported as during the first wave. The new measures adopted to limit the impact on the new growing epidemic were not as strict as before. More information is provided in the Appendix.

Data and descriptive evidence

In our analysis, we use data collected in two waves of a large survey conducted on a representative sample of 699 Italian women who were working before the COVID-19 outbreak.[7] The two waves

[5] The Harmonised European Time Use Survey statistics (HETUS) data shows that there are particular patterns of how women and men use their time: women are, on average, more involved in household and care activities than men. Women perform more food management, cleaning, ironing and laundry, while men are more involved in construction and gardening. While both men and women participate in childcare, it seems that women are relatively more involved in the physical care, supervision and accompanying of their children, while men seem to participate relatively more in teaching, playing and talking with their children.
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=How_do_women_and_men_use_their_time_-_statistics&oldid=463738

[6] From March to May 2020 the school closures lasted 103 days versus an average of about 50-55 in other European countries.

[7] The surveys were administered by Episteme, a professional survey company, with CAWI (computer-assisted web interviewing) interviews. A previous survey was conducted in April 2019 on a national representative sample of 1,249 working women (aged 25-64). Most of the 1,249 women were then surveyed again in April 2020 and November 2020.

of the survey were conducted in April 2020 (during the strict lockdown) and November 2020 (during the second wave of COVID-19).

Table 1 reports the descriptive statistics of the sample. The average age in our sample is 45 years, and 46% of respondents have a university degree. More than half (55%) of the interviewed working women live in the northern regions. Also, 55% of women in our sample live with their children and 72% with a partner. To assess the representativeness of our sample, we looked at the characteristics of the population of working women in Italy in 2020, as provided by the Italian National Institute of Statistics (ISTAT). With regard to the geographical areas, our sample shows the same distribution as the national population (ISTAT reports that 54% of working women live in the northern regions of Italy, about the same percentage as in our sample). As ISTAT reports that around one-third of working women have a degree, we acknowledge that our sample is biased toward more educated women, who have access to an online survey.

Table 1. Descriptive statistics.

	Mean	*Std. Dev.*	*Min*	*Max*
Age	44.96	9.50	26	65
Having a degree	0.46	0.50	0	1
North	0.55	0.50	0	1
Centre	0.20	0.40	0	1
South	0.25	0.43	0	1
Having children	0.55	0.50	0	1
Having a partner	0.72	0.45	0	1
Working at the usual workplace	0.58	0.49	0	1
Working from home	0.24	0.43	0	1
Not working or other	0.18	0.38	0	1

Note: The full sample is made up of 699 observations.

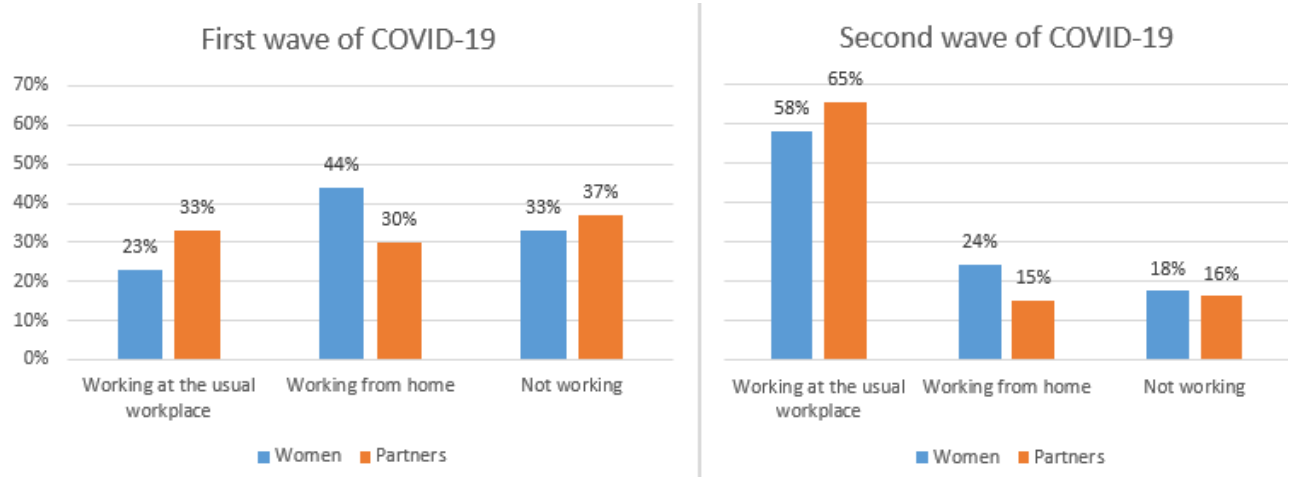
Since the question on the number of hours spent in family work during the lockdown and before the pandemic were asked retrospectively in the second wave, when looking at the short-term effects of the pandemic we consider only the women who were interviewed in both waves. This should reduce the numerosity of the sample used to study the short-run.

In this section, we first present evidence on working arrangements during the two waves of COVID-19. We then move to the division of labor within the couple, taking into account

housework, childcare and support of distance learning. Finally, we look at the link between working arrangements and the division of labor within the household.

