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DISCUSSION PAPER SERIES

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ABSTRACT

Fathers Matter: Intra-Household Responsibilities and Children's Wellbeing during the COVID-19 Lockdown in Italy

The lockdown declared during the Spring 2020 because of the COVID-19 outbreak caused a reallocation of market and household work. A the same time school closures in many countries impacted on children's lives and their learning process. In Italy, schools and nurseries have been closed during three months and the incidence and quality of distant learning activities has been hetero-geneous over education levels and among schools. Using a real time survey data collected in April 2020 on children's wellbeing, and parents' market and household work, we estimate how the reallocation of intra-household responsibilities during the lock-down has affected children's use of time, their emotional status and their home learning. We find that changes in the parental division of household tasks and childcare are mostly due to the labor market restrictions imposed during the lockdown and that this reallocation increases fathers involvement in childcare and homeschooling. This positive variation in fathers involvement is accompanied by an increase in children's emotional wellbeing while the quality of children's home learning is mostly determined by distant learning activities proposed by their teachers.

JEL Classification: I21, I24, J13, J16

Keywords: parenting, childcare, children's education, emotional skills, COVID-19

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1 Introduction

From a family perspective the lockdown situation had a vast impact on two fundamental assets of families wellbeing: parents' work and children's education. Children were out of school, with very limited child care possibilities, without access to group activities, team sports, or playgrounds. Parents were attempting to work remotely or unable to work, while caring for children at the same time. In Italy the situation was particularly severe since the country has been in an almost complete lockdown situation from March 8 to May 3, while some regions and municipalities started as early as February 21. Italy has been the first country in Europe to close school and nurseries (March 4 2020). Step-wise openings started on May 4, but a comprehensive re-opening of activities and traveling options across regions started only on June 15, delaying the return to school to mid September 2020.

The impact on children's educational progress is likely to have been particularly strong in the Italian context, characterized by high educational inequality among socio-economic groups (Brunello and Checchi, 2005) and regions (Angrist et al., 2017), with schools, teachers and parents substantially unprepared to manage a distance learning educational model. Schools had underdeveloped IT infrastructure, lacking PC both in classes and for teachers. Most teachers were not trained in the use of computer-based or web-based educational instruments.

In this context, parents were struggling to cope with work, either because not working or because bound to teleworking solutions while having to take care of children and the house without external help. Social distance implies that most working parents cannot take advantage of any form of childcare, in particular babysitting or grandparents, the latter being one of the pillars of the Italian childcare system. In Italy, intra-household responsibilities traditionally follow the specialization model, with women being the main responsible for household production and childcare.

The current paper studies how parents reacted to the lockdown in terms of gender distribution of housework and childcare and analyses, for the first time, how these changes affected children's emotional wellbeing, educational outcomes, and use of time. To address these research questions we use data collected on a sample of families with kids starting from April 7 to May 3 (right in the middle of the stronger Italian lockdown period, the so called "Phase I") and estimate household and children fixed effect models.

This paper offers several contributions to the existing literature. First, we contribute to the growing literature on the changes in market and household work during the COVID-19 crisis by looking at the impact of those changes on children. Alon et al. (2020) and Hupkau and Petrongolo (2020) predicted that a number of fathers will become temporary the main caregivers and this temporary change could lead to a shifts in gender social norms. A number of studies already tested this hypothesis in different countries affected by COVID-19 pandemic between March and April confirming the prediction in Alon et al. (2020) and Hupkau and Petrongolo (2020). In particular, both Del Boca et al. (2020) for Italy and Farré et al. (2020) for Spain analyse the gender division of household tasks and childcare, and find that most of the additional household workload due to COVID-19 crisis falls on women' shoulders, with very limited contribution of their partners. On the other hand, childcare activities were more equally shared during the lockdown, especially when mother continue to work away from home. Sevilla and Smith (2020) focus on childcare in UK families with young children and also find that gender childcare gap is smaller during the lockdown. We also observe a substantial increase of fathers' involvement in

child care and use this variation to estimate its impact on children's wellbeing. This temporary shift in gender roles is particularly interesting in Italy, a country characterized by persistent gender gaps and very low fathers involvement in raising children (Bloemen et al., 2010; Barigozzi et al., 2020).

Second, the paper links the situation that Italian families lived during COVID-19 acute pandemic phase within the Beckerian theory of the household. We provide evidence that Becker's theory makes a good job in explaining families reactions to the lockdown and identify those household tasks for which a gender reallocation would be more likely to happen in responsive to policy reforms –those characterized by a high degree of complementarity between parents–, and those that instead are more persistent because parents are close substitute.

Third, we contribute to the few studies in economics on the importance of fathers involvement in child development (Harris et al., 1998; Hsin and Felfe, 2014; Giménez-Nadal et al., 2019), exploiting the exogenous shock generated by the lockdown that increased fathers' participation in childcare when mothers continue to work. We analyze what happens to children's use of time and emotional status when fathers become the main caregivers.

Fourth, we contribute to the stream of literature that look at the role of parental inputs and the allocation of children's time on their cognitive and non cognitive development (Fiorini and Keane, 2014; Del Boca et al., 2017; Moroni et al., 2019). In the survey we ask parents about time allocation of kids before and during the lockdown as well as on their learning process and emotional status. We can then evaluate how children reacted to the lockdown in terms of time-use and test the mediating effects of parental inputs.

Finally our analysis offers a preliminary evidence of the impact of school closure and the effects of home schooling on children's educational progress. This is specially relevant for Italy, where schools remained closed during three months and the re-opening process has been delayed to September 2020. The lockdown situation had the potential to widen educational inequalities in a similar way to what happens in other contexts in which schools remain closed for a long period due to other kinds of shocks (see for instance Jaume and Willén, 2019). Even if we cannot measure children's outcomes in a objective way, we can identify potential detrimental effect of the lockdown on the way children allocated their time or on the parental judgment of their education progress with the distant learning methods and the homeschooling.

In our sample we observe that more mothers than fathers completely stopped working during the lockdown (28% vs 25%), but as men worked more hours on average before (37 vs 25 hours per week), they had more additional hours to spend on household tasks or childcare, while at the same time, grandparents and babysitter hours fell to about one third of their pre-lockdown value. This causes an overall small reduction in women's share of housework and childcare tasks. Nevertheless, the share of households in which the father is the main caregiver increases by 6.6 percentage points to almost 35% of families: a significant variation that could have an impact on children's emotional wellbeing and the quality of their use of time and home learning process. Estimating household and children fixed effect models, we find that the intra-household reallocation of responsibilities is mostly due to the labor market restrictions imposed during the lockdown and that this reallocation increases fathers involvement in childcare and homeschooling. This shift, in turn, is accompanied by an increase in children's emotional wellbeing while the quality of their home learning is mostly determined by the distance learning activities offered by the schools.

The rest of the paper is organized as follows. Section 2 sets the analysis within the relevant theory and the existing empirical research. Section 3 describes data and the empirical strategy. Section 4 presents and discusses the results and Section 5 concludes.

2 Background

2.1 Theoretical underpinning

The analytical framework that can be profitably used to analyze the lockdown situation is the classical Beckerian model of the family with household production of commodities, including the analysis of the demand for children (Becker, 1981).[1] In the Beckerian framework the household receives utility from the consumption of commodities Z_i that are produced within the household employing market goods c_i and time of household members t_i using some production technology $f_i(c_i, t_i; E)$, where E are environmental factors, such as skills, human capital, social and physical climate, and so on. An example of such commodities may be meals, which are prepared transforming the food bought at the market using time of one or more household members in a production process that is commonly called "cooking." The household receives utility from the consumption of meals and other commodities, $U(Z_1, Z_2, ..., Z_i)$, rather than directly from goods purchased in the market.

In such a framework, a particularly relevant commodity is represented by children, say Z_c. The related preferences and the production technology determine the demand for children, both in term of quantity and quality. If the choice of the optimal number of children is not of particular interest for our analysis, it surely is the quality aspect. Children of higher quality imply larger Z_c which produces more utility, but which also require higher investment both in term of market goods and service or in terms of parental time. Thus measurable children outcomes, in terms of emotional wellbeing and educational progress, can be used as a proxy of Z_c, which is instead unobservable by definition. In our analysis, not only it is possible to determine whether the lockdown had a negative impact on the quality of children, Z_c, but also how much of this loss was attributed to school inputs reduction and whether parents tried to compensate.

