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Italian Families in the 21st Century: Gender Gaps in Time Use and their Evolution[^]

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Abstract

We provide novel estimates of gender differences in the allocation of time by Italian adults and document their trends over the span 2002-2014, pooling three time-use surveys run by the Italian National Institute of Statistics (ISTAT). The positive gap (females-males) in time devoted to *Household work* and the negative gap in *Market work* and *Leisure* are found to have narrowed over the observed period, mainly due to changes in women's time allocation, while the positive gap in time devoted to *Child care* remained substantially constant. In 2014, the sharing of family duties appears still heavily unbalanced even when we look at the subsample of full-time working parents. Full-time working mothers devote to *Market work* about 4 hours per week less than their partners, but they devote 14 hours per week more to *Household work* and 3 hours and a half more to *Basic child care*. This translates in 13 hours per week more total (paid and unpaid) work and 11 hours per week less *Leisure*. On the positive side, the gender gap in time devoted to *Quality child care* exhibits a reversed sign in 2014. The change is driven by weekend days, when partners of full-time working mothers become the main provider of this type of care.

JEL Classification: J13, J22, H31

Keywords: time use, gender gaps, child care, household work

[^] We are grateful to Chiara Bernardi for her excellent research assistance. The paper also benefitted from comments of the participants to the First Conference of the Society of Economics of the Household (San Diego University, 2017) where we presented a preliminary version of this work, which did not include the 2013-14 Italian Time use survey. Corresponding author: Chiara Monfardini, University of Bologna, Department of Economics, Piazza Scaravilli 2, 40126, Bologna, Italy, e-mail: chiara.monfardini@unibo.it.

Non-technical summary

This paper investigates the gender differences in the allocation of time in Italy and its evolution over a time span of more than a decade (2002 - 2014). Through the usage of diary data collected by the Italian National Institute of Statistics (ISTAT), we highlight gender gaps in time use for the adult population (age 25-64) focusing on the following macro-categories: *Market work, Household work, Basic child care, Quality child care* and *Leisure*. Understanding the trends in time use for those categories is relevant because gender imbalances in household duties and child-care represent a fundamental indicator of the level of gender inequality in any society.

Similarly to previous studies, we find that Italy presents dramatic gender differences in time use, even if the gap has diminished in the last thirteen years. Our novel approach, based on a weekdays - weekend days comparison combined with a tailored study of full-time working parents with young children, allows us to understand current and potentially future evolutions. Overall, we document that women have substantially changed their allocation of time in the last thirteen years in almost all the macro-categories under study. They are, without any doubt, the driving force behind the observed reduction of the gender gap. The same cannot be said for men, who did not show any substantial changes in their time allocation with the only exception of that devoted to quality child care. This translates into a gender gap in total (paid and unpaid) work of 13 hours per week which is largely superior to the European average. What we find particularly disappointing is that (relatively young) partners of full-time working mothers are not more incline, on average, to a fair sharing of domestic chores in the couple than (relatively older) men belonging to the whole sample of adults.

1. Introduction

Gender imbalances in family work and informal childcare are at the heart of the current economic debate. Indeed, it is widely recognized that the increase in women's participation in the labour force occurred over the past decades in developed countries has not translated into a proportional increase in men's presence in household activities. In their recent book "Gender and Time Use in a Global Context", R. Connelly and E. Kongar state that "despite the cliché, time really is the ultimate scarce resource and how we use our time defines who we are and what we produce. In addition, who we are and what we produce are affected by our gender, race, ethnicity, and other characteristics, and the other opportunities and constraints in the communities in which we live".

Time use surveys based on time diaries collect detailed data on the whole set of activities performed by the respondent during the 24 hours of the reference day and are increasingly recognized as a fundamental tool for understanding time allocation decisions, providing a more accurate and reliable measure with respect to that obtained through retrospective questionnaires. As emphasized by Sevilla (2014), "Diaries are increasingly becoming the gold standard in gathering information on time spent on market work, non-market work and leisure in a similar way that money expenditure diaries have become the preferred method to gather information on expenditure levels in the consumption literature." A considerable advantage brought in by time use data is that they allow to observe time allocation outside the labor market, a possibility which -according to Hamermesh and Pfan (2005)- opens up new perspectives for the economic analysis of household behavior seminally introduced by Becker (1965).

Time use data also reveals how, partly due to gender norms and roles, men and women spend differently their time in unpaid work activities -such as household chores, child and adult care-, paid work and leisure.[1] There is indeed ample evidence from various European Countries and the US pointing to considerable gender differences in time use and documenting that women are poorer than men in terms of time (see, among others, Bittman and Folbre, 2004; Craig and Mullan, 2011; Anxo et al., 2011; Gimenez-Nadal and Sevilla, 2012; Burda et al., 2013; Kolpashnikova et al.; 2018). Gálvez-Muñoz *et al.* (2011) offer a cross-national comparison of European countries based on the Harmonised European Time-Use Survey (HETUS) data referred to years from 1998 to 2003 and argue that "unpaid care work is at the core of gender inequality in all countries". They show that "on average, women work [paid plus unpaid work] longer each day than men. Countries with the largest discrepancy of at least 1 hour of work per day between men and women are the Eastern European and the Mediterranean countries." (Gálvez-Muñoz et al., 2011, pages 125 and 132).

Italy has gathered interest in relation with this specific topic, standing out as a negative benchmark in official statistics[2] and in comparative studies. Anxo et al. (2011) compare gender gaps in time use during the

[1] The massive gender unbalance in unpaid work has been at the heart of the feminist scholars research, advocating since the 1970s the inclusion of unpaid work in economic theories (Connelly and Kongar, 2017).

[2] The OECD 2019 Gender Data Portal reports figures elaborated from the most recent waves of time use surveys of the different countries. The time spent daily in unpaid work by women aged 15-64 amounts to 306 minutes for Italy against

life cycle in France, Italy, Sweden, and the US. Analysing the 2002-2003 Italian Time Use Survey, they find that "Italy presents the largest gender gap in time use along all stages of the life course. The gender roles are still shaped in a traditional way, especially when the children are very young. The specialization among men and women remains very strong." (Anxo et al. 2011, page 189) As an explanation for the difference among the four countries the authors point to social norms and gender roles. [3]

In this paper we provide up to date estimates of gender differences in the allocation of time in Italy across a quite long time span covering the 13 years 2002-2014 period, which includes the most recent national Time Use Survey available. In doing so, we offer a novel and comprehensive analysis of the Italian case looking at time management across different time categories for the full 24-hour-spectrum, while documenting the evolution of intrahousehold time allocation differences across the last two decades. Our study explores gendered patterns in time allocation along two novel dimensions. First, we look separately at weekdays and weekend days. This distinction is particularly interesting: since there is a higher degree of flexibility during weekends, changes in time use over time are likely to be more evident in weekends than in weekdays. Our results suggest that the documented changes in weekends precede and anticipate new trends that will soon show up also in weekdays. Second, together with analyzing a larger sample of adults aged 25-64, we focus on the subsample of full-time working parents with young children. The information about behaviors in the subsample is particularly relevant because young, full-time working individuals should have less traditional gender attitudes and we expect a much more balanced share of family and house duties in the subsample.

Our work relates to studies providing gendered analyses of time use in Italy such as Bloemen et al., 2010; Anxo et al., 2011; Gálvez-Muñoz *et al.*, 2011; Craig and Mullan, 2011; Pailhé *et al.*, 2019; Zanella *et al.*, 2019. Most of these papers adopt a comparative approach and focus on the respective role of institutions and gender norms, and neglect the weekend/weekday distinction. Moreover, they do not provide trend implications and rely on past Italian time use surveys – or their harmonized versions. A couple of studies incorporating the last Italian survey were recently developed in parallel with our research: Zanella and De Rose (2019a) and (2019b). The first one analyses time use trends by gender focusing on the impact of the 2008 economic recession, which is found to have triggered an increase in male unpaid work. The second one evaluates unpaid work transfers within the family and show that women continue to be the net donors. We compare our results to those of these two studies in Section 5, emphasizing and explaining some important differences. By evaluating direct estimates of gender gaps for an exhaustive set of activities and distinguishing

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the 262,4 minutes of the OECD average. Italy ranks 4th after The Netherland (331 minutes), Portugal (328) and Australia (311).