Figure 1 shows the working arrangements of women and their partners during the first and second waves of COVID-19. While in April 2020 only 23% of women who were working before the COVID-19 emergency are working at their usual workplace, they become the majority (58%) in November 2020. In fact, as a consequence of less restrictive measures implemented during the second wave, many more individuals have returned to their usual place of work in November 2020.

Figure 1. Working arrangements during the first and second waves of COVID-19.



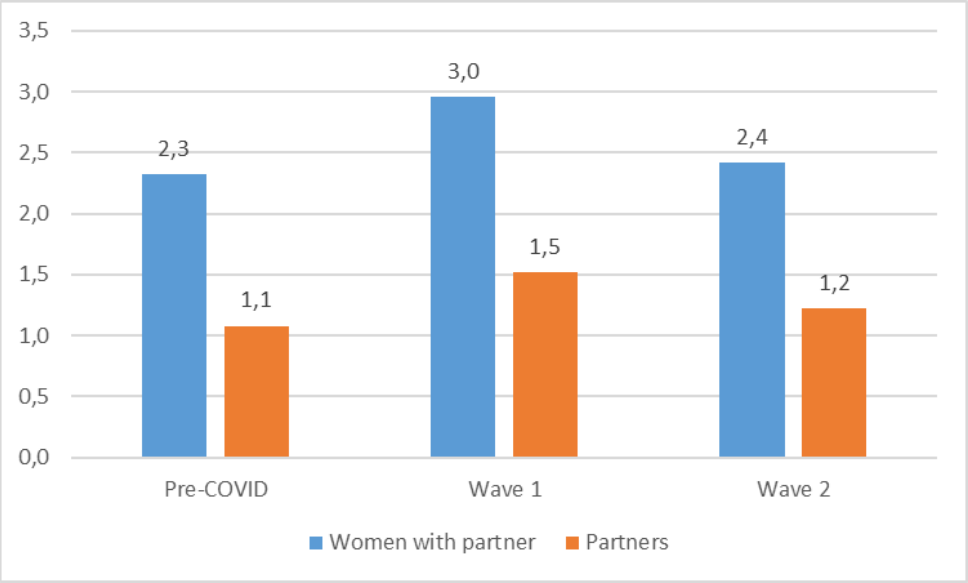
Note: Percentage of working women and their partners by working arrangement in April and November 2020.

On the other hand, the share of individuals either working from home or not working 9 months after the outbreak of COVID-19 is much lower than during the very first months of the pandemic. In terms of gender differences, while the proportion of individuals not working was higher among men in the first wave (37% of men versus 33% of women), this is not the case in the second wave (16% of men versus 18% of women). More men than women remained at their usual workplace in November 2020 (65% of men versus 58% of women), while more women worked from home (24% of women versus 15% of their partners).

We now move on to examine the division of labor within the household. Figure 2 shows the distribution of the daily hours of housework[8] spent by coupled working women and their partners before the emergency, during the first wave, and in the second wave of COVID-19. Even though both women and their partners dedicated less time to housework during the second wave than the first, women always spent more time than men on household chores (Figure 2).

[8] The question on housework includes a couple of examples like cleaning and cooking.

Figure 2. Hours of housework before the emergency, during the first wave, and during the second wave of COVID-19.

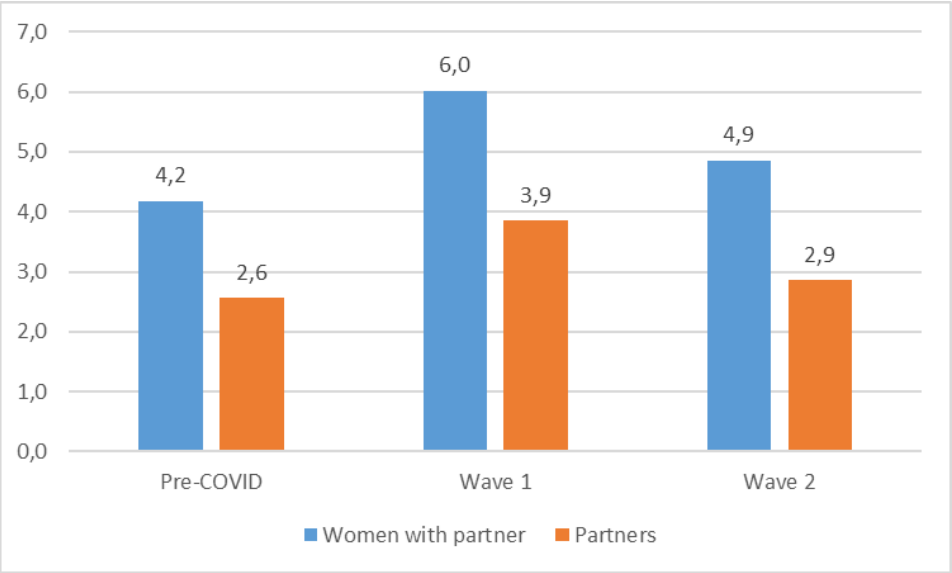


Note: The sample is made up of women cohabiting with a partner.