Within this framework, in equilibrium, the parental division of time spent in housework and childcare is determined by their comparative advantage (which in turn is determined by earlier investment in the specific type of human capital needed for the task) in each task, the market wage of each partner, and the degree of complementarity of each partner's production time t_i: if times are perfect substitute, only the partner with comparative advantage would spend time in a certain task, but if times are complementary it would be optimum that both partners spent time in the production of the commodity. This is relevant both for the production of household commodities, such as meals and a clean environment, and for the production of children's quality, and the COVID-19 lockdown offers the possibility for testing the degree

[1] Alternative models of the family could have been helpful, such as the collective model (Chiappori, 1992; Bourguignon, 1999) or the WiHo model (Grossbard, 2015), but in the current pandemic setting the Beckerian model seems better suited. In fact, Collective models can be seen as an extension to the unitary model where different individuals in the family have different, possibly non-constant, bargaining power. While this is certainly appreciable, for the current analysis there is no need of additional complications and possibly no way for estimating how the lockdown impacted on the bargaining power with the available data. On the other hand, the WiHo model strongly relies on marriage market equilibrium to determine the intra-household division of housework, but during the lockdown people were forced to stay at home, limiting the functioning of both the labor and the marriage markets. Besides, it does not explicitly deal with the demand for children.

of complementarity of these tasks between parents.

In fact, the lockdown has to some extent disrupted such equilibrium, forcing some individuals to temporarily stop working and forced them to spend the additional available time at home. In such a case it would become optimal, for these individuals, to spend this time in household production as this would increase the production of commodities, including the quality of children. The way in which parental division of household task, being comparative advantages given, depends on whom has to stop working and on the degree of complementarity of the specific task. If the parents' times are close substitute we will observe little variation in the intrahousehold distribution of time spent in the specific task, even when only one partner stops working. On the other hand, if parents' times are complement we will observe larger variations.

2.2 Related empirical research

Several studies have already analyzed the evolution of intra-household allocation of time spent in household production during the lockdown after the COVID-19 outbreak in spring 2020.

In the early period of the pandemic in Europe, Alon et al. (2020) and Hupkau and Petrongolo (2020), using pre-existing survey data for the US and UK, predicted that woman would take on more of the household and chilcare due to the impossibility to use formal (schools and nursery) and informal (grandparents or babysitter) childcare. Nevertheless these studies pointed out that a relevant proportion of fathers will forced to become primary caregivers when their wives were still working and there were not. Hopefully this temporary change due to the lockdown measures will turn to be persistent leading to a shift in social norms. Successive studies confirmed their predictions collecting and analyzing real-time data during the COVID-19 pandemic in the US, UK, Germany, Spain and Italy(Adams-Prassl et al., 2020; Farré et al., 2020; Del Boca et al., 2020; Sevilla and Smith, 2020).

Farré et al. (2020) in a representative sample of Spanish households show that, even if for household chores men increased only slightly their participation, the increase in childcare needs (from 48 to 60 hours of childcare done by parents in a week) was absorbed by both mothers and fathers. Sevilla and Smith (2020), making use of real-time data collected in the UK, find that the allocation of additional hours of childcare is more equal than the previuos allocation of childcare. The gender childcare gap has narrowed from 30.5 percentage points to 27.2 percentage points. They also documented that this increase has been driven by families where men were working from home or, to a greater extend, where men have stopped working.

For Italy the baseline situation was particularly unequal, Barigozzi et al. (2020) recently documented that mothers with young children do a total amount of work of 60 hours per week (25 hours of paid work and 35 hours of housework and childcare), while their male partners provide 47 hours per week (a gender gap of 13 hours per week). Del Boca et al. (2020), using a representative sample of working woman interviewed at the end of April 2020, also find that the additional housework associated with the lockdown falls on woman while childcare and home learning activities were more equally shared. They found that 68% of women and 40% of men spent more time in housework and childcare during the lockdown in the general sample. However, restricting the sample to families where only women continue to go to their usual place of work and their partner does not work at all, the share of husbands that did more household tasks raised to 58% for housework (vs 61% of wives) and 54% for childcare (vs 31% of wives). In the current paper we focus on couples with children in Italy and are able to identify

families where fathers became main caregivers. We can then estimate the impact of this evolution in care responsibilities on children's home learning, time-use and emotional status.

2.3 Institutional setting

In Italy the first two cases of COVID-19 were identified on January 30 2020 in Rome, with the Italian government declaring the state of emergency and suspended flights from China on the following day. On February 21, already 79 cases were identified, most of them concentrated in specific municipalities of the Lombardy (54 cases) and Veneto (17 cases) regions. The following day the number of recognized cases almost doubled to 152. It was the real start of the pandemic in Italy.[2]

The initial attempt of the government to contain the epidemic started with the complete lockdown of school, economic activities and transportation in 10 villages in Lombardy and 1 in Veneto, including prohibition to travel to/from these municipalities, applied on February 23. Following right on, several Northern regions suspended schools activities and public events for one week, possibly extending the date according to the epidemic evolution. In a very rapid escalation, on March 4 the government suspended all schools and sport activities, and few days later, on March 9, Italy was set under a lockdown, forbidding individual movements, unless driven by necessity (health, work, purchasing food or medicines), and imposing, on March 11 the closure of most retail shops except grocery shops and pharmacies. The complete lockdown was set on March 22/23, when al non-necessary production activities were closed and any transfer outside the municipality of domicile forbidden (except for health, work or absolute urgency reasons). Briscese et al. (2020) show that while the government communication strategy may have been sub-optimal to maximize compliance with the restrictions imposed, at least half of the population complied with all restrictions, while a very small proportion was not following any of the government's indications (less than 3%). All these restrictions were on place until May 3, when the so called "Phase I" ended and a gradual weakening of these restrictions was planned. This complete lockdown period is the objective of this study, as a relevant share of the adult population was forced to temporarily stop working and kids were at home, without possibility of moving from the house of domicile and any use of external childcare service besides other co-resident adults.

3 Data and Empirical Strategy

In such an worrying context, we developed a web survey specifically aiming at analyzing how Italian families reacted to the COVID-19 lockdown, collecting data right in the middle of the lockdown crisis (the second month of the Italian "Phase I" of the lockdwon). Specifically, the project under which the survey was developed aims at analyzing at the micro level how Italian families reacted to the lockdown, and to compare the results with other EU countries heavily affected by the COVID-19.[3]. The survey collected data on 3,352 families, which completed the surveys from April 7 to May 3, right in the middle of the complete lockdown phase in Italy, through a voluntary and anonymous on-line survey. The survey was conducted without sampling strategy, thus it is not representative of the Italian population.

[2]In Italy, the rapid growth in the number of cases could possibly be attributed to the high share of intergenerational co-residence typical of the Italian society (Aparicio and Grossbard, 2020).

[3]The survey was developed in collaboration with an international team of research that developed similar surveys for Spain, France and Germany.

Nevertheless, thanks to the relevant sample size and the ability to reach all of Italian regions and different socioeconomic groups, as reported by Table A1, several key variables used in the analysis are in line with national statistics reported by ISTAT (the Italian National Institute of Statistics). As to number of children for couples, our sample slightly over-represents couples with 2 children, at the expenses of couples with 1 child or with 3 or more children. The geographical distribution sees an over-representation of North and Center of Italy, although one has to say that South was much less affected by COVID-19 than other regions, and thus it is expected to have a lower survey response. As to the key variables of interest, i.e. couple division of housework and childcare and children hours of tv and reading, they are very much in line with national statistics, except hours of reading, which are larger in our sample.

The survey asked detailed information on respondents' previous and current work arrangements and on the division of household tasks, asking respondents to report their own and their partner's previous and current employment, sector of employment, labor supply evolution and hours of teleworking. The survey had a section on couples division of housework and child care tasks. It collected detailed information on respondents' background characteristics including gender, age, highest level of education, marital status, and number of children below 16. In Italy and France[4] the survey included a specific section on children and on the home schooling during the lockdown. For individuals with children up tp 16 years old living in the household, we asked about the number of hours spent on active childcare and on home-schooling and their evolution with the lockdown. The last section collects detailed information on each child, based on his/her age and school grade. In particular, we ask questions on time use and its evolution (hour spent studying, performing extracurricular activities, reading and watching tv/passive screen/social networks), parents' subjective opinions on the child's educational progress and emotional status, whether and which type of e-learning technology their teachers have adopted, availability of computers/tablets, and so on.