[3] Indeed, Italy's performance in terms of gender parity is quite poor. As an example, Italy ranks 76 out of 153 countries according to the Global Gender Gap Index 2020, one of the worst positions in Europe (see https://www.weforum.org/reports/gender-gap-2020). The World Value Survey depicts Italy as a country were traditional values about gender roles are still very strong (see http://www.worldvaluessurvey.org/wvs.jsp). In Italy, the 51% of the population fully agrees with the claim "The most important role of a woman is to take care of her home and family" and, to this respect, Italy ranks 15 out of the 29 European countries ordered by conservative views about gender roles (see the 2018 Report on Equality Between Women and Men in the EU). Finally, in the 2018/2019 Global Report prepared by the Global Entrepreneurship Monitor, among all European and North American countries Italy depicts the lowest early-stage Entrepreneurial Activity in the adult female population (see https://www.gemconsortium.org/report).

the time use allocation patterns between weekdays and weekends, our investigation very partially overlaps with theirs and offers additional insights to the unequal allocation of time between women and men, as we detail below.

Our empirical analysis relies on pooled Italian time use data from three ISTAT "Use of Time" surveys: 2002-3, 2008-9 and 2013-14. Consistently with recent related research (Aguiar and Hurst, 2007; Gimenez-Nadal and Sevilla, 2012) we focus on time allocated to the following categories: *Market Work, Unpaid Work* (disentangling *Household Work* from *Purchase of Goods*), *Child care* (distinguishing *Basic* and *Quality child care*), *Leisure*.[4] We run descriptive OLS regression models and estimate time gender gaps and their evolution both unconditional and conditional to a set of individual observed characteristics available in the survey. As mentioned before, we first focus on adults in working age. By restricting our samples to individuals aged 25-65 we limit the heterogeneity due to the peculiar periods of life in which the individual might be studying or in retirement. Then, we analyse the subsample of full-time working parents, which provides a lower bound to gender gap figures but shows that traditional roles in the family still persists even among (young) couples with full-time working mothers.

Our main findings about trends in time allocation gaps across genders in Italy are the following. Over the 13 years under study, gender gaps (females-males) in *Market work*, *Household work* and *Leisure* all narrowed. However, the negative gap in *Market work* shrunk much more than the (positive one) others: 30% against 23% and 13%, respectively. The positive gap in *Child care* remained instead constant. The documented trends are mainly driven by the changes in women's time allocation: men did not change their behavior substantially. Specifically, men slightly decreased the time devoted to *Market work* and slightly increased the time devoted to *Households work* and *Child Care*, especially during weekends, but not enough to really affect the trends of the gender gaps. On the other hand, women significantly increased the time devoted to *Market work* and considerably decreased the time devoted to *Household work*. Both men and women increased the time devoted to *Basic child care* and even more so the time devoted to *Quality child care*. Men increased particularly the time allocated to *Quality child care* and mainly during weekends. Considering the total workload obtained summing market work, household work and child care, the estimated weekly figure is on average about 48 hours for a woman against the 39 hours of a man in 2002, about 47 hours against the 39.5 of a man in 2008 and about 49 hours against the 41 hours of a man in 2014. These numbers coexist with an average increase of women weekly market work from 13 hours in 2002 to 14,5 hours in 2008 and 18 hours in 2014. Simply put, the increased involvement of women in the Italian labor market has not been followed by a parallel growth in the participation of men in home duties.

We document gender gaps which are still very high in the most recent wave. With respect to men, in 2014 women devoted about 39% less time to Market work (corresponding to a gender gap of -11.65 hours per week), 200% more time to Household work (amounting to a gender gap of +18 hours per week), 100%

[4] In our descriptive analysis we also include *Self care (Sleeping* and *Other Self care)*, *Voluntary Work* and *Study* in order to obtain a complete picture of daily time allocation over the 24 hours.

more time to Child Care (corresponding to a gender gap of 2 hours per week) and 24% less time to Leisure (with a gender gap of -10 hours per week). The sharing of family duties remains uneven in the subsample of full-time working parents, despite the relatively younger age of the individuals and, more importantly, despite the similar work responsibilities and the time constraints characterizing the two partners. In 2014, full-time working mothers devote to *Market work* 13% less time than their partners (-1 hour per day) during weekdays, which documents that the gender gap in *Market work* is closing for full-time workers (the drop of the gap with respect to 2002 is about 60%). However, always in weekdays, women still devote to *Household work* 200% more time than men (+1.8 hours per day), to *Basic care* 100% more time (+0.5 hours per day) and to *Quality care* 25% more time than their partners (+0.10 hours per day). This translates in almost -1.2 hours per-day less *Leisure* for full-time working mothers. The situation improves during weekends where male partners contribute more than they do during weekdays to both *Child care* and *Household work.* Interestingly, partners of full-time working mothers are the main providers of *Quality care* during weekends meaning that the gender gap is reversed for this time category. Despite this, during weekends full-time working mothers still devote 140% more time to *Household work* (+ 2 hours per day) and experience 30% less time of *Leisure* (-1.7 hours per day) than their partners. The gap reversal for *Quality care* during weekends is a positive signal about fathers' involvement in kids' education and it could indicate that the gender gap in *Quality care* is likely to disappears in a near future also in weekdays. However, the large and persisting gender gap related to home duties is alarming and documents the strength of traditional gender roles in the household in Italy; we elaborate on this point in the Conclusions.

The rest of the paper is organized as follows. Section 2 illustrates our data and variables definition; Section 3 provides trends and gender differences figures for the whole 24-hours-spectrum of activities on the sample of adults aged 25-64. Section 4 presents the results of descriptive OLS regressions on selected categories of activities, disaggregated by weekdays /weekend days, for the sample of adults aged 25-64 and for the subsample of full-time working parents. Section 5 offers some comparison with related results of other studies; Section 6 concludes.

2. Data and time categories definition

The time-use surveys we use for our analysis come from the "Indagine Multiscopo sulle famiglie - Uso del tempo" developed by ISTAT: the *Use of time 2002-2003* survey, the *Use of time 2008-2009* survey and the *Use of Time 2013- 2014* survey. In the rest of the paper we refer to the three surveys as: 2002, 2008, 2014. After a careful analysis, we decided to disregard the previous 1988-89 survey since it adopts a classification of the time activities that is only partially consistent with the one of the subsequent surveys, making the comparison across time arduous.[5] Table A1 in the Appendix describes the main characteristics of the three

[5] The 1988 survey includes some activities in macro-categories different from those of the other surveys, i.e. some religious activities are part of the "Leisure" category in 1988 but are part of the "Voluntary" one in 2002, 2008 and 2013. Moreover, some information is not reported in the same way (in 1988, the "travel" variable is codified without a reference

surveys we use. From the available observations we dropped those individuals who did not complete the diary (or who did not complete it covering the whole 24-hours-spectrum) and excluded individuals not reporting information used in the analysis (e.g., those not reporting the geographical area of residence or the marital status).