A similar trend emerges for childcare[9] when comparing the number of hours spent before the emergency, and during the first and second waves of COVID-19. Figures 3 and 4 show the daily hours spent on childcare, and home schooling in particular, by working women and their partners. Our data show that both women and men spent less time taking care of their children during wave 2 than during wave 1. Women typically spend many more hours per day on childcare; this gap not only increased with the emergency (from 1.6 to 2.2 hours per day), but never returned to the pre-COVID level (the average difference between mothers and fathers in the time devoted to children is 2 hours as of the second wave).

Figure 3. Hours of childcare before the emergency, during the first wave, and during the second wave of COVID-19.

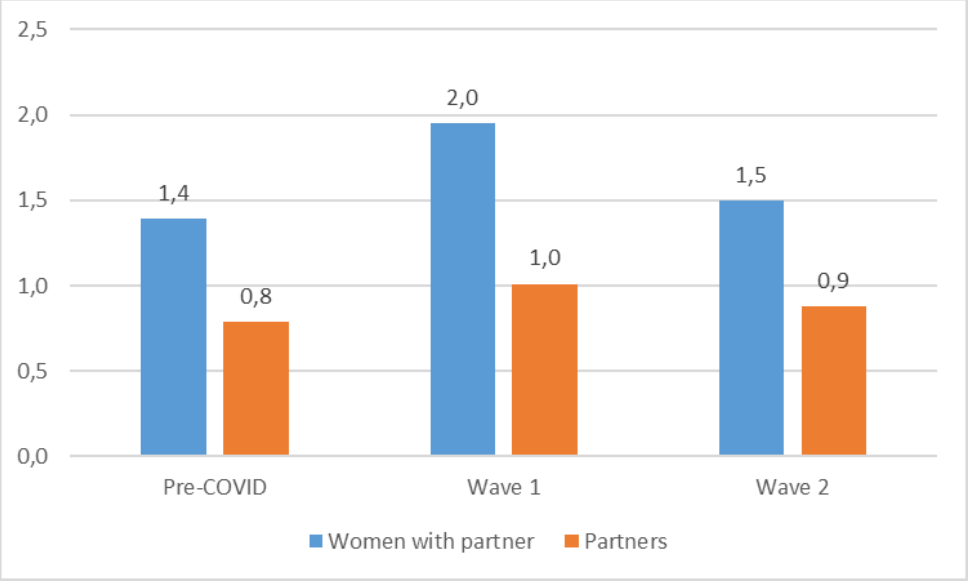
[9] The question about childcare asks about the time devoted to children in general, including the time devoted to home schooling.



Note: The sample is made up of women with children cohabiting with a partner.

Figure 4 shows the hours spent on children's distance learning by both partners and confirms the trend observed for housework. Women and their partners spent less time on the education of their children during the second wave than the first, but women still spend more time than men on home schooling. In fact, as of November 2020, women spend an hour and a half per day on home schooling, while their partners spend less than one hour. This confirms previous results (Carlson et al., 2020).

Figure 4. Hours devoted to children's distance learning before the emergency, during the first wave, and during the second wave of COVID-19.



Note: The sample is made up of women with children cohabiting with a partner.

To understand the link between working arrangements and the allocation of housework and

childcare within the household, Table 2 shows the hours of housework during the first and the second wave of COVID-19 according to all the possible combinations of working arrangement between women and their partners. In doing so, we restrict the sample to women cohabiting with a partner.[10]

Both panels of Table 2 shows that the distribution of housework within the couple is highly unbalanced against women. In almost all possible combinations of working arrangements, women spend significantly more hours doing unpaid work at home than their partners. The highest difference experienced during the first wave (2.57 hours) concerns women who were not working because of the emergency and partners working at their usual workplace. Yet when men were the ones not working while women continued working at their workplace, the gender difference was still positive and significant. The highest difference in the time devoted to housework during the second wave (1.81 hours) was observed when men kept working at the usual place and women worked from home. However, in the opposite situation, women still spent more time on housework than men (2.92 versus 1.40 hours per day). During both waves, the distribution of housework penalized women in symmetric situations too, i.e., when both partners had the same working arrangements.

Table 2. Hours of housework during the first and second waves of COVID-19.

Panel a) Men and women's hours of housework during the first wave of COVID-19 by working arrangement.

	Partners working at the usual workplace	Partners working from home	Partners not working
Women working at the usual workplace	Women 3.14 Partners 2.19 Difference 0.95*** N=42	Women 2.47 Partners 2 Difference 0.47 N=15	Women 2.30 Partners 1.33 Difference 0.96*** N=27
Women working from home	Women 2.52 Partners 1.26 Difference 1.26*** N=50	Women 3.03 Partners 1.57 Difference 1.46*** N=87	Women 2.96 Partners 1.57 Difference 1.38*** N=47
Women not working	Women 4.03 Partners 1.46 Difference 2.57*** N=35	Women 2.38 Partners 1.38 Difference 1 N=21	Women 3.30 Partners 1.54 Difference 1.75*** N=81

[10] Note that the question on the number of hours spent on family work during the lockdown was asked retrospectively during the second wave. Hence, when looking at the family work in the first wave, we will exploit only the women who were interviewed in both waves. This reduces the numerosity of the sample to study the short-run.

Note: The sample is made up of women cohabiting with a partner (N=405).