As the aim of the analysis is twofold, i.e. to analyze the impact of the COVID-19 lockdown on intra-household responsibilities and on children emotional and educational wellbeing, we use two different samples. The first is a family-level sub-sample composed of couples with children, composed of 2,101 observations. The descriptive statistics of this sample are presented in Table A2. The second sample is an individual-level sample of children composed of 3,619 observations, and its descriptive statistics are presented in Table A3.

For the analysis of household division of work we use as dependent variable in the regression analysis 3 indicators: i) the share of housework tasks carried on by women; ii) the share of childcare carried on by women; and iii) whether the father is the main child caregiver, a dummy variable taking value 1 when the father carries on at least 50% of the childcare tasks. Each of these variables are available before and during the lockdown, allowing us to perform fixed effect regressions of the form

$$Y_{it} = \beta X_{it} + LD + \gamma LD \cdot W_i + u_i + e_{it}, \tag{1}$$

where Y_{it} is the selected outcome, X_{it} is a set of time-varying regressors and W_i is a set of time-invariant regressors. LD is to be interpreted as the residual impact of the lockdown on the dependent variable once controlling for covariates, while the γ coefficients are to be interpreted as the differential impact

[4] Champeaux et al. (2020) propose a comparative impact evaluation of the lockdown on children in the two countries.

of the lockdown depending on the vales taken by time invariant characteristics W_i. The parameters of equation (1) are estimated using a first difference estimator.

In our analysis, the most important explanatory variable is the work status of both parents, which accounts for the fact that during the lockdown everybody except those working in sectors of special national interest had to temporarily stop working. We aim at verifying whether the effect that the lockdown had on the gender division of household work should be attributed to the exogenous increase in time available to perform household tasks by those who stopped working. For this reason, at variance with Del Boca et al. (2020), parents that switched to smart-working arrangements are considered to be still working during the lockdown. While it is true that in some cases smart-working may allow flexible arrangements, anecdotal evidence suggest that such experience has been frustrating and stressful. In addition, considering childcare tasks performed as secondary activity while working would imply very little value added for the kids as parents' time would be mostly passive. Other potentially relevant time-varying variables for explaining the intra-household division of household tasks is the childcare time by grandparents and babysitters: during the lockdown there has been a sharp reduction in such hours as babysitters were not allowed to work (unless already living in the same household) and grandparents were not allowed to travel to visit the family (again unless already living in the same household).

The time-invariant characteristics W_i that may have made the lockdown have a differential impact on the gender distribution on household task include: the weekly hours of work before the lockdown (as a proxy of the amount of additional time available during the lockdown), the share of family income earned by the woman, the age of both partners and its difference, the gender of the respondent, the number of children (as a dummy indicating whether 2 or more children are present), the presence of other adults besides parents in the household, whether parents have a university degree and whether both parents have non-Italian nationality. As the COVID-19 epidemic had a very heterogeneous geographical spread, we included province specific lockdown effect (province FE). Finally, as the prime minister typically had a speech to the population on Friday night, updating on the status of the epidemic and indicating whether changes in the restrictive policies were to be expected in the following days, we included specific lockdown effects also for the day of the week in which the survey was completed. Standard errors of the regressions are clustered at province level.

The descriptive statistics reported by Table A2 highlight how the family organization changed during the lockdown: mother' share of housework was more than 75% before the lockdown and reduced to 71% during the lockdown, a reduction of 4.4 percentage points. A similar pattern is observed for the mother' share of childcare, which reduced by 2.2 percentage points from 68.9% to 66.7%. Although the reduction has been smaller, the proportion of fathers that became the main caregiver, i.e. that carry on at least 50% of childcare tasks rose substantially, from 28.1% of the sample to 34.8%. About 28% of mothers and 25% of fathers completely stopped working (that is smartworkers were not counted in these figures) during the lockdown. As their average weekly hours of work were about 25 for mothers and 37 for fathers, this means that a substantial proportion of the sample either one or both parents experienced an exogenous –in the sence that the temporary suspension of their work activity was determined by the government, not by their choice– boost in the daily hours available for housework and/or childcare. On the contrary, as expected, both grandparents' and babysitter's hours of childcare fell to about one third of their pre-lockdown values. These are also exogenous variations, as induced by the lockdown and not by family choices.

As to time-invariant characteristics, we observe that prior to the lockdown mothers contributed to about 34% of family income, are on average 41 years old, about 37% of them have a university degree, and were those who responded most to the survey (93% of respondent are female). Fathers are only slightly older (nearly 44 years old) and are more educated (almost 59% have a university degree). More than half of the sampled households have 2 or more children (55%), and about 12% of them have other adults living in the same dwelling. Only 1.5% of the sample is composed of parents of foreign nationality.

As to the analysis of the impact of the lockdown on children emotional and educational wellbeing, we rely on 5 indicators: i) the evolution in the emotional status of the child[5]; ii) the evolution in the personal relationship that the child had with parents (with the same categories of emotional status); iii) the daily hours spent by the child watching TV, passive screen (YouTube and similar) and social media; iv) the daily hours spent by the child reading (or listening to an adult reading for the younger kids); v) an evaluation of the educational progress of the child.[6]

The main explanatory variables of interest are those describing the parental division of household work, i.e. the dependent variables of parents' regressions, and specifically: i) whether the father is the main child caregiver, and ii) the share of housework carried on by the mother.

The other explanatory variables included in the regressions are: the daily hours of distance learning live classes, the school level attended (kindergarten, primary or secondary), the daily hours extra curricular activities, the daily hours of childcare by grandparents, gender and age of the child, the number of children in the household, whether both parents have a university degree and whether the respondent is male. As for parents, also children's regressions include province and day of week fixed effects. Here, since many families have more than one child, standard errors are clustered at household level (although the alternative of clustering at province level have a minimum impact on standard errors).

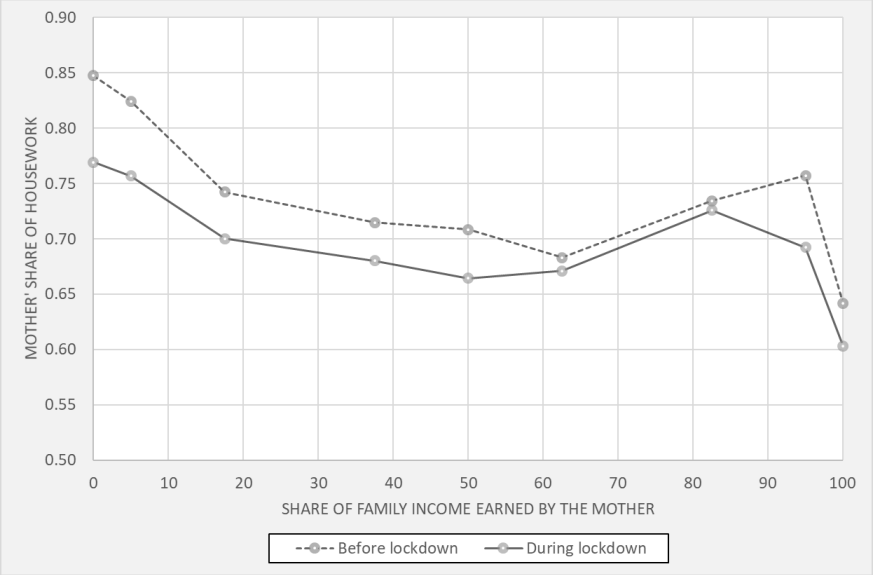
Table A3 describes the observed variations implied by the lockdown. Parents have observed an overall reduction in their children emotional wellbeing. Recalling that categories take values 0 for unchanged and -1 for slightly worsened, the average value of -0.59 seems to suggest a significant reduction. At the same time, the overall increase in the time spent with parents, have produced a slight improvement in their personal relationship with their children. However, as about 50% of mothers and 70% of fathers were still working during the lockdown (either physically because working in a sector of national interest or because shifting to smart-working), we observe an increase by 1.5 daily hours of TV, passive screen or social networks use. An increase is observed also for reading time, but by a much smaller amount, joust about 15 minutes per day. As to educational progresses, parents evaluate it as largely insufficient, with 4.8 in a scale from 0 to 10.