The information gathered in these surveys were collected through direct interviews and through the compilation of a diary where individuals were asked to list all the activities performed during the day and their duration. Within the diary, each respondent had to describe, using her/his own words, the various activities conducted every 10 minutes with the possibility to highlight a primary and a secondary activity. We focus only on primary activities without considering the secondary activities so to avoid overestimations of certain activities.[6]

Following Aguiar and Hurst (2007) and Gimenez-Nadal and Sevilla (2012), we divided the time use of our sample into seven different macro-categories, splitting some of them in more specific sub-categories, as follows:[7]

1. *Market work:* It includes all time spent at working in the paid sector or main job, second jobs, and overtime. It also includes breaks.
2. *Unpaid work:* all the activities listed in this category might be performed by a third person through a salary or a paid service. It includes two sub-categories:
   2.1. *Household Work*: any time spent on meal preparation and clean-up, doing laundry, ironing, dusting, vacuuming, indoor household cleaning, indoor design, indoor maintenance and elderly-care;
   2.2. *Purchase of goods*: any time spent in obtaining goods and services like grocery shopping.
3. *Child-care:* It includes all the time devoted to child-care. We distinguish between:
   3.1. *Basic Child Care* which includes activities like feeding and food preparation, washing, changing children, putting babies to bed or getting them up, babysitting, medical care for babies and so on.
   3.2. *Quality Child Care* which is instead related to children education and mental growth. It includes activities like helping with homework, reading books to children, playing games with them and so on.
4. *Self-care*: it lists all the activities related to personal physical needs and basic necessities.
   4.1 *Sleeping*: includes sleeping.
   4.2 *Other self-care*: it includes all the other self-care activities, like eating, dressing and so on.
5. *Voluntary work:* it includes religious and voluntary activities.

to a macro-category, while in the following surveys each macro-category has its own "travel" variable, i.e. "travelling for leisure purposes" is included in "Leisure").

[6] This implies that the time devoted to *Basic Child Care* is slightly underestimated in our analysis. Indeed, *Basic Child Care* is also sometime performed as a secondary activity when the primary one is either *Household work* or *Purchase of goods*.

[7] Table 1 describes the detailed activities we included in each category, as coded by ISTAT in the surveys.

6. *Leisure*: It includes all time spent on entertainment, social activities, relaxing and recreational activities which are pursued solely for the direct enjoyment such as watching television, sports, socializing, visiting museums, general out-of-home leisure and the like.
7. *Study:* it is a residual category, includes study activities (it is of little importance, also because of the age selection we chose).

Even if we are only interested in activities that highlight the difference in time use with respect to gender (mainly *Market Work, Household Work, Child Care* and *Leisure*), we look at the whole set of activities performed in the 24-hours-spectrum in order to be able to read the trend patterns of these activity in connection with the trend pattern of the others.

The definition of individual variables is displayed in Table 1. We base our analyses on two samples., We call "complete sample" the first, larger sample that is meant to provide general evidence. Given that our analysis focuses on gender gaps, *Market Work* is one of our key time categories and we restrict the sample to people in the working age range 25-64, minimizing this way the presence of individuals in studying or retirement periods of their life.[8] The second sample is a subsample of the former, which is meant to quantify gender gaps for individuals that have heavier family duties and share similar working time constraint, and thus includes only couples with both parents working full-time and having at least one child of age 14 or younger.[9] The number of interviewed people in the subsample is 6,220 against the 69,381 individuals of the complete sample. Descriptive statistics on individual characteristics in the complete sample and in the subsample are displayed in Table A2 and A9 of the Appendix respectively. People in the subsample are younger(the 54% are in the age-range 35-44 against the 28% in the whole sample) and more educated (the 21% have a University degree against the 13% in the whole sample). In addition, the percentage of people living in the South is lower: 34% against 38% of the whole sample, reflecting the fact that there are less employed mothers in the South. Finally, the average number of children per-person obviously increases and amounts to 1.45 against 0.47 for the whole sample.

3. Descriptive evidence on Trends and Gender Gaps

In this section we look at some summary statistics on the larger sample for all time categories, disaggregating them along two dimensions of interest: year (Table 2) and gender (Table 3). We also investigate differences in means across time and gender through several *t-tests*. In Table 2, we report the t-tests for the *2014-2002* difference, to check the presence of trends, while, in Table 3, we show the result of the t-test *Female-Male*, so to quantify potential gender gaps.

[8] These cut-offs were chosen accordingly to the constraints imposed by the information available in the 2013-2014 wave, where age ranges are provided (instead of specific age, as in the previous waves).

[9] In order to have the same number of men and women, we drop those couples where only one parent provided a complete diary as well as those couples where only one parent belonged to the age range of interest (25-64). Finally, we also dropped households with more than one family unit.

We start the presentation of our results by highlighting trends in time use for the complete sample. As shown in Table 2, when we consider the sample pooling men and women together, trends are generally very small. No trend at all exist for *Market Work* which remains basically constant and amounts at slightly more than 21 hours per week on average in the three surveys. As for *Unpaid Work,* we report a small and negative trend fully driven by *Household Work*. Specifically, *Purchase of goods* remains constant at 5.1 hours per week whereas *Household Work* decreases of almost two hours moving from an average of 19.63 hours in 2002 to an average of 18.13 hours per week in 2014. The opposite trend can be observed in *Child Care* and *Leisure* which are both slightly increasing.

To be more specific about *Child Care*, the three-waves average of the aggregated category amounts to 3.24 hours per week, divided in 2.04 hours for *Basic care* and 1.2 hours for *Quality care.* The total time devoted to *Child Care* moves from 3.09 hours in 2002 to 3.48 hours per week in 2014. As for the subcategories, *Basic Child Care* moves from 1.95 hours in 2002 to 2.17 hours per week in 2014. *Quality Child Care* moves instead from 1.14 hours in 2002 to 1.31 hours per week in 2014.

The difference in the relatively small amount of time devoted to *Basic child care* and the much larger amount of time devoted to both *Purchase of goods* and *Household Work* may be surprising. This difference is partially explained by the fact that, on the one side, many individuals in the sample have no children or have grown up children and, on the other side, we only account for the first activity indicated by respondents in the survey. *Basic child care* is often indicated as the secondary activity (precisely when the first one corresponds to *Purchase of goods* or *Household Work*). Consider however that *Quality child care, by* definition, is not compatible with *Purchase of goods* or with *Household Work*, being these activities mutually exclusive. As a result, while the time devoted to *Basic child care* is somehow understated in hour analysis, the time devoted to *Quality child care* is not.

Considering the trend of the other time-categories, *Leisure* increases of more than 1 hour per week: it moves from 34.76 hours to 36.06 per week. The time devoted to total *Self care* basically remains constant at about 80 hours per week. We observe that the *Sleeping* subcategory is slightly increasing, reaching 59.16 hours per week in 2014, while the *Other Self care* category is slightly decreasing, amounting at 22 hours per week in 2014, so that the two changes cancel out.

When we move to the results based on gender differences reported in Table 3, evaluated pooling together the three periods of observation, we immediately notice a sizeable gender gap (female - male) in *Market work* of -14.48 hours per week. Basically, women work on average half the hours than men do: 14.13 against 28.61 hours per week. Consider however that the sample is representative of the Italian population and unemployed women are a large share of the female population in the age range 25-64 (about 50% in 2018).[10] Specifically,

[10] Italian employment rates amount to 67.6% for men and only 49.5% for women, with a gap of 18%. To put these figures in perspective, in 2018 the average employment rate in the European Union (28 countries) was 73.8% for men and 63.3% for women with a gender gap of around 10% Consequently, the employment gap is larger Italy and women participation is extremely low. This picture is mirrored by data on unemployment: the average unemployment rate for women in the European Union (28 countries) is 6.4% but increases to 10,4% in Italy. Female part-time employment as percentage of the total employment in Italy is instead very close to the European average: 32.4% for Italy versus 31.3% for the European Union (28 countries). However, a much darker picture emerges when we consider involuntary part-time employment as

as reported in Table A3 of the Appendix, the 80% of men in the sample are employed against the 53% of women. In addition, the 3% of men have a part-time job against the 13% of women.