Panel b) Men and women's hours of housework during the second wave of COVID-19 by working arrangement.

	Partners working at the usual workplace	Partners working from home	Partners not working
Women working at the usual workplace	Women 2.31 Partners 1.17 Difference 1.14*** N=241	Women 2.92 Partners 1.40 Difference 1.52*** N=25	Women 2.35 Partners 1.52 Difference 0.84** N=31
Women working from home	Women 2.56 Partners 0.75 Difference 1.81*** N=57	Women 2.82 Partners 1.43 Difference 1.39*** N=44	Women 1.91 Partners 1.30 Difference 0.61** N=23
Women not working	Women 2.53 Partners 1.04 Difference 1.49*** N=47	Women 1 Partners 3.37 Difference -2.37 N=8	Women 2.68 Partners 1.43 Difference 1.25*** N=28

Note: The sample is made up of women cohabiting with a partner (N=504).

Table 3 focuses on women with children and reports similar findings for childcare. In most of the combinations of the working arrangements of women and their partners, women spent significantly more time taking care of their children during both waves of the pandemic. Panel A of Table 3 shows that women who did not work at their usual workplace during the first lockdown spent significantly more time on childcare than their partners. During the second wave (Panel B), the largest differences in the time devoted to childcare are reported when men kept working at the usual place while women worked from home or did not work. In contrast, men never spent significantly more time on childcare than their spouses. In symmetric situations, women are penalized as well. In fact, when both partners worked at their usual workplace, women spent on average 1.41 more hours on childcare. That difference went up to 1.83 hours when both partners were working from home.

Table 3. Hours of childcare during the first and second waves of COVID-19.

Panel a) Men and women's hours of childcare during the first wave of COVID-19 by working arrangement.

	Partners working at the usual workplace	Partners working from home	Partners not working
Women working at the usual workplace	Women 4.34 Partners 3.91	Women 2.5 Partners 2.25	Women 3.38 Partners 2.67

	Difference 0.44 N=32	Difference 0.25 N=8	Difference 0.71* N=21
Women working from home	Women 2.87 Partners 1.72 Difference 1.16** N=32	Women 5.91 Partners 4.40 Difference 1.51* N=57	Women 6.87 Partners 5.27 Difference 1.6*** N=30
Women not working	Women 8.23 Partners 3.46 Difference 4.77*** N=26	Women 10.92 Partners 7.15 Difference 3.77** N=13	Women 6.65 Partners 4.74 Difference 1.91*** N=54

Note: The sample is made up of women with children cohabiting with a partner (N=273).

Panel b) Men and women's hours of childcare during the second wave of COVID-19 by working arrangement.

	Partners working at the usual workplace	Partners working from home	Partners not working
Women working at the usual workplace	Women 3.59 Partners 2.18 Difference 1.41*** N=162	Women 4.56 Partners 3.44 Difference 1.12** N=16	Women 3,3 Partners 3,4 Difference -0,1 N=20
Women working from home	Women 5.85 Partners 2.92 Difference 2.92*** N=39	Women 5.86 Partners 4.03 Difference 1.83*** N=29	Women 5 Partners 4.46 Difference 0.54 N=13
Women not working	Women 8.90 Partners 2.86 Difference 6.03*** N=29	Women 13.2 Partners 6.4 Difference 6.8 N=5	Women 5.58 Partners 3.63 Difference 0.98* N=19

Note: The sample is made up of women with children cohabiting with a partner(N=332).

3. Empirical Analysis

Working arrangements and the allocation of housework, childcare and distance learning within the couple

The descriptive evidence of Tables 2 and 3 suggests a link between working arrangement and the allocation of housework, childcare and support for distance learning. The direction of the link is consistent with our Hypothesis 1. To better explore this link, we now estimate a set of multivariate regressions using linear probability models. In Tables 4, 5 and 6 we show for both working women and their partners the association between working arrangements, together with individual and family characteristics, and the hours devoted to housework, childcare and distance learning by

women and their partners during the two waves of the pandemic (lockdown and second wave of COVID-19).

Table 4. Multivariate regression model of hours spent on housework by women and their partners during the first and second waves of COVID-19.

	Hours spent on housework by women during the lockdown	Hours spent on housework by partners during the lockdown	Hours spent on housework by women during the second wave of COVID-19	Hours spent on housework by partners during the second wave of COVID-19
Woman's age	-0.002	-0.037***	0.009	-0.022***
	(0.010)	(0.010)	(0.008)	(0.008)
Woman having a degree	0.085	0.157	-0.125	-0.042
	(0.187)	(0.195)	(0.155)	(0.156)
Woman having children	0.502***	0.126	0.444***	0.173
	(0.192)	(0.199)	(0.155)	(0.156)
Centre	-0.051	0.008	-0.015	0.158
	(0.233)	(0.242)	(0.196)	(0.198)
South	1.127***	0.045	0.899***	0.294*
	(0.218)	(0.226)	(0.177)	(0.178)
Woman working from home	0.050	-0.393	0.070	-0.363*
	(0.245)	(0.255)	(0.189)	(0.191)
Woman not working	0.567**	-0.422	0.125	0.013
	(0.254)	(0.264)	(0.210)	(0.212)
Partner working from home	-0.285	-0.045	0.288	0.697***
	(0.236)	(0.246)	(0.221)	(0.223)
Partner not working	-0.211	-0.064	-0.190	0.467**
	(0.219)	(0.228)	(0.213)	(0.215)
Constant	2.420***	3.435***	1.497***	1.928***
	(0.526)	(0.547)	(0.397)	(0.401)
Observations	405	405	504	504
R-squared	0.113	0.044	0.082	0.045