A particularly relevant exogenous variation in children activities due to the COVID-19 lockdown is the reduction in extracurricular activities, which reduced by almost half an hour per day. The average age of children of interviewed couples is 7, with 50.7% of them being males, and doing on average 1.2 hours of live classes per day. About 37.5% of kids attend kindergarten, 40.2% primary school, and the remaining secondary school (either lower secondary or the first two years of high school).

[5]The categorical variable takes the following values: -2 for "substantially worsened"; -1 for "slightly worsened"; 0 for "unchanged", 1 for "slightly improved"; and 2 for "substantially improved".

[6]The variable takes values from 0 for "not progressing at all" to 10 "progressing at the same pace as when she/he was attending classes at school."

Figure 1: Variation in the mother's share of housework by share of income earned



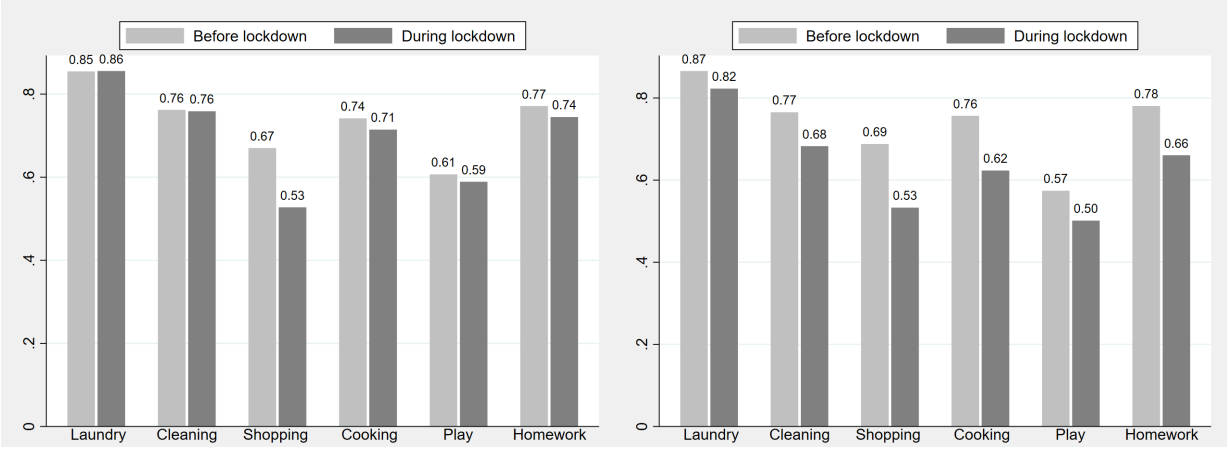
4 Results

4.1 Parents' division of housework and childcare

A closer look at the descriptive analysis of the impact of the COVID-19 lockdown on the distribution of household tasks reveals substantial heterogeneous effects. Figure 1 show that the share of housework tasks performed by the mother reduced more for those mothers that earn up to 50% of family income, and in particular for those not contributing at all or a very limited amount. The effect could plausibly be driven by bargaining power. In those households where most of the income is earned by the father, according to the Beckerian model of the household (Becker, 1981), specialization is at work, where the husband is more productive in the market work and the wife is more productive in housework. However, when the lockdown imposed some workers to stop working, the specialization argument don't hold anymore. Having more time available for household production, it becomes optimum to put that time to good use, and thus the reduction in the mother' share of housework.

Having a closer look to which are the household tasks that see a deeper involvement of fathers, the left panel of Figure 2 reveals that on average males' contribution focuses on doing shopping, and to a smaller extent cooking, playing with children, and helping children with homework. Those tasks that are more strongly rooted in traditional gender norms, such as making the laundry or cooking, show almost no variation during the lockdown. Under the Beckerian model of the household, time spent in laundry, cleaning and shopping is likely to be close substitute, while some degree of complementarity is more likely to emerge for cooking and children activities. The very little variation observed in laundry and cleaning seems to suggest that women keeps a competitive advantage in laundry and cleaning. Such a competitive advantage may not be present for doing shopping, where a substantial variation is observed. Things look a little sharper when restricting the sample to families where mothers were working during the lockdown while the father had to stop. The right panel of Figure 2 shows that the reduction of women' share of household tasks was observed for all activities and by a greater magnitude. This

Figure 2: Variation in the mother' share of household tasks. Full sample (left) and sub-sample where only mothers worked during the lockdown (right)



evidence suggests that the Beckerian household framework can explain the variations observed during the lockdown, where most of the changes in the gender distribution of household tasks would be driven by the changes in the available time of both partners as implied by their work situation.[7]

This hypothesis is tested by a regression analysis, whose results are reported in Table 1.[8] The first row reports the overall unconditional variation of the selected outcome during the COVID-19 lockdown, and tests whether this is significantly different from zero. The results confirm that the lockdown had a balancing effect on the parents' division of household tasks, reducing the mothers' share of housework by 4.3 percentage points and mothers' share of childcare tasks by 2.1 percentage points. Although the reduction in childcare tasks is relatively modest, the lockdown increased the probability that the father became the main caregiver by almost 6.6 percentage points.

The regressions coefficients reported in Table 1 confirm that the most important factor for determining the parents' division of household tasks is who had stopped working during the lockdown. For all the three outcomes when only the father stopped working, he took on more household tasks, while when only the mother stopped working the opposite happens. The mother coefficient is always smaller than that of the farther, which clearly highlights an heterogeneity that explains the small overall variation of the inra-household division of housework and childcare during the lockdown. For instance, when the father stopped working the share of housework performed by the mother reduce by 6.6 percentage points, from 75.4% to 68.8%. As to childcare tasks, the heterogeneous impact of the lockdown is even larger: when only the father stops working the mother' share of childcare drops by almost 8 percentage points, from 68.9% to 60.1%. It follows that the probability that the father becomes the main child caregiver during the lockdown increases by 20.5 percentage points when he stops working. In addiction, when accounting for the chosen set of control variables and considering the differential impacts by province

[7] On the other hand, the suggestive hypothesis that the COVID-19 pandemic could be an occasion "erode" traditional gender norms (Alon et al., 2020) may have fund limited application in a quite traditional country as Italy. In the Beckerian framework, to have long lasting impact on the gender distribution of housework fathers should have significantly invested in human capital specific to housework task, i.e. the should learn how to clean and do the laundry for instance, and this seemed to happen only for a specific subset of families and limited to specific activities, such as cooking and doing homework with children.

[8] Full estimation tables are reported in the Appendix, Table A4.

Table 1: Impact of lockdonwn on the division of housework and childcare (FE regressions)

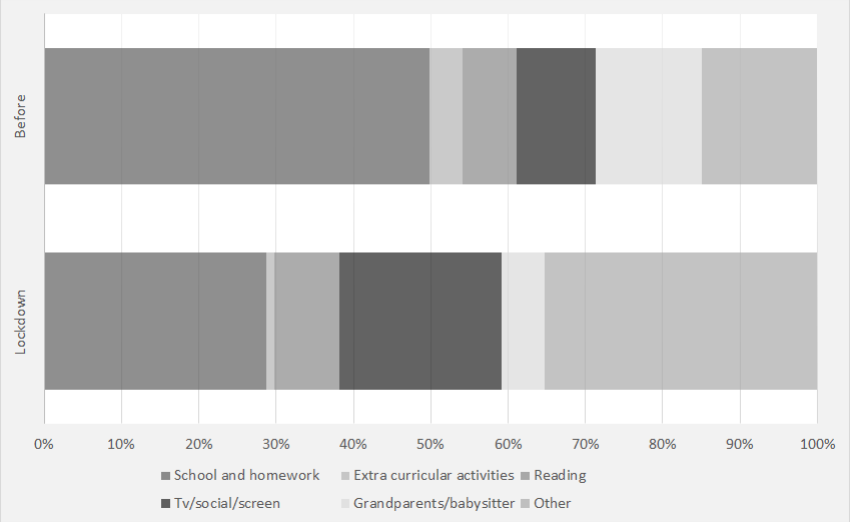
	(1) Mother' share of housework	(2) Mother' share of childcare	(3) Father main caregiver
Variation of the dependent variable during the lockdown	-0.0433*** (0.0033)	-0.0212*** (0.0061)	0.0660*** (0.0131)
Coefficients of interest			
Lockdown	0.270 (0.280)	0.0378 (0.470)	0.603 (1.096)
Father stopped working	-0.0662*** (0.0102)	-0.0791*** (0.0110)	0.204*** (0.0270)
Mother stopped working	0.0310*** (0.00686)	0.0657*** (0.0104)	-0.123*** (0.0291)
Both parents stopped working	-0.0251 (0.0158)	-0.0558*** (0.0203)	0.0528 (0.0407)
Controls	Yes	Yes	Yes
Province FE	Yes	Yes	Yes
Day of week FE	Yes	Yes	Yes
Observations	1,930	1,910	1,910
R-squared	0.135	0.142	0.108