The difference is impressive also when we consider *Unpaid work*. The gender gap here is essentially driven by *Household work*, which displays a huge gender gap of 20.78 hours per week: 28.90 hours for women against 8.12 hours for men (about 256% more time for women). The gap for *Purchase of goods* is much lower and amounts to 1.87 hours per week.

The gender gap in hours devoted to *Child care* amounts to 2.18 hours per week that is extremely high given that the average time devoted to this time category is 3.24 hours per week. Women devote more time to both *Basic care* and *Quality care* but the gap is much larger for *Basic care* (1.94 hours per week) than for *Quality care* (0.24). Specifically, women dedicate 2.98 hours whereas men only 1.04 hours per week to *Basic care* (about 186% more time for women) and 1.32 and 1.08 to *Quality care* (about 22% more time for women), respectively. In other words, if one parent at the time provides informal care to his/her children, men provide one-fourth of the time of *Basic care* and one-third of the time of *Quality care* that the children overall receive as primary activity from their parent. For more details on this gap we refer the reader to the next subsections where we report data for individuals belonging to full-time working partners with children.

Interestingly, summing up by gender the time devoted to *Market work*, *Unpaid work* and *Child care*, we observe that women's overall non-leisure activities amount to 53.34 hours per week whereas men's overall non-leisure activities amount to 43 hours per week. Meaning that the gender gap in *Leisure* time amounts to 10.57 hours less for women per week, as Table 3 shows.

Finally, the gender gap in time devoted to *Self care* is relevant too and amounts to almost one hour less for women per week. It is totally driven by *Other self care* activities (22.33 hours for men, 21.53 for women), given that the time devoted to *Sleeping* is the same for men and women and amounts to 59 hours per week.

4. OLS estimates of gender gaps

The figures in the previous section depicted overall trends for males and females time allocation and average time use gender gaps over the 13 years under study. In this section we go deeper in the investigation of variation along both gender and time dimensions and run OLS regressions to estimate time use gender gaps and quantify their changes across years. The very simple model we specify by way of appropriate year dummies is:

$$Y = \beta_0 + \delta_1 women + \delta_2 2008 + \delta_3 women * 2008 + \delta_4 2014 + \delta_5 women * 2014 + u$$

where *Y* is hours per week spent in a given time category and the benchmark group is men belonging to the survey from 2002. We estimate two versions of the above model, without controls (model 1) and with controls (model 2). Control variables include the following individual characteristics: age, education level,

percentage of the total part-time employment. It amounts to 22.1% in Europe (with a gender gap of 11.3%) and to 60.8% in Italy (with a gender gap of 19.5%); see Eurostat at http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do.

geographical area of residence, marital status. More precisely, we consider four age groups categories (25-34, 35-44, 45-54, 55-64), two education categories (high school or less, university or more), two geographical categories (North and South).

We first estimate regressions corresponding to models 1 and 2 on the complete sample of adult individuals and for each category of activity we obtain two sets of results: (i) hours per week; (ii) hours per day during a weekday and hours per day during a weekend day respectively.[11]

Then, we replicate the same estimation exercises on the subsamples of full-time working parents. Here, we drop marital status from the set of controls of model 2, since we only have couples, but we add two categories corresponding to the presence of children within the household (1 child, 2 or more children), and four categories corresponding to the age of the children within the household (children in the age range 0-2, 3-5, 6-10, 11-14) which refer to the type of school they possibly attend (daycare, kindergarten, primary school and middle school); list of variables and related distributions for the subsample are available in Table A9 in the Appendix.

We start by visualizing our main results in Figure 1 which illustrates the gender gaps for the complete sample, computed as *female time minus male time*, and their trend for the four time-categories of main interest: *Market work*, *Non-market work* (made up of the two components, *Household work* and *Purchase of goods*), *Child-care* (*Basic child-care* and *Quality child-care*) and *Leisure*. At a first glance we see that gaps are reducing in all time categories except *Child care*. We can be more specific linking these figures to the underlying estimates obtained for the different categories estimating model 1 (without controls) on the larger sample, contained in the left-upper part of Table 4 to Table 8 for selected categories. The negative gap in *Market work* decreased in absolute terms of more than two hours from 2002 to 2008 and of almost three hours from 2008 to 2014. Even though the gap in *Market work* decreased of 30% in 13 years, in 2014 women still worked 11.65 hours per week less than men. The negative gap in *Leisure* narrowed of slightly less than one hour from 2002 to 2008 and of almost half an hour from 2008 to 2014. Thus, the gap in *Leisure* decreased of 13% in 13 years, but in 2014 women still enjoy 10 hours per week of leisure less than men. The positive gap in *Unpaid work* decreased of three hours from 2002 to 2008 and of additional three hours from 2008 to 2014.[12] The decrease in the gap for *Household work* (the most relevant component of Unpaid Work) is 5 hours and a half in 13 years, corresponding to a reduction of the 23% but, in 2014, women still devoted to the household 18 hours per week more than men did. The gap in *Child care* is basically constant and, in 2014, men still devoted half of the time than women to this activity: 2 hours for men against 4 hours for women.

To sum up, we can thus observe that, while all the three gaps in *Market work*, *Household work* and *Leisure* are reducing, the gap in *Market work* is closing much faster than the others. The gap in *Child care*

[11] The results in (ii) are obtained splitting the observations between weekday (about one third of the total) and weekend (about two thirds) and without inserting controls, since these turn out to leave the estimated gaps in (i) almost unaffected.

[12] In Table 5 we only report regression estimates on Household work, which is by far the most relevant component of Unpaid work. Purchase of goods results are available on request.

remains instead constant. In the next subsection we will consider each time category in detail, first in the whole sample and then in the subsample of full-time working parents, with a focus on the different patterns of allocation of time to household duties occurring during weekdays and weekend days.

4.1 Market Work

The gender gap in *Market work* decreased of 5 hours in 13 years, corresponding to a fall of 30%. This result can be driven by the decrease of the time devoted to *Market work* by men, by the increase of the time devoted to *Market work* by women or both. To understand the reasons for the decreasing trend of *Market work*, we now look the OLS results in Table 4.

Starting from the **complete sample**, we observe (from the third column in the upper part of the table) that men's Market work remains substantially stable in the three surveys (29 hours and a half per week), so we can infer that the fall of the gender gap is completely driven by the increase in women's working hours. Specifically, the decrease of the gender gap in Market work is constant between subsequent surveys: it decreases of about two hours and a half per week every 5/6 years and the overall drop across the 13 years is highly significant. This is entirely due to the rise of women's participation and to the increasing share of full-time working women. Despite this increase, in 2014, women devoted to Market work the 39% of time less than men.[13] Overall, adding controls does not affects results.[14] In the bottom of Table 4 we display time devoted to Market Work during a weekday and during one day of the weekend (either Saturday or Sunday) and we only consider the model without controls.[15] Not surprisingly people devote to Market Work more time during a weekday than in a day of the weekend. It can be noticed that the gender unbalance is similar in both types of days, with women working slightly more than half of the time than men.

Moving to the **subsample** of full-time working parents (in the right-hand side of the table) we see that the average amount of hours per week of Market work provided by men is higher than in the whole sample in 2002 (35.68 hours per week) but converges to the same amount as in the whole sample in 2014 (29.39 hours per week). The reduced time that full-time working fathers devote to Market work in 2014 with respect to 2002 (-6.3 hours per week) is compensated almost entirely by the additional time devoted to Household work (+ 2 hours per week), Child care (+ 2 hours per week) and Leisure (+ 1 hour per week). In the following comments we only refer to the estimates obtained without controls, given that adding covariates does not alter

[13] The gender gap in time devoted to *Market work* is crucial to explain the 'gender overall earnings gap', a synthetic indicator which includes the average earnings per hour, the number of hours worked per month, and the employment rate. According to Eurostat (2017), the Italian gender overall earnings gap amounts to 43.7% (the European average being 39.7%). Consistently, this value is extremely close to our estimation of the (percentage value of the) gender gap in time devoted to *Market work.*

[14] Table 4 of the Appendix allows to observe the effect of covariates on hours of work. Being younger (age range 34-45) and having a University degree have e positive impact on *Market work*. Living in the South of Italy and being married instead have a negative impact. We expect the negative effect of being married to be fully driven by the behavior of the female population: for a woman it is more likely to be unemployed if married.