Note: Coefficient estimates from OLS regressions. The sample is made up of women cohabiting with a partner. The baseline category for working arrangements is "working at the usual workplace." During the lockdown, the average hours spent on housework by women are 3.01 and the average hours spent on housework by men are 1.57. During the second wave of COVID-19, the average hours spent on housework by women are 2.42 and the average hours spent on housework by men are 1.22. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The first and third columns of Table 4 show that, during both waves of the pandemic, the time spent by women on housework was not related to their home-working arrangement or to the working arrangements of their partners. During the lockdown, non-working women spent more hours on

housework. Having children and living in the South of Italy increases a women's probability of working more hours, since they are the only significant variables explaining the additional time devoted to the household care. The driver of the extra care seems, then, to be more culturally rooted than ruled by working necessity. For partners, instead, the working arrangements do matter in terms of the time spent on housework: the last column of Table 4 shows that a few months after the outbreak of COVID-19, men were spending more time on housework if they were working from home or not working. Also, while women's housework is not affected by their partners' working arrangement, it seems that men are less likely to spend time on household tasks when their partners are working from home. Finally, while columns 1 and 3 show that women spend more time on housework when there are children in the household, this is not true for men.

The results regarding time devoted to childcare, reported in Table 5, are more similar between partners over the longer run, and show a symmetric effect on children's care when one of the partners is absent from home (columns 3 and 4). During both waves, mothers spent more hours with their children if they were not working and, in the second wave, if they were working from home. During the second wave, fathers spent more hours with their children if they were not working or worked from home. During the second wave, working-from-home mothers devoted 1.6 more hours to the care of children than mothers not at home and working-from-home fathers devoted 1.30 more hours to the care of children than fathers not at home. Also, non-working mothers spent almost 4 more hours on childcare than women who continued working at their workplace, while not-working fathers spent an hour and half more on childcare compared to men who kept working at their workplace.[11]

Table 5. Multivariate regression model of hours spent on childcare by women and partners

	Hours spent on childcare by women during the lockdown	Hours spent on childcare by partners during the lockdown	Hours spent on childcare by women during the second wave of COVID-19	Hours spent on childcare by partners during the second wave of COVID-19
Woman's age	-0.191***	-0.166***	-0.205***	-0.128***
	(0.042)	(0.041)	(0.032)	(0.025)
Woman having a degree	0.673	0.151	0.560	0.451

[11] Mangiavacchi et al. (2020) report that the contribution of fathers to childcare and home schooling affects children's outcomes in a positive and significant way. This is a very important result, especially during a period of school closures in which children's educational outcomes are reduced and inequality among children grows (Moroni et al., 2020).

	(0.748)	(0.723)	(0.568)	(0.452)
Centre	-1.374	-1.824*	-0.301	-0.537
	(0.960)	(0.928)	(0.727)	(0.579)
South	1.271	0.535	0.937	0.919*
	(0.842)	(0.814)	(0.643)	(0.512)
Woman working from home	1.053	0.250	1.601**	0.437
	(0.972)	(0.939)	(0.696)	(0.554)
Woman not working	3.295***	0.737	3.951***	0.215
	(0.984)	(0.951)	(0.793)	(0.631)
Partner working from home	0.899	1.314	0.685	1.262*
	(0.963)	(0.931)	(0.824)	(0.656)
Partner not working	0.528	1.303	-0.616	1.558**
	(0.858)	(0.829)	(0.792)	(0.630)
Constant	12.041***	10.473***	12.692***	7.747***
	(2.197)	(2.124)	(1.546)	(1.231)
Observations	273	273	332	332
R-squared	0.154	0.096	0.216	0.122

Note: Coefficient estimates from OLS regressions. The sample is made up of women with children cohabiting with a partner. The baseline category for working arrangements is "working at the usual workplace." During the lockdown, the average hours spent on childcare by women are 5.79 and the average hours spent on childcare by men are 4.04. During the second wave of COVID-19, the average hours spent on childcare by women are 4.86 and the average hours spent on childcare by men are 2.86. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6 shows that, when we consider the time spent with children on distance learning, the working arrangements either of the partner or of the woman do not affect the woman's decision of how many hours to devote to her children. In contrast, during both waves, men "take advantage" of their partner's staying home and devote less time to helping with school, if their partner works from home or doesn't work at all (approximately half an hour less). Also, when looking at the portion of childcare specifically devoted to home schooling, we notice that men spend more hours to it when they had not been working for many months after the COVID-19 outbreak. The educational attainment of the mother is not a significant predictor of childcare.