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Clustered standard errors in parentheses (province level)
Full estimates are presented in Table A4

and day of the week, the lockdown coefficient loses its significance. Full estimation results are reported in Table A4, together with a regression in which the only explanatory variables are those indicating who stopped working. The table provides some further insights to the analysis: i) the stop working variables coefficients are very similar when including a large set of covariates, pointing towards the robustness of the results; ii) the stop working variables alone are not sufficient to make the lockdown coefficient lose significance; iii) very few of the selected covariates are significant and the only one significant in all regressions is the share of family income earned by the mother, confirming that families where there was more gender inequality from the start were those that experienced the stronger equalizing effect during the lockdown; iv) For parents' division of housework the other most important characteristic is the working time of parents before the lockdown, consistently with the interpretation of the additional time freed up by the lockdown which would be optimally employed in household production, the more the father worked before, the larger the reduction in the mother' share of housework; v) as to childcare, parents education had a great importance in determining the variation in the division of childcare tasks, the effect is substantially larger when both parents have a university degree, while when both parents have a foreign nationality the effect has been significantly smaller.

In summary, the regression results confirm that the changes in the gender division of household tasks

Figure 3: Typical daily use of time of children, before and during the lockdown.



induced by the COVID-19 lockdown passed through the work situation, through an exogenous shock of the time available to be devoted to housework and childcare (as found also by Sevilla and Smith, 2020, for the UK). In addition, specifically to childcare tasks, parents education played also a key role (as shown in Del Boca et al., 2020), possibly because families in which both parents have a university degree may be more conscious of the potentially beneficial effects of the additional time spent with children by fathers.

In the next section we move our attention to children, and in particular on the impact that the COVID-19 lockdown had on their emotional and educational wellbeing, and whether it has been mediated by the changes in the parents' division of household tasks.

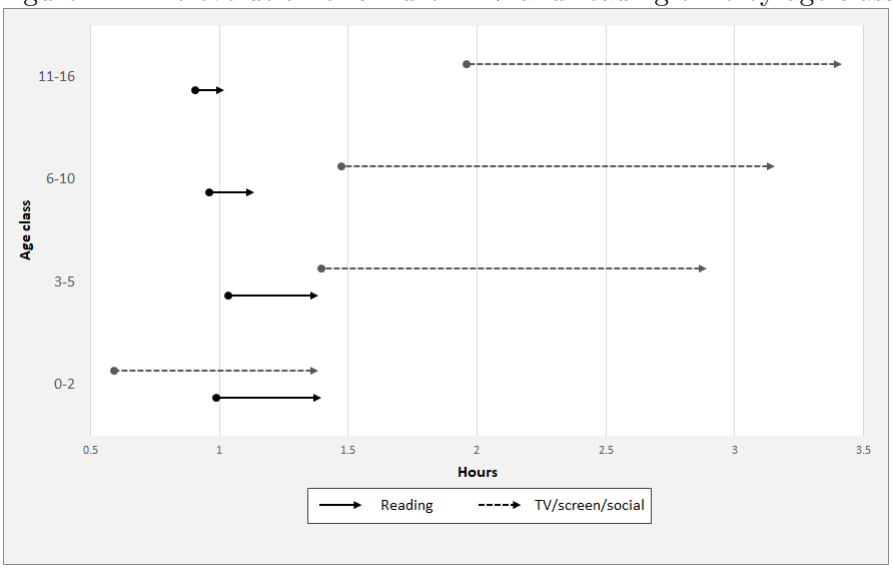
4.2 Children emotional and educational wellbeing

If the COVID-19 lockdown had a tremendous impact on adults' lives, it may have had an even stronger one on children's lives. Schools were closed at the very beginning of the pandemic in many countries, and in some –including Italy– they have not re-opened with the end of the lockdown, letting children "on their onw" until at very least September.[9]

Figure 3, for instance, shows how the composition of the typical day of children changed during the lockdown. There is a clear reduction in "productive" activities from a human capital accumulation perspective, such as school, homework, and extra curricular activities. Reading time is an exception, although the overall increase is rather limited. Also external childcare activities have seen a sharp reduction, for obvious reasons. On the other hand, non-productive time, including TV, passive screen, social and other have seen a dramatic increase (see also Andrew et al., 2020, for similar results in the UK). Overall, if productive activities occupied slightly more than 60% of the typical day before the pandemic upsurge, during the phase I of the lockdown they sum up to less than 40% of the available

[9]At the time of writing, schools are scheduled to restart on Spetember 14, but the government rules on minimum distance and other measure to prevent contagion make it impossible to just start over. Large classes may need to be split, there is severe lack of teachers, and basically the entire responsibility of reopening process is held by school directors. So it is still quite uncertain about how schools will open in September.

Figure 4: The evolution of children TV and reading time by age class



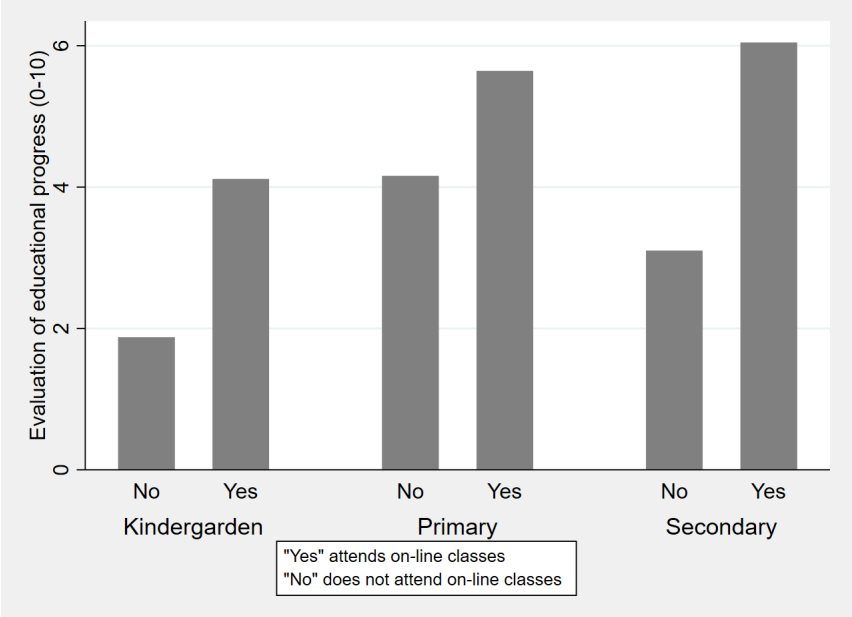
time. This is particularly worrying as this four-month reduced activity period adds straight to the usual three-month inactivity period of Italian school during summertime. In addition, the effect is likely to be heterogeneous not only by family socio-economic status and level of education (Mancini et al., 2017; Mencarini et al., 2019), but also by age of the children. In fact, while about 95% of children attending secondary school had access to distance education classes and material, for primary school the school ability to provide distance education was much more limited and quite heterogeneous. In fact, only about 60% of primary school children had some live on-line classes and about 30% of them received only some learning material accompanied by homework to be delivered through an electronic registry. As to kindergarten, children aged 3-5 were almost abandoned by the school system: only 18% of them had some live on-line classes, and 37% received some material from their teachers. An astonishing 45% of these children was never involved in any school activity at the date of interview. Knowing the importance of early childhood education (see Cunha et al., 2010, and the foolowing stream of research on the topic), these children should deserve particular attention in future policies.

Figure 4 provides evidence of such an heterogeneous effect by looking at the evolution of children TV/screen/social and reading time by age class. The starting point of TV time, i.e. before the lockdown, show how kids starting at age 3 spend already one hour and a half per day watching TV, and the figure reaches two hours for older kids (11 and older). With the lockdown all children watched more TV, about twice as much and reaching 3 hours and a half per day for secondary school children, about 3 hours for kindergarten and primary school children, and almost 1 hour and a half for the smallest ones.