[15] Hence, the aggregated number of hours devoted to *Market work* and depicted in the upper part of Table 4 corresponds to (5/7)(# of hours of work on a weekday)+ (2/7)(# of hours of work on a weekend).

substantially the results. Not surprisingly, the fall in the gender gap is much pronounced than in the complete sample: here the gap decreased of 6.6 hours per week in 13 years, versus the 4.9 hours per week in the complete sample. Hence, for full-time working parents, the gender gap in Market work fell of the 60% of its initial value in 13 years, versus the 30% in the complete sample. In 2014 women were working 11.7 hours (39%) less than men considering the complete sample in age 25-64 and only 4.4 hours (15%) less in the subsample containing younger individuals and only full-time working women. Disaggregated data show that women devote to Market work 1 hour (13%) less than men in weekdays and 25 minutes (18%) less than men in weekend days. This gap, still existing in the case of full-time employed mothers, is due to women's sorting in different sectors of the labor market and different job occupations. Female workers typically enter less demanding and less remunerated jobs. As an example, the (compulsory) Education sector is dominated by female workers, especially in Italy. Middle and high-school teachers have a standardized contract requiring an average of 21 hours per week for teaching and administrative duties to be "physically" performed into (public) schools and enter as full-time workers in the survey.[16]

4.2 Household Work

The 23% fall of the gender gap in *Household work* depicted in Figure 1 amounts to about 5.5 hours in 13 years. Again, this result can be given by the increase of time devoted to *Household work* by men, by the fall of time devoted to *Household work* by women or both.

From the OLS results obtained without controls in Table 5 we observe that the time devoted to *Household work* by men in the **complete sample** only increased of one hour and a half in 13 years. Therefore, we immediately understand that the reduction of the gender gap is basically driven by the reduction of the time devoted to *Household work* by women. In addition, the decrease of the gender gap in *Household work* is constant between the three surveys: the gap decreased of about three hours per week in every survey and the overall 13 years change is highly significant, amounting to a decrease of 24% in the 13 years under study. In 2014 women devoted to this activity about 18 hours more than men, a percentage gap of about 200%. Again, adding controls leaves our results almost unaffected, so that we refer only to model 1 estimates in the following.[17] The bottom part of Table 5 shows that, in 2014, men devoted more time to *Household work* during weekends than in weekdays while slightly the opposite holds for women. The gender gap in *Household work* amounts to 2.7 hours per-day in a weekday and to 2.5 hours per-day in weekends. Despite the positive trend,

[16] Unfortunately, the survey does not allow us to know the relative share of school teachers among employed parents in the sample. However, the percentage of women is likely to be important. Indeed, the 83% of Italian school teachers are women, the average in the OECD Countries being 68%; see "Gender imbalances in the teaching profession", OECD (2017). And we know from Del Boca *et al.* (2000) that the 19% of Italian married and employed women was working as teacher in 1995.

[17] Looking at Table 5 of the Appendix we see that coefficients of the controls in the OLS regression are -as expected- the opposite of the ones we observed for *Market work*. Now, having a University degree impact negatively on *Housework work*. Younger individuals devote less time to *Housework work.* Living in the South of Italy and being married impact positively on *Housework work*. We expect the positive effect of being married to be mainly driven by the behavior of the female population: for married people family duties are larger but their responsibility remains a female's burden.

the gap remains huge. The 20 more minutes that men devote to *Household work* per-day during weekends in 2014 with respect to 2002 are very far from closing the gap.

Let us move to the **subsample**. The right-hand side of Table 5 in the main text indicates that the average amount of hours per week of *Household work* provided by men in the complete sample and in the subsample is very similar. In 2014, it amounted to 8.8 and 9.1 hours per-week, respectively. Fathers with a full-time working partner only devoted 18 minutes per week more to *Household work* than male individuals in the complete sample. In the same year, in the subsample the gender gap in *Household work* amounted to 14.02 hours per week, against the 17.97 hours per week in the complete sample. The lower gender gap in *Household work* estimated in the subsample is caused by the lower amount of time that full-time working mothers devoted to this activity: 23.9 hours per week instead of 26.8. Put differently, women in the subsample devoted 3 hours per week less to *Household work* than their counterpart belonging to the complete sample and this fully drives the lower gender gap in this activity in the subsample. For full-time working mothers the gender gap in *Household work* fell only of the 23% in 13 years which is the very same percentage that we observe for the whole sample. This suggests that partners of full-time working mothers are not more incline, on average, to a fair sharing of household duties in the couple than men in the whole sample. Results are mostly unchanged when we consider disaggregated data for weekends (see the bottom part of Table 5). However, contrary to what we observe in the complete sample, full-time working mothers devote more time to *Household work* during weekends than in weekdays. While men devote more time to *Household work* during weekends in both samples. We observe that, during weekends, the gender gap in *Household work* in 2014 amounts to +2 hours (the 140% more for women) and it fell of about the 23% in 13 years (as in the complete sample). Results are slightly different when we move to weekdays: in the complete sample the gender gap in *Household work* fell of the 25% while it fell of the 28% in the subsample, showing that partners of full-time working mothers are becoming slightly more available for home duties during the weekend than in weekdays. Basically, in 2014, full-time working mothers devoted 2.8 hours per-day to *Household work* in weekdays and their partner only 54 minutes per-day. Hence, full-time working mothers spend 200% more time on this activity in weekdays than their partners. Recalling results from the previous subsection we observe that, while the negative gap in *Market work* for full-time working mothers reduced of the 60% in 13 years, the positive gap in *Household work* decreased less than the half (i.e. 25%) in the same period. The burden of home duties remains thus very unbalanced, mainly in weekdays.

4.3 Child care

Figure 1 shows that the (positive) gender gap for *Child care* is not closing and, as mentioned before, men continued to take care of their children half of the time that women devote to this activity. Specifically, from Table 3 containing data by gender, we know that women devoted to the sum of *Basic* and *Quality care* an average of about 4 hours per week in the three waves while men only 2 hours. This constant gap may reflect parallel trends for men and women or no trend at all. To better characterize the lack of evolution of the gender

gap for *Child care* we first focus on *Basic care* whose results appear in Table 6 and then we will move to *Quality care* whose results are reported in Table 7.

We move directly to the **subsample** of full-time working parents because in the complete sample we have also individuals without children and individuals with grown up children sot time devoted to *Child care* is decidedly underestimated. The right-hand side of Tables 6 and 7 show data for *Basic care* and *Quality care*, respectively. Interestingly, men devote about the same amount of time to *Basic care* and to *Quality care,* women instead devote much more time to *Basic care* than to *Quality care*. As it will be clear in the following, *Basic care* remains mainly a responsibility of mothers while fathers are relatively more involved in *Quality care*. Our interpretation is the following. On the one side, *Quality care* is a more gratifying way of spending time with children (also because no social stigma for fathers is associated with this type of activity[18]). On the other side, *Quality care* is perceived as more directly related to the development of children's cognitive skills and school abilities so that it has a relatively more tangible return than *Basic care*.