Table 6. Multivariate regression model of hours spent on helping children in distance learning by women and partners

	Hours spent on distance learning by women during the lockdown	Hours spent on distance learning by partners during the lockdown	Hours spent on distance learning by women during the second wave of COVID-19	Hours spent on distance learning by partners during the second wave of COVID-19
Woman's age	-0.031**	-0.033***	-0.051***	-0.040***

	(0.015)	(0.012)	(0.012)	(0.010)
Woman having a degree	0.171	0.093	0.068	0.167
	(0.262)	(0.220)	(0.205)	(0.173)
Centre	0.210	0.191	-0.188	-0.133
	(0.336)	(0.282)	(0.263)	(0.221)
South	0.275	0.397	0.315	0.083
	(0.295)	(0.248)	(0.232)	(0.196)
Woman working from home	-0.333	-0.601**	-0.157	-0.356*
	(0.341)	(0.286)	(0.252)	(0.212)
Woman not working	0.171	-0.659**	0.041	-0.425*
	(0.345)	(0.290)	(0.287)	(0.241)
Partner working from home	0.597*	0.499*	0.344	0.394
	(0.338)	(0.283)	(0.298)	(0.251)
Partner not working	0.221	0.220	0.314	0.535**
	(0.301)	(0.252)	(0.286)	(0.241)
Constant	2.941***	2.645***	3.673***	2.637***
	(0.770)	(0.647)	(0.559)	(0.471)
Observations	273	273	332	332
R-squared	0.049	0.067	0.072	0.071

Note: Coefficient estimates from OLS regressions. The sample is made up of women with children cohabiting with a partner. The baseline category for working arrangements is "working at the usual workplace." Children's distance learning is included in childcare. During the lockdown, the average hours spent on children's distance learning by women are 1.90 and the average hours spent by men are 1.05. During the second wave of COVID-19, the average hours spent on children's distance learning by women are 1.50 and the average hours spent by men are 0.88. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

To conclude, we find some support for our Hypothesis 1, although it is not conclusive. In fact, in line with Hypothesis 1, we find that working-from-home and non-working men spend more hours on family work than men working at the usual workplace. However, this increase of men's involvement does not seem to lead to a reallocation of couples' roles in housework chores and childcare. The time spent on housework, childcare, and helping children in online schooling by women does not depend on their partners' working arrangements. Conversely, men spend less time on housework and home schooling when their spouses are at home. Hence, the extra family work due to COVID-19 is a burden mainly borne by women, regardless of the time men spend at home.

Finally, in Table 7 we analyze the determinants of the difference in the daily hours devoted to housework, childcare, and children's distance learning many months after the outbreak of COVID-19. Such a gap is much higher when the woman is working from home and/or not working. The gender gap in both housework and childcare is instead lower when the partner does not work.

Table 7. Multivariate regression model of gender gaps in the daily hours of housework, childcare, and children's distance learning during the second wave of COVID-19.

	(1) Gap in hours of housework	(2) Gap in hours of childcare	(3) Gap in hours of children's distance learning
Woman's age	0.031***	-0.077***	-0.011
	(0.010)	(0.024)	(0.009)
Woman having a degree	-0.084	0.108	-0.099
	(0.186)	(0.426)	(0.165)
Woman having children	0.271		
	(0.186)		
Center	-0.174	0.236	-0.055
	(0.235)	(0.546)	(0.211)
South	0.605***	0.018	0.232
	(0.212)	(0.483)	(0.187)
Woman working from home	0.433*	1.164**	0.199
	(0.227)	(0.523)	(0.202)
Woman not working	0.111	3.736***	0.466**
	(0.252)	(0.595)	(0.231)
Partner working from home	-0.409	-0.577	-0.050
	(0.265)	(0.619)	(0.240)
Partner not working	-0.657**	-2.175***	-0.221
	(0.255)	(0.595)	(0.230)
Constant	-0.430	4.945***	1.037**
	(0.477)	(1.161)	(0.450)
Observations	504	332	332
R-squared	0.063	0.169	0.026

Note: Coefficient estimates from OLS regressions. The sample is made up of women cohabiting with a partner in the first column and women with children cohabiting with a partner in the second and third columns. The baseline category for working arrangements is "working at the usual workplace." The average gaps in the daily hours of housework, childcare, and distance learning are 1.20, 2 and 0.62, respectively. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Working arrangements and Women's Feelings of Insecurity and Dissatisfaction

We now move on to our second hypothesis. Changes in working arrangements have also affected women's well-being. Several studies have emphasized that the level of anxiety of women has increased (D'Ambrosio et al., 2020). We study this outcome only in the second wave, because time is needed to observe the results.

As a preliminary analysis, in Table 8 we use as dependent variables four dummies which capture women's feelings of insecurity and dissatisfaction. The respondent reported whether she was concerned (1) about losing her job/closing her business, (2) about earning less money, (3) about having a lower pension when retired, given the potential interruptions in work, or (4) about at least

one of the previous aspects. Working from home does not seem to have changed women's feeling of insecurity, while women not working during the second wave of COVID-19 and those with a non-working partner were the most concerned about losing their job or closing their businesses. However, more educated women felt less insecure about their futures, meaning that they are in a stronger position to cope with the current and future situation. We also control for having been directly affected by the virus through a dummy indicating whether the respondent or a member of her household had been infected.