Reading time has also increased, as the only educational activity that could to some extent compensate the decrease in school time and extra curricular activities. The impact, however is quite heterogeneous: children that are able to read on their own barely spent just a few minute more per day, while preschool children, which listen to their parents reading had a more substantial increase, almost half an hour per day.

Parents were clearly worried about the educational progress of their children during the lockdown, as in a scale from 0 to 10, the average evaluation is about 4.8, but there is substantial heterogeneity

Figure 5: Parents' evaluation of children educational progress, by school level and distance learning.



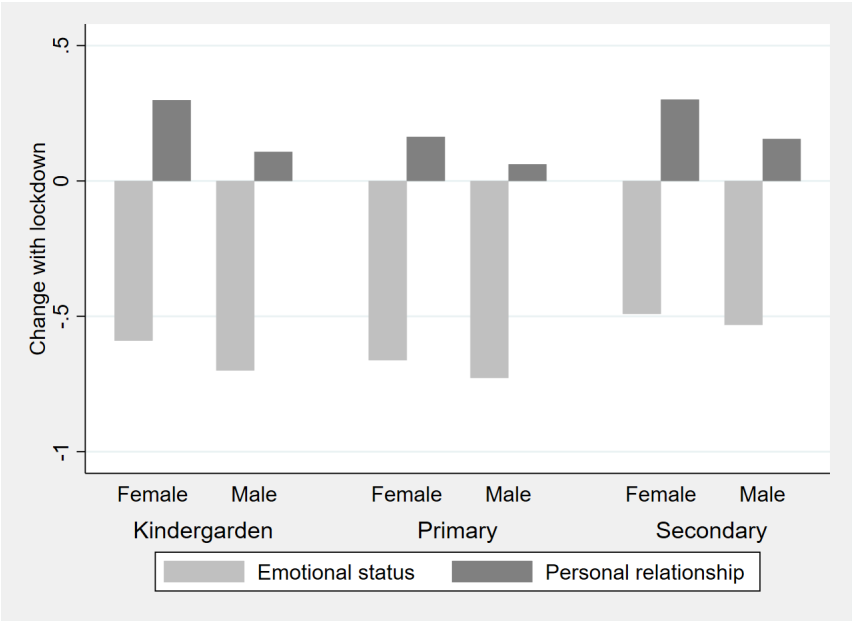
by school level and, most importantly by whether the school attended by the kid implemented some distance learning classes. Figure 5 highlights how parents of preschool children were particularly worried about their educational progress, with a 2-point difference in the evaluation when the child had some on-line classes. For primary school children the evaluation is clearly better, although it approaches a score of 6 only for kids that attended on-line classes. A similar result is observed for secondary school children, but in this case for the few children that did not have on-line classes, the evaluation drops by 3 full points.

Besides the educational outcomes, the COVID-19 lockdown could have severely impacted children's emotional wellbeing (Moroni et al., 2020). Our survey collected two questions on this respect: the first is whether the emotional status of the child and the second is about the personal relationship with the child. Figure 6 shows that children of all ages and gender experienced a negative impact of the lockdown on their emotional wellbeing, with a slightly stronger impact for boys and a slightly lighter one for secondary school boys and girls. On the other hand, the lockdown have improved children personal relationship with their parents, especially for girls. This effect, although small in magnitude, is notable as it was measured right in the middle of the most difficult phase of the COVID-19 lockdown, with parents struggling to balance smart-working options, housework tasks, children homework and distance learning education, and possibly economic difficulties. This positive effect is likely determined by the additional time parents had to spend with their children.

To have a closer look to these relationships, Table 2 presents the overall variation of the selected outcomes (first row) and the regression results for the coefficient of interest, trying to disentangle to which extent the change in parental division of household tasks mediated the lockdown effect. To this aim the key explanatory variables used are whether the father became the main child caregiver during the lockdown and the mother' share of housework.

Looking at the overall variations, the results confirm that the lockdown had a significant impact on children's lives: the emotional status reduces by almost 0.6 points in a -2 to 2 scale, while personal

Figure 6: Variation in the emotional wellbeing and personal relationship by gender and school level



relationships improved by 0.2 points on the same scale. Hours of TV/screen/social increase on average by one hour and a half, while reading hours increased only by less than 15 minutes. The reduction in the educational progress was valued in 5.5 points in a 0-10 scale.

As to the regression results, the most notable result is that when the father is the main caregiver the negative effect of the lockdown on children's emotional status is significantly smaller, while the personal relationship improves more. These results seem to stem directly from the additional time fathers can spend with their children, according to the results shown in Table 1. Also the TV time increases slightly less, possibly due to the increase in physical play time spent with fathers (see right panel of Figure 2). According to the Beckerian theory of the household, this evidence suggests that parents' time spent in producing the commodity "children" have a certain degree of complementarity, and that fathers took advantage of the increased time available when stopped working to better balance mothers' and fathers' time spent with children, with the objective of minimizing the negative impact on child quality implied by the lockdown. The positive mediating effect of father's care and home schooling on children's emotional status is consistent with findings in Harris et al. (1998) and along different school levels,[10] supporting the idea that fathers' involvement has a positive effect on children's emotional skills both when taking care of young children and when helping older kids with home schooling activities.

On the other hand, as expected, father's involvement has no impact on reading hours and on the educational progress, since in these fields fathers' time is possibly more closely substitute to mothers' (Becker, 1981). Also in line with expectations is the fact that the parental division of housework is not important in explaining these outcomes, except for TV hours: when mothers have to do a larger share of housework tasks children spend more time watching TV.

Thus, changes in the work status are able to explain a substantial portion of the overall variation in the parental division of housework and childcare induced by the lockdown. In turns, variations in

[10]Results by school level are available upon request.

Table 2: Impact of fathers' involvement during the lockdonwn on children's outcomes

	(1) Emotional status	(2) Personal relationship	(3) Hours of TV	(4) Reading hours	(5) Educational progress
Variation of the dependent variable during the lockdown	-0.588*** (0.019)	0.194*** (0.020)	1.516*** (0.030)	0.240*** (0.018)	-5.523*** (0.059)
Coefficient of interest					
Lockdown	-0.532*** (0.205)	0.423* (0.223)	1.562*** (0.356)	0.277 (0.199)	-0.885 (0.603)
Father main caregiver	0.124*** (0.0456)	0.115** (0.0513)	-0.143** (0.0701)	0.0154 (0.0455)	0.0757 (0.125)
Mother' share of housework	0.0196 (0.163)	-0.0789 (0.178)	0.515* (0.272)	0.0803 (0.191)	0.378 (0.427)
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Day of week FE	Yes	Yes	Yes	Yes	Yes
Observations	2,839	2,849	2,650	2,628	2,513
R-squared	0.103	0.075	0.089	0.073	0.336

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Clustered standard errors in parentheses (household level)
Full estimates are presented in Tables A5 and A6

the parental division of childcare is also relevant for explaining children's emotional outcomes, while variations in the division of housework not. As expected, however, even including a large set of control variable and fixed effects, the significance and magnitude of the lockdown coefficient is still similar to the overall variation. For example, looking at emotional status, the overall variation is -0.59 and after introducing the full set of controls the residual impact of the lockdown is still -0.53. Clearly, the lockdown, which conceives the impossibility of interacting with peers and other adults, had a direct impact on children's emotional wellbeing that goes beyond the impact of the measured variables.

Tables A5 and A6 show the full set of coefficients,[11] showing how the emotional wellbeing worsened slightly more for boys than for girls but much less when the child had siblings (the more the better). Another particularly relevant factor for compensating the negative impact of the lockdown were the hours of extracurricular activities: one additional hour improved the emotional status by more than 0.3 points, a magnitude similar to the effect of having 2 or more siblings. Having both parents with an university degree also reduces the negative effect, but by a smaller amount, 0.14 points. A similar pattern is observed for the change in hours of TV, where the increase is attenuate only by the hours

[11]Both Tables also present as a robustness the same model estimated by ordered logistic regressions. It is introduced because educational status and personal relationship are categorical variables whose numerical values have little relevance. Ordered logistic regression are conducted also for TV hours, reading hours and educational evaluation because, although theoretically continuous variables, they are very much concentrated around some integer values as if they were categorical. The results are all on the same line of the FE estimates, sometimes with gains in significance of few covariates.

of extracurricular activities and in those families where both parents have a university degree. The ordered logistic regression indicates that boys and older children increase more the hours of TV. In this case, the effect of the lockdown seems to stem directly from the increased availability of time and stronger preferences for TV versus reading or other activities that could be done at home. As to personal relationship, the coefficient of the lockdown gets even larger with the controls, although it loses some significance for the reduced efficiency due to the large set of covariates. The personal relationship improves less for boys and when the child spends more hours with the grandparents or babysitter. On the other hand we observe a larger improvement when the child does more hours of extracurricular activities and when both parents have a university degree.