Let us first focus on *Basic care*. In the 13 years under study both men and women in the subsample increased the time devoted to *Basic care*. In 2014 men devoted to *Basic care* 4.5 hours per week and women 8 hours which means that women devoted to this activity almost 77% more time than men. Looking at per-week time devoted to *Basic care*, the gender gap remains stable across the 13 years both in the complete sample and in the subsample. However, we observe a (significant) fall of about 28% of the gender gap in *Basic care* provided during weekdays in the subsample. Full-time working mothers devoted to *Basic care* half an hour more per-day than their partners during weekdays in 2014; whereas they were devoting 45 minutes more per-day in 2002. In 2014, the gender gap in time devoted to *Basic care* in full-time working couples amounts to about 0.5 hours in both types of days, being greater in percentage terms during weekdays, when women dedicate the 100% more than men.

Moving to *Quality care* and checking Table 7, we observe many interesting phenomena. First, in the 13 year under study men doubled the time they devote to *Quality care*. In 2014, men in the subsample devote slightly more than 4 hours per week to *Quality care* against 3 hours and a half of their female partners. The gender gap thus changed its sign and Italian fathers in the subsample devoted in 2014 more time to *Quality care* than their female partners: specifically, the negative gender gap amounts to 30 minutes, corresponding to a percentage value of -14% and is significant only when we include controls. Recall that, in the complete sample, men devoted slightly more than 1 hour and women 1 hour and 23-25 minutes per week to *Quality care* in 2014, with a (positive) gender gap of 11 minutes per week. Looking at disaggregated data from the bottom-right part of Table 7 we observe that the gender gap is still positive in weekdays, but it is negative in weekends. Then we conclude that, in the subsample, the gender gap for *Quality care* reversed because of the evolution of fathers' behaviors in weekends. Specifically, in 2014, fathers devoted 24 minutes per-day to *Quality care* in weekdays, against half an hour per-day of their female partners, with a positive gender gap of 6 minutes per-

[18] See, as an example, Haas and Hwang (2019) and references within. For a general overview see. Paternity Leave: The Rewards and the Remaining Stigma. The NYT, Nov. 7, 2014; available at https://www.nytimes.com/2014/11/09/upshot/paternity-leave-the-rewards-and-the-remaining-stigma.html.

day, meaning that women dedicate to this activity the 25% more than men. During weekends, instead, fathers in the subsample devoted 41 minutes per-day to *Quality care* against 32 minutes per-day of their female partners, with a negative gap of 9 minutes per day (in the complete sample both men and women devoted 12 minutes per-day to *Quality care* during weekends).

To sum up results for the subsample, both fathers and mothers increased the time they devote to the two types of *Child care* in the 13 years under study. As already mentioned before, this corresponds to a general trend in developed countries and the increasing attention to parenting is naturally stronger in the subsample composed of relatively younger and more educated people. The evolution of the gap in the two types of *Child care* activities is however different. Despite working full-time like their male partners, mothers still maintain the main responsibility of both types of *Child care* during weekdays. Instead, during weekends, their male partners become the main provider of *Quality care* thus reversing the gender gap for this specific informal care activity.

4.3.1 Parents' childcare and time use surveys data

We documented above that both men and women increased the time devoted to childcare in the period under study and that more educated parents provide more childcare. This evidence is common to other countries. Evrim (2016) analyses the American Heritage Time Use Study (1965–2014) and shows that the gap between high- and low-educated parents' time investment in developmental childcare activities has widened. An increasing absence of fathers in households with low-educated mothers has exacerbated the trend.

Lyn and Killan (2011) analyse time-use data from matched married couples living in Australia, Denmark, France, and Italy (2002-2003). They conduct a cross-national study of mothers' and fathers' relative time in childcare. They show that the average total parental childcare time is the longest in Australia and the shortest in Denmark, followed by Italy and then France. In all four countries, mothers spend more time performing childcare than their partners, with fathers spending only the 35 percent (Denmark) and the 25 percent (France) of their respective spouses household care time. We learn that, in Italy, the total time devoted to childcare by parents is relatively low and that, in France, fathers' involvement in child care is even lower than in Italy.

Using the Spanish Time Use Survey 2009–2010, Roman Joan and Cortina (2016) show that mothers spend more time with children than fathers do and that the employment-status variables are the most determining factors. Couples that share similar jobs and education level have lower differences in the time that fathers and mothers spend with their children. However, the differences remain high, and mothers are still the main caregivers in all types of households.

Henz (2019) uses data from the UK Time Use Surveys 2000–2001 and 2014–2015. She documents the stability of fathers' involvement in the UK and interprets it as a stalling of the transformation of the father role and progress towards gender equality in the home. In addition, she shows that father involvement on weekend days continues to diverge between high and low status groups. To this respect our analysis is less

disappointing because the involvement in quality care by fathers is increasing in Italy and, in 2014, the gender gap in this time category changed its sign in weekend days!

4.4 Leisure

In the upper-left part of Table 8 we observe that the time devoted to *Leisure* in the **complete sample** slightly increases both for men and women but increases relatively more for women so that the gender gap fell of the 13% in 13 years. Men tend to constantly benefit from about 40 hours of *Leisure* per week while women moved from 29 hours in 2002 to 31 in 2014. In the same year, women devoted to *Leisure* the 24% of time less than men. Adding controls does not change these conclusions.[19] Disaggregating data for weekdays and weekends is particularly relevant for this time category. In the bottom-left part of Table 8 we notice that the reduction of the gender gap for *Leisure* is basically driven by the change in behavior during weekends. Indeed, the gender gap during weekdays remains stable at about 46 minutes per-day across the 13 years: men moved from 4.2 hours per-day in 2002 to 4.4 in 2014, while women moved from 3.4 hours per-day in 2002 to 3.6 hours in 2014. Hence during weekdays, women devoted to *Leisure* 45 minutes of time less than men. During weekends the gender gap is higher, and women devoted to *Leisure* 72 minutes less than men. In weekends the gap decreased of 18.7 minutes per-day in 13 years amounting to a decrease of the 15% of the initial gap of 2002: men benefit from 6.7 hours per-weekday of *Leisure* in 2002 and in 2014, while women moved from 4.6 hours per-weekday in 2002 to 4.9 hours in 2014. The negative gender gap is mainly driven by female family duties in terms of more *Household work* and, to a lesser extent, of more *Child care*.

While the gender gap in *Leisure* reduced of the 12% in the complete sample, from the upper right-hand side of Table 8 we observe that the gender gap in *Leisure* remains basically constant in the **subsample** in the 13 years under study. In 2014 fathers took advantage of 34.44 hours per week of *Leisure* while women of only 23.77 with a gap of 10.67 hours, amounting to the 31% less of the time that men devoted to this activity. Comparing with the complete sample it can be noticed that the amount of *Leisure* in the subsample is lower for both men and women, which is expected, but the gap is larger. This means that, among full-time working parents, gender inequality in *Leisure* is larger than in the full sample. This confirms that the period in which children are young is the heaviest period of the life of a full-time working mother, especially in a country with very traditional gender attitudes like Italy. Once again disaggregating data in weekdays and weekends provides interesting insights. The bottom right hand side of Table 8 shows that in weekdays the gender gap remains constant in the 13 years, similarly to the complete sample. Specifically, in 2014 in the subsample fathers took advantage of 3.5 hours per-day of *Leisure* against the 2.3 hours of their female partners with a gap of 1.2 hours

[19] In Table 8 of the Appendix we observe that being relatively younger has a negative impact on *Leisure* time while being in the age range 45-64 has a positive impact because of the lower family duties and the lower time devoted to *Market work*. Having a university degree and living in the South of Italy have a positive impact on *Leisure* time but for different reasons: people in the North tend to be more educated and to provide more *Market work* but, having higher labor income, they can delegate more *Household work* to third parties, so that overall their *Leisure* increases.

per-day. For the sake of comparison, consider that in the same year in the complete sample the gap was 46 minutes per-day. During weekends, instead, the gender gap significantly decreases in the 13 years. Still, in 2014 in the subsample men took advantage of 5.7 hours per-day of *Leisure* in weekends against slightly less than 4 hours per-day of their female partners, with a negative gap of 1.7 hours per-day (amounting to the 30% less for women).