Table 8. Multivariate regression model of women's feelings of insecurity about the future during the second wave of COVID-19.

	(1) Losing job	(2) Earning less money	(3) Lower pension levels	(4) Feeling of insecurity about at least one aspect
Woman's age	-0.008***	-0.005**	-0.000	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Woman having a degree	-0.112**	-0.106**	-0.079*	-0.093**
	(0.046)	(0.044)	(0.045)	(0.037)
Woman having children	0.020	0.079*	0.085*	0.085**
	(0.046)	(0.044)	(0.045)	(0.038)
Center	-0.002	-0.030	-0.026	0.000
	(0.058)	(0.056)	(0.057)	(0.047)
South	0.060	0.071	0.013	0.040
	(0.052)	(0.050)	(0.051)	(0.043)
Woman working from home	-0.093	-0.076	-0.131**	-0.096**
	(0.056)	(0.054)	(0.055)	(0.046)
Woman not working	0.167***	0.088	0.023	0.073
	(0.062)	(0.060)	(0.061)	(0.051)
Partner working from home	0.108	0.065	0.123*	0.123**
	(0.066)	(0.063)	(0.064)	(0.053)
Partner not working	0.165***	0.017	0.059	0.023
	(0.064)	(0.061)	(0.062)	(0.052)
Directly affected by COVID-19	0.059	-0.071	0.075	0.012
	(0.081)	(0.078)	(0.079)	(0.066)
Constant	0.802***	0.884***	0.624***	0.866***
	(0.119)	(0.114)	(0.116)	(0.097)
Observations	504	504	504	504
R-squared	0.081	0.045	0.036	0.049

Note: Coefficient estimates from OLS regressions. The sample is made up of women cohabiting with a partner. The baseline category for working arrangements is "working at the usual workplace." Mean values of the dependent variables from column (1) to (4) are 0.48, 0.67, 0.65, and 0.80, respectively. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Second, in line with our Hypothesis 2, we investigate how working arrangements, together with other individual characteristics, affect women's dissatisfaction with their current situation. In Table 9, we use as dependent variables four dummies indicating whether the respondent reported that she is currently dissatisfied with her household income, partner, life in general, or at least one of the previous aspects. The results show that women who were not working several months after the outbreak of COVID-19 were more likely to be dissatisfied about their partners and life in general. Women whose partners were not working are more likely to be dissatisfied with the household income and their life. Once again, women with a university degree were less likely to be dissatisfied.

Working from home reduces dissatisfaction with household income, although it has no effect on the other measured dimensions of satisfaction. Thus, we confirm, at least in part, our Hypothesis 2.

Table 9. Multivariate regression model of women's dissatisfaction during the second wave of COVID-19.

	(1) Dissatisfied with household income	(2) Dissatisfied about the partner	(3) Dissatisfied about life in general	(4) Dissatisfied about at least one aspect
Woman's age	-0.000	0.003	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Woman having a degree	-0.093**	-0.038	-0.085**	-0.069
	(0.045)	(0.036)	(0.041)	(0.046)
Woman having children	-0.003	0.052	-0.046	-0.000
	(0.046)	(0.036)	(0.041)	(0.046)
Center	0.120**	0.003	0.064	0.122**
	(0.057)	(0.045)	(0.052)	(0.058)
South	0.087*	-0.015	0.031	0.039
	(0.052)	(0.041)	(0.047)	(0.053)
Woman working from home	-0.159***	0.061	-0.035	-0.109*
	(0.055)	(0.044)	(0.050)	(0.056)
Woman not working	0.065	0.105**	0.123**	0.098
	(0.062)	(0.048)	(0.055)	(0.063)
Partner working from home	0.089	-0.003	0.037	0.044
	(0.065)	(0.051)	(0.058)	(0.066)
Partner not working	0.299***	0.021	0.117**	0.249***
	(0.063)	(0.049)	(0.056)	(0.064)
Directly affected by COVID-19	-0.016	-0.058	0.113	-0.005
	(0.080)	(0.063)	(0.072)	(0.082)
Constant	0.428***	-0.012	0.223**	0.453***

	(0.117)	(0.092)	(0.106)	(0.119)
Observations	504	504	504	504
R-squared	0.093	0.027	0.051	0.070

Note: Coefficient estimates from OLS regressions. The sample is made up of women cohabiting with a partner. The baseline category for working arrangements is "working at the usual workplace." Mean values of the dependent variables from column (1) to (4) are 0.44, 0.17, 0.25, and 0.53, respectively. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

4. Concluding Remarks

In several countries, the coronavirus pandemic has been associated with a "She-cession", since many women have lost their jobs and have experienced an increase of family work. The pandemic has also imposed new working arrangements, namely working from home, which has the potential of increasing men's involvement in the family and thus of rebalancing the asymmetry in the division of housework and childcare within the couple. To what extent new work arrangements are able to achieve the goal of a more symmetric equilibrium is an empirical issue, which we have investigated using new data from Italy, a country characterized by high gender conservativeness. We have shown that the increased gap in household care related activities during the first wave became less pronounced in the second wave, but was still larger than pre-COVID. So far, working from home has not been able to rebalance the asymmetric equilibrium within the couple: although both men and women working from home are more involved in all family tasks (as stated by our Hypothesis 1), the time women spend on housework, childcare, and home schooling does not depend on their partners' working arrangements. Conversely, men devote fewer hours to housework and home schooling when their spouses are at home.