Table A6 presents the full set of coefficients for the remaining outcomes, reading hours and the evaluation of educational progress. Recalling that for both outcomes we found no effects of the parental division of household tasks, it becomes particularly relevant to check the effects of other covariates. As to reading hours, the only significant factor in the FE regression is when both parents have a university degree. The ordered logistic regression add significance to gender and age of the child, indicating that boys and older children increased less the number of reading hours during the lockdown with respect to girls and younger kids.

Finally, the set of results for the evaluation of educational progress indicates that most of the negative effect is explained by the number of distance learning hours, with a particularly large impact for preschoolers, and by the hours of extracurricular activities, with a quite relevant magnitude –about two thirds of distance learning hours–. Finally the educational progress evaluation is worse for boys and better in families with 3 or more children.

5 Conclusions

Italian families, as well as many other counties around the world, have been challenged during the COVID-19 pandemic with an almost complete lockdown, as non-essential economic activities were temporarily closed or forced to reorganize with extemporaneous smart-work solutions. Children were also heavily affected: school were immediately closed, as well as any form of childcare services or extracurricular activities. In both cases, attempts to provide distance learning solutions were highly heterogeneous both in quantity and in quality, with likely negative long-run effects on human capital accumulation and educational inequality. In addition, the imposition of staying at home except in cases of absolute necessity implied, strongly limited children' social life and their possibility to develop soft skills through peers interactions, possibly affecting their emotional wellbeing.

In this study, we analyzed the impact of the lockdown on the intra-household division of housework and childcare and how this, in turns, have impacted on children's emotional wellbeing and learning process. For doing this we framed the current situation within the Beckerian model of the household and performed descriptive analyses and fixed effect regressions using a real time survey data developed for this purpose and collected right in the middle of the stronger Italian COVID-19 lockdown phase, in April 2020. While recent studies have investigated the consequences of the COVI-10 outbreak on the reallocation of market and unpaid work, this is the first study that investigates how these changes impacted on children's wellbeing, jointly with the lockdown itself.

The results suggest that changes in the intra-household distribution of housework and childcare

tasks can be largely explained by the exogenous increase in the available time for those parents that had to stop working during the lockdown, highlighting how for some tasks, such as cleaning and doing the laundry, parents are close substitutes, while for others, especially for child education and care and cooking, parental times show a higher degree of complementarity.

Taking advantage of this exogenous variation we evaluate the impact of the lockdown on children emotional wellbeing and learning process, and to which degree the shift in childcare roles towards fathers had an impact on children. We find that fathers fathers matter: when they become the main child caregiver children emotional wellbeing increases substantially, both in terms of emotional status and relationship with their parents. In addition they watch significantly less TV, an unproductive activity that increased notably with the lockdown.

These results provide support to implement policies aimed at increase fathers' involvement in childcare activities, such as increased mandatory paternity leave periods and more flexible work arrangements. All these would have positive effects on children's wellbeing with the additional plus of contributing to re-balance women workload (at home and in the market), and possibly shift Italian gender norms from the traditional family structure to more egalitarian role models.

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A Supplementary material

Table A1: Comparison of key variables with ISTAT surveys

	Our sample	ISTAT
Family type[1]		
Copules with 1 child	44.0%	47.9%
Copules with 2 children	46.8%	41.7%
Copules with 3 or more children	9.1%	10.4%
Geographical distribution[2]		
North	53.6%	46.0%
Center	26.7%	19.9%
South	19.7%	34.1%
Parents[3]		
Mother' share of housework	73.0%	73.3%
Mother' share of childcare	66.8%	62.7%
Children 3-5[3]		
Hours of TV	1.37	1.25
Hours of reading	1.02	0.42
Children 6-10[3]		
Hours of TV	1.45	1.57
Hours of reading	0.94	0.46
Children 11-14[3]		
Hours of TV	1.96	1.72
Hours of reading	0.90	0.55

Notes: 1. Reference population shares are drawn from the Multipurpose Survey on Households: Aspects of Daily Life 2019. 2. Reference values are drawn from Resident Municipal Population on January 1 2019. 3. Reference values are drawn to the Italian Time Use Survey 2013, for a sample of bi-active couples with children, with the woman in the age range 25-64. For comparative purposes, the same conditions have been applied to our samples.

Table A2: Descriptive statistics for the sample of couples with children

Variable	Before Lockdown Mean	Before Lockdown S.d.	During lockdown Mean	During lockdown S.d.
Mother' share of housework	0.754	0.188	0.710	0.195
Mother' share of childcare	0.689	0.183	0.667	0.199
Father main caregiver	0.281	0.450	0.348	0.476
Mother's work status (1 = working, 0=other)	0.786	0.410	0.507	0.500
Father's work status (1 = working, 0=other)	0.960	0.197	0.704	0.457
Grandparents hours of childcare	2.210	2.532	0.790	2.218
Babysitter hours of childcare	0.343	1.126	0.109	0.750
Mother's weekly hours of work	25.085	15.972	-	-
Father's weekly hours of work	36.978	15.083	-	-
Share of family income earned by the mother	0.341	0.236	-	-
Age of mother	41.234	5.736	-	-
Age of father	43.854	6.360	-	-
Age difference ratio	0.515	0.026	-	-
Respondent is male	0.069	0.253	-	-
2 or more children in the household	0.554	0.497	-	-
Presence of other adults in the household	0.118	0.322	-	-
Father has a university degree	0.587	0.493	-	-
Mother has a university degree	0.374	0.484	-	-
Both parents have non-italian nationality	0.015	0.121	-	-
Observations	2,101			

Table A3: Descriptive statistics for the sample of children

Variable	Mean	S.d.
Emotional status	-0.585	0.957
Personal relationship	0.193	1.019
Variation in TV hours per day	1.510	1.468
Variation in reading hours per day	0.239	0.880
Evaluation of educational progress	4.778	2.861
Variation in extracurricular activities hours	-0.461	0.518
Child is male	0.507	0.500
Age of child	7.082	4.121
Distance learning hours	1.199	1.418
School level	0.846	0.757
Observations	3,619	

Table A4: Full regression estimates on the division of housework and childcare

	(1)	(2)	(7)	(8)	(9)	(10)
	Mother' share of housework		Mother' share of childcare		Father main caregiver	
Constant	-0.0357***	0.270	-0.0187***	0.0378	0.0553***	0.603
	(0.00418)	(0.280)	(0.00571)	(0.470)	(0.0182)	(1.096)
Father stopped working during the lockdown	-0.0698***	-0.0662***	-0.0695***	-0.0791***	0.204***	0.224***
	(0.00811)	(0.0102)	(0.0100)	(0.0110)	(0.0270)	(0.0309)
Mother stopped working during the lockdown	0.0335***	0.0310***	0.0667***	0.0657***	-0.123***	-0.128***
	(0.00681)	(0.00686)	(0.00919)	(0.0104)	(0.0291)	(0.0311)
Both parents stopped working during the lockdown	-0.0210	-0.0251	-0.0543***	-0.0558***	0.0528	0.0456
	(0.0144)	(0.0158)	(0.0198)	(0.0203)	(0.0407)	(0.0458)
Variation in grandparents' hours of childcare		0.00174		0.000636		-0.00276
		(0.00108)		(0.00132)		(0.00340)
Variation in babysitter's hours of childcare		0.000633		-0.00529		0.0106
		(0.00330)		(0.00371)		(0.00928)
Mother's labour supplybefore lockdown		0.000555**		-0.000299		0.000309
		(0.000274)		(0.000303)		(0.000901)
Father's labour supplybefore lockdown		-0.000641***		-0.000443*		0.00109
		(0.000225)		(0.000263)		(0.000716)
Share of family income earned by the mother		0.0444***		0.0564**		-0.140**
		(0.0164)		(0.0244)		(0.0606)
Age of mother		-0.00388		-0.00173		-0.00522
		(0.00324)		(0.00492)		(0.0120)
Age of father		0.00384		0.00216		0.00130
		(0.00303)		(0.00489)		(0.0117)
Age difference ratio		-0.578		-0.164		-0.905
		(0.525)		(0.944)		(2.162)
Respondent is male		-0.0194		0.00824		-0.0219
		(0.0141)		(0.0257)		(0.0468)
2 or more children in the household		0.00305		0.0179		-0.0339
		(0.0112)		(0.0120)		(0.0288)
Presence of other adults in the household		-0.00765		-0.0164		0.0756**
		(0.00884)		(0.0143)		(0.0378)
Only father has a university degree		-0.00712		-0.0241		0.0438
		(0.0176)		(0.0160)		(0.0466)
Only mother has a university degree		0.00310		-0.0206*		0.0327
		(0.00811)		(0.0113)		(0.0262)
Both parents have a university degree		-0.00595		-0.0358***		0.0761***
		(0.00914)		(0.0117)		(0.0285)
Both parents have non-italian nationality		-0.0205		0.0554**		-0.143*
		(0.0203)		(0.0265)		(0.0799)
Province FE	-	Yes	-	Yes	-	Yes
Day of week FE	-	Yes	-	Yes	-	Yes
Observations	2,101	1,930	2,070	1,910	2,070	1,910
R-squared	0.052	0.135	0.066	0.142	0.042	0.108