To sum up, the gender gap in Leisure is systematically higher in the subsample than in the complete sample. This is particularly true in weekdays where, despite working full-time as their male partners, women devote to *Leisure* 1.2 hours per-day less than their male partner. In addition, the gender gap in *Leisure* remained stable during the 13 years under study meaning that no improvement at all exists to this respect. The situation is becoming slightly fairer in weekends because, differently from the gap in weekdays, the gender gap in weekends fell of the 17% in 13 years.

5. Our results in perspective

Our study shows that the negative gender gap (female -male) in *Market work*, as well as the positive gender gap in *Household work* narrowed over the 13 years under study, while the positive gap in *Child care* remained constant. How do these patterns compare to other countries?

Gimenez-Nadal and Sevilla (2012) compare trends in time allocation in seven European countries from the 1970s onwards (Italy is not included in their analysis)[20]. They document general decreases in men's market work coupled with increases in men's unpaid work and childcare, as well as increases in women's paid work and childcare coupled with decreases in unpaid work. This picture is consistent with our evidence from Italy. Specifically, as far as child care is concerned, we show that the gender gap remained constant in Italy because both mothers and fathers increased the time devoted to this activity in a similar way. A difference can be observed in the evolution of the male presence within the market work which remains constant in Italy (we observe a slight decrease only in the subsample of fathers with at least one child under 14) while it is decreasing in the other countries.

The gap in domestic work persists in the US too but, differently from Italy, in the US total work is declining for men and women in the same way; see Fisher et al. (2007). More recently, Kolpashnikova (2018) uses the American Time Use Survey (2003–2016) and unveils a persistent traditional gender performance of women in housework in the US and a new pattern for men's involvement in indoor routine housework.

Fang and McDaniel (2017) focus on hours devoted to household work in the US and in the European countries. They show that household work per person have declined in both the US and European countries

[20] They examine diary data for the following industrialized countries (corresponding sample years in parentheses): Australia (1974–1982–1992–1997), Canada (1971–1981–1986–1992–1998), Finland (1979–1987–1999), France (1974–1998), the Netherlands (1975–1980–1985–1990–1995–2000–2005), Norway (1971–1981–1990–2000), and the UK (1975–1983–1987–1995–2000).

over the past 50 years and that female time allocation contributes more to the difference in time allocation per person between the US and European countries than male time allocation does. To this respect, our evidence from Italy shows that the time devoted to this time category slightly increased for men (both in the whole sample and in the subsample of fathers with full-time working partners) and decreased substantially for women.

Recent trends in Spain, a Mediterranean country characterized by traditional gender roles like Italy, are described by the following papers. Sevilla et al. (2010) use the 2002-2003 Spanish Time Use Survey and find that a woman's relative share of housework fails to decrease with her relative earnings beyond the point where her earnings are the same as her husband. In contrast, a woman's share of childcare time displays a flat pattern over the distribution of her spouse's relative earnings. The authors claim that this result can be interpreted in light of social norms, whereby women specialize in this type of caring activity regardless of their relative productivity or bargaining power. Gimenez-Nadal and Sevilla (2014, page 1894) write that "the relative increase in total work for women compared to men can be explained by a relative increase in market work of 8 hours per week, coupled with a relative decrease in nonmarket work of 6 hours per week, which have led Spanish women to devote, relatively, 2 fewer hours to leisure per week in 2009–10, compared to 2002–03." Again they propose social norms as a potential explanation of these empirical findings that are consistent with our evidence from Italy.

Álvarez and Miles-Touya (2019) focus on the share of household duties in dual-earner couples and use the same two waves of the Spanish Use of Time survey considered in Gimenez-Nadal and Sevilla (2014). They show that a husband's non-working day leads to an (almost) equal distribution of housework, whereas a wife's non-working day leads the partners to approach full specialization—with the wife performing most of the household tasks. All this shows that, contrary to what the advocates of "iso-work" claim, in societies with stringent gender roles like Spain and Italy, the time devoted to total work by gender is not equal.

Burda et al. (2013) analyse 27 countries and find a negative relationship between GDP per-capita and gender difference in total work. As they write, this means "either that economic development is highly positively correlated with gender equality of total work or that today's rich non-Catholic countries have always had a different culture along this dimension." Burda et al. (2013, page 243). In their study Italy is part of the Catholic countries, together with Belgium, Spain, France, Ireland and Mexico. As we mentioned in the introduction, female participation in the market work in Italy is very low and women represent the larger share of part-time workers. It is clear that closing the large gender gap in market work that we document for the full sample would allow to increase Italian GDP substantially!

Finally, we would like to report evidence from few recent papers that use Italian Time Use data to analyse gender gaps: Carriero and Todesco (2018), Zanella and De Rose (2019a; 2019b). Carriero and Todesco (2018) use the 2013–2014 Italian time-use survey to investigate whether women's ability to assert their egalitarian beliefs is linked to having sufficient personal resources in economic and cultural terms. They find that, for a woman, the effect of gender ideology is strongest when she earns roughly as much or more than her partner and when she holds a college degree. When the woman's income is lower than the man, the effect of women's gender ideology is quite small. If the woman does not have a degree, her egalitarian attitudes will

not translate into her doing less housework.

Zanella and De Rose (2019a) focus instead on time transfers in the couple and show that women continue to be net donors of time transfers within the family and to perform the bulk of the work within the couple. Households where both partners do not work in the market or where only the woman has a market job show the highest levels of inequality, with women contributing to about 70% of the couples' total working time. Zanella and De Rose (2019b) considers the three waves 2002-3, 2008-9, 2013-4 and focus on the impact of economic recession on time allocation of females and males. Based on the subsample of individual aged 15-64 they report a decrease of about two hours per week in female housework coupled with a similar increase in male unpaid work over the entire period. While signs of this gender convergence were already evident for women in the years before the recession, they do not find any significant change in male unpaid work between 2002 and 2008. To this respect, as we reported in Section 4.2 and depicted in Figure 1, we document a similar narrowing of the gender gap in household work, but show that this decrease is constant between the three surveys and is mainly driven by the decrease of the time women devote to this activity. The difference between our findings and theirs on the effect of the 2008 recession is likely to depend on our sample selection. Indeed, in order to filter out the phase of the life cycle focused on the academic education, we left out individuals in the age range 15-24. This group of young people is well known to have been very severely hit by the 2008 recession.[21] This could explain the fact that we do not observe -in our complete sample- a drop in males market work across the period, and document a similar increase in males household work across the two sub periods (2002-2008, 2008-2014). To conclude, with respect to both Zanella and De Rose (2019a) and (2019b), the comprehensive investigation we perform in our paper, contrasting weekday with weekend days and the complete sample with the subsample of full time working parents, provides additional and novel knowledge on family workload division in the contemporary Italian society.

6. Conclusions

This work provides novel evidence on the entity of the gender gap in time use and its evolution across the first two decades of the 21th century (2002-2014) in Italy. Exploiting data from three Italian Time Use Surveys from the Italian National Institute of Statistics (ISTAT), including the most recent one available, we draw an informative and up to date picture of time use allocation of Italian adults.

We document a general reduction of gender gaps in *Market work*, *Household work* and *Leisure* over the 13 years under study. The gap in *Market work* decreased much more than the others: 30% against 23% and 13%, respectively. The positive gap (female-male) in *Child care* remained instead constant. We show that women are dramatically changing their time allocation and are thus the mainly responsible for the observed reduction of the gender gaps: the fall of the gender gap in *Market work* and in *Household work* are driven by the increase in women's working hours and by the decrease in the time they devote to household duties . The

[21] See, the UNICEF report Innocenti, Report Card n. 12 (2014).

time devoted to *Leisure* slightly increased both for men and women but has increased relatively more for women. Particularly interesting is the trend in the time devoted to *Child care:* both men and women increased the time devoted to *Basic child care* and even more so the time devoted to *Quality child care*. Men increased particularly the time allocated to *Quality care* and mainly during weekends, closing the *Quality care* gap in 2014 during weekends. Even though men slightly increased the time devoted to both *Households work* and *Child Care*, especially during weekends, this has not been enough to really affect the trends of the gender gaps.