The new working arrangements also affect women's feelings of insecurity and dissatisfaction. We find that, partially in line with our Hypothesis 2, women working from home are more satisfied with household income, although no other dimension of satisfaction seems to be affected.

Other outcomes are relevant and merit further investigation. First, women's labor supply. The growth in the burden of housework and childcare on working women after several months of COVID-19, due to the restrictive measures and school closures, is likely to have a negative impact not only on women's employment rates but also on their labor supply. In fact, non-participation rates have already increased more significantly among women than among men. Second, inequality. As education seems to amplify the gaps, future studies should better assess the impact of COVID-19 on inequality.

Overall, our results show that COVID-19 may have a long-lasting impact on women. Policy interventions to sustain women's status during the pandemic and their future outcomes are needed.

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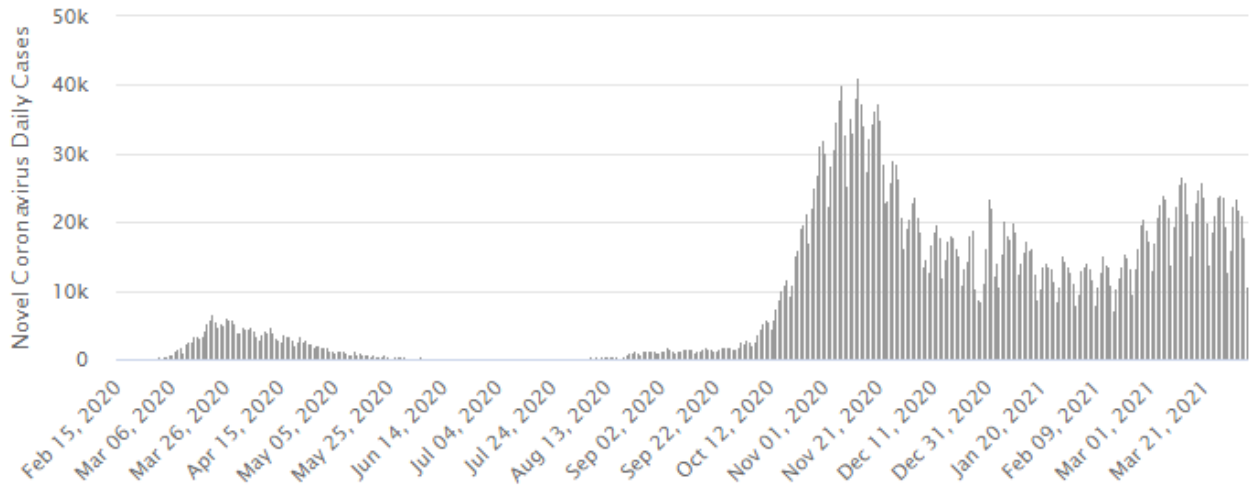
Appendix: The two waves of COVID-19 pandemic in Italy

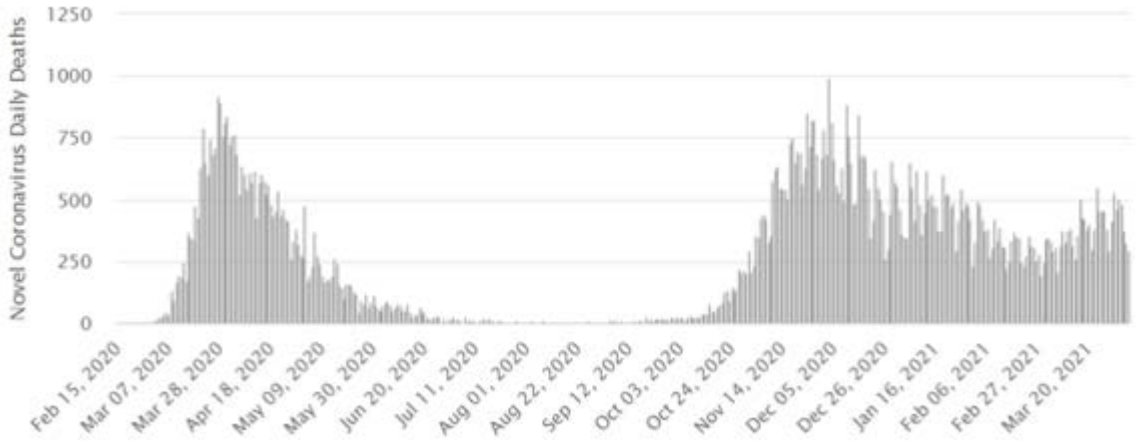
Italy was the first European country to report coronavirus cases and still has one of the highest rates of infection and fatality. Figure A1 shows the number of daily new cases and Figure A2 shows the number of daily deaths of COVID-19. The two figures show the existence of two waves. The second wave is more prolonged.

Figure A1. Number of COVID-19 cases in Italy (New cases, daily)



Source: Worldometer

Figure A2. Number of deaths for COVID-19 in Italy (daily)



Source: Worldometer