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Robust standard errors in parentheses (clustered at province level)

Table A5: Full regression estimates for children's outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Emotional status			Personal relationship			Hours of TV		
	OLS	OLS	Ologit[1]	OLS	OLS	Ologit[1]	OLS	OLS	Ologit[1]
Constant	-0.636***	-0.532***		0.139***	0.423*		1.574***	1.562***	
	(0.0242)	(0.205)		(0.0259)	(0.223)		(0.0379)	(0.356)	
Father main caregiver	0.143***	0.124***	0.245***	0.164***	0.115**	0.233**	-0.140**	-0.143**	-0.231**
	(0.0404)	(0.0456)	(0.0922)	(0.0439)	(0.0513)	(0.0957)	(0.0634)	(0.0701)	(0.0908)
Mother' share of housework	-0.0185	0.0196	0.0622	0.0291	-0.0789	-0.208	0.400	0.515*	0.642*
	(0.147)	(0.163)	(0.329)	(0.159)	(0.178)	(0.343)	(0.247)	(0.272)	(0.336)
Child is male		-0.0569*	-0.125*		-0.134***	-0.246***		0.0278	0.130*
		(0.0344)	(0.0713)		(0.0387)	(0.0722)		(0.0576)	(0.0747)
Age of child		-0.0155	-0.0408*		-0.0165	-0.0350		0.0149	0.0489**
		(0.0109)	(0.0222)		(0.0119)	(0.0214)		(0.0195)	(0.0230)
Distance learning hours # kindergarden		0.0354*	0.0935**		0.0212	0.0332		-0.0307	-0.0507
		(0.0208)	(0.0411)		(0.0228)	(0.0408)		(0.0406)	(0.0480)
Distance learning hours # Primary school		0.0172	0.0547		0.0255	0.0387		-0.0661*	-0.0932**
		(0.0188)	(0.0373)		(0.0207)	(0.0369)		(0.0372)	(0.0444)
Distance learning hours # Secondary school		-0.0516*	-0.0890		-0.0441	-0.0989*		-0.0427	-0.0582
		(0.0272)	(0.0544)		(0.0281)	(0.0507)		(0.0529)	(0.0619)
2 children present in the household		0.119***	0.307***		-0.0723	-0.0760		-0.0880	-0.113
		(0.0460)	(0.0951)		(0.0533)	(0.0983)		(0.0784)	(0.0976)
3 or more children present in the HH		0.313***	0.768***		0.00920	0.0896		-0.150	-0.233*
		(0.0705)	(0.150)		(0.0760)	(0.138)		(0.107)	(0.138)
Hours of extra curricular activities		0.315***	0.633***		0.161***	0.244***		-0.339***	-0.445***
		(0.0465)	(0.0937)		(0.0515)	(0.0848)		(0.0838)	(0.0980)
Hours of childcare by grandparents		-0.00940	-0.0148		-0.0471***	-0.0876***		-0.00426	-0.00798
		(0.00959)	(0.0194)		(0.0111)	(0.0202)		(0.0183)	(0.0229)
Both parents have a university degree		0.135***	0.253***		0.106**	0.201**		-0.224***	-0.359***
		(0.0472)	(0.0961)		(0.0512)	(0.0943)		(0.0709)	(0.0912)
Survey respondent is male		0.0470	0.203		0.0459	0.0716		-0.318**	-0.381**
		(0.0803)	(0.167)		(0.0834)	(0.151)		(0.161)	(0.178)
Province FE	-	Yes	Yes	-	Yes	Yes	-	Yes	Yes
Day of week FE	-	Yes	Yes	-	Yes	Yes	-	Yes	Yes
Observations	3,554	2,839	2,893	3,567	2,849	2,903	3,304	2,650	2,696
R-squared[2]	0.005	0.103	0.0433	0.006	0.075	0.0274	0.004	0.089	0.0316

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Robust standard errors in parentheses (clustered at household level)

Notes: 1. The constant is not reported for ordered logit estimation as it is separate for each level of the dependent variable. For the same reason, for each explanatory variable the table reports the coefficient, not the marginal effects. 2. For ordered logit estimation, the pseudo R-squared is reported.

Table A6: Full regression estimates for children's outcomes (cont.)

	(10)	(11)	(12)	(13)	(14)	(15)
	Reading hours			Educational progress		
	OLS	OLS	Ologit[1]	OLS	OLS	Ologit[1]
Constant	0.233***	0.277		-5.183***	-0.885	
	(0.0248)	(0.199)		(0.0732)	(0.603)	
Father main caregiver	0.0471	0.0154	0.00628	-0.0727	0.0757	0.0515
	(0.0365)	(0.0455)	(0.106)	(0.132)	(0.125)	(0.0964)
Mother' share of housework	0.101	0.0803	0.384	0.228	0.378	0.253
	(0.166)	(0.191)	(0.356)	(0.461)	(0.427)	(0.335)
Child is male		-0.0604	-0.212***		-0.294***	-0.243***
		(0.0368)	(0.0814)		(0.0969)	(0.0731)
Age of child		-0.0109	-0.0585**		-0.0457	-0.0211
		(0.0114)	(0.0251)		(0.0294)	(0.0227)
Distance learning hours # kindergarden		-0.00892	0.00921		1.088***	0.782***
		(0.0223)	(0.0486)		(0.0573)	(0.0469)
Distance learning hours # Primary school		0.00802	0.0227		0.665***	0.463***
		(0.0205)	(0.0444)		(0.0512)	(0.0405)
Distance learning hours # Secondary school		0.0318	0.0353		0.696***	0.515***
		(0.0321)	(0.0610)		(0.0653)	(0.0518)
2 children present in the household		-0.0173	-0.0663		0.0695	0.0294
		(0.0463)	(0.108)		(0.134)	(0.102)
3 or more children present in the HH		-0.00335	-0.0497		0.383**	0.234*
		(0.0598)	(0.149)		(0.176)	(0.133)
Hours of extra curricular activities		0.0316	0.0131		0.417***	0.174**
		(0.0486)	(0.0967)		(0.116)	(0.0787)
Hours of childcare by grandparents		-0.00346	-0.0330		-0.0152	-0.00804
		(0.0105)	(0.0242)		(0.0274)	(0.0201)
Both parents have a university degree		0.167***	0.424***		0.0113	0.0248
		(0.0442)	(0.103)		(0.123)	(0.0928)
Survey respondent is male		0.0722	0.0823		-0.278	-0.262
		(0.0734)	(0.173)		(0.232)	(0.174)
Province FE	-	Yes	Yes	-	Yes	Yes
Day of week FE	-	Yes	Yes	-	Yes	Yes
Observations	3,263	2,628	2,674	2,955	2,513	2,561
R-squared[2]	0.001	0.073	0.0342	0.000	0.336	0.0871

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Robust standard errors in parentheses (clustered at household level)

Notes: 1. The constant is not reported for ordered logit estimation as it is separate for each level of the dependent variable. For the same reason, for each explanatory variable the table reports the coefficient, not the marginal effects. 2. For ordered logit estimation, the pseudo R-squared is reported.