For full-time working couples with children, we observe that gender gaps are closing faster but less than we could expect given the younger sample and the partners' similar work responsibilities. We show that, in 2014, full-time working Italian mothers are still handling a double job: they supply almost the same amount of labor than their partners in the job market and they provide much more informal *Child Care* and *Household* work than their partners at home. The gender gap in market work is closing very fast and full-time working mothers were working only the 13% less than their partners (-1 hour per day) in 2014. However, family duties remain a female responsibility, mainly during weekdays. Specifically, in weekdays full-time working mothers still devoted to *Household work* 200% more time (+1.8 hours per day), 100% more time to Basic care (+0.5 hours per day) and 25% more time to Quality (+0.10 hours per day) care than full-time working fathers, which translates in almost -1.2 hours per-weekday of *Leisure* less for mothers. A higher relative contribution to household duties is given by male partners during weekends. Interestingly, the gender gap in *Quality care* is reversed during weekends and partners of full-time working mothers become its main providers. Nevertheless, during weekends full-time working mothers still provide 140% more time to *Household work* (+ 2 hours per day) and experience 30% less time of *Leisure* than their partners (-1.7 hours per day).

Our results thus describe a very unbalanced picture of Italian families in the first two decades of the 21th century: the total amount of paid and unpaid work of full-time employed mothers with young children is about 60 hours per week (25 hours of paid work plus 35 hours of unpaid work) against the 47 hours provided by their male partners. This translates into a gender gap in total work of 13 hours per week which is largely superior to the European average.[22] What we find particularly disappointing is that (relatively young) partners of full-time working mothers are not more incline, on average, to a fair sharing of domestic chores in the couple than (relatively older) men belonging to the whole sample.

To conclude, we have documented the persistence of a strong gender time use imbalance in Italy, a country where in 2018 more than a half of the population (both male and female) still believe that "the most important role of a woman is to take care of her home and family" (see European Commission 2018). Traditional gender attitudes contribute to explain why the recent increased involvement of women in the labor market is still far from being compensated by a greater involvement of men in family and household duties.

[22]The 2018 Report on Equality Between Women and Men in the EU indicates - based on survey data from Special Eurobarometer 465- that, in couples with the youngest child under 7, women spend on average 32 hours per week on paid work but 39 hours on unpaid work (household work and childcare), compared to men who do 41 hours paid and 19 hours of unpaid work per week. In our subsample of full-time working parents with at least one child under 14, women provide less paid work and less unpaid work than the EU average but the gender gap in total work is higher in Italy than in the average of European countries (13 against 9 hours per week on average in the EU).

In the political debate, childcare policies and women quotas are presented as important interventions to increase women participation in the labor market and to increase women's career opportunities. At the same time, parental leave is (also) emphasized as a policy to increase fathers' involvement in informal child care and media advocate the importance of quality-time devoted by (both) parents to their children. As our data on *Quality care* show, an improvement can be observed to this respect and the role of fathers in raising children is more and more important. On the negative side, fathers' poor engagement in *Basic care* let us understand that a different attitude still persists towards parent activities that are perceived as "low status", as *Basic care*, and others that are perceived as more "prestigious" (and are objectively more psychologically rewarding for parents), as *Quality care*.

Despite the trend of informal child care we find is encouraging enough, domestic chores are still totally perceived as "women's work". To understand the reasons for the gendered division of housework, Auspurg et al. (2017) use a novel vignette-based experimental design. They show that both sexes appear to prefer an equal allocation of housework and they conclude that women's preferences are not aligned with gender norms. Hence, they rule out gendered preferences as an explanation for the gendered allocation of housework and suggest that the latter depends on the different bargaining strategies employed by men and women. Specifically, even though women do not derive any more utility from doing housework than men do, they may derive a greater level of utility than men from avoiding conflict in a relationship, with the net result that they end up doing more housework.[23]

Unfortunately, the public debate on the share of housework inside the family is totally insignificant. Housekeeping is associated with "low status" and a "negative stigma" even among (the less traditional) younger and more educated men. Do policies exist that can encourage an equal share of domestic chores inside the household? An equal burden of family duties is not only important for fairness reasons but also because it would indirectly encourage female market work and boost women's career opportunities. Subsidies on formal domestic work are not a solution because they represent a very regressive policy (the richer households would benefit from the policy relatively more). In the seventies, the Italian movement "Wages for Housework" (Austin and Federici 2017) received some echoes and in 2014 in Italy the idea that the government (or, as an alternative, the husband) should pay women for domestic work reached again the political debate. The advocates of the allowance for housewives think that domestic work should be rewarded to let housewives be economically independent. Such a policy however does not allow to overcome the social norm about domestic work as a "women's work", quite the opposite, and in addition discourages women's participation in the labor market.

We believe that promoting gender equality inside the household requires women's awareness about gender gaps and, more importantly, a cultural change in attitudes, together with the rise of woman's bargaining

[23] Related to that, Bertrand et al. (2015) show that women who earn more money than their husband increase rather than decrease the amount of time they invest in household work. They suggest that this behavior can be rationalized with the utility cost associated with going against the stereotypical expectation of being a good wife. Even if, absent the gender identity norms, women do not enjoy housework, engaging in those tasks might still be utility maximizing if it allows them to comply with the gender identity norms.

power inside the couple (to this respect see also Carriero and Todesco (2018) cited in Section 5). To change social norms and eliminate gender stereotypes about gender roles, the family and the school have a crucial role. Parents wanting their children to live in a more gender equal society, should make their family *gender neutral* in the first place by requiring (among other things) that all members, irrespective of their gender, contributes to domestic cores.

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TABLE 1- Variables

VARIABLE	DEFINITION
	Time Categories - Activities included*
Market Work	Working in the paid sector. Includes breaks.
Unpaid Work	Activities which may be performed by someone else through a salary or a paid service. Made up of *household work* and *purchase of goods*.
Household Work	Cooking, washing dishes, tiding-up the house, sewing and mending clothes, doing laundry, ironing, dusting, vacuuming, indoor household cleaning, indoor design and maintenance, gardening and pet care, outdoor restructuring and elderly-care.
Purchase of goods	Daily grocery shopping, purchase of goods and services for the house and the family members, medical shopping, pet-care items purchase.
Child care	Made up of *basic child care* and *quality child care*.
Basic child care	Children surveillance, physical and medical care.
Quality child care	Helping children with homework; reading, playing and talking to children.
Voluntary	Helping people outside the family for free, voluntary activities within associations or groups, religious practice and meetings attendance.
Self-care	Made up of *sleeping* and *other self-care*.
Sleeping	Sleeping.
Other self-care	Staying sick in bed, eating and drinking, dressing-up, washing and combing oneself, medical cares.
Study	Attending classes, doing homework and studying at any level of education.
	Individual characteristics
Women	Dummy variable equal to one if the individual is a woman and zero if the individual is a *man*
Age range	Categorical variable specifying to which of the four age categories (25-34, 35-44, 45-54 and 55-64 years) the individual belongs to.
University	Dummy variable equal to one if the individual has a University degree and zero if the individual has high school or inferior degree.
South	Dummy variable equal to one if the individual lives in the South of Italy or in the islands; zero otherwise.
Numb_children	Categorical variable reporting the number of children (zero, one or more than one) for each observation.
Child_age_range	Categorical variable specifying to which of the four age categories (0-2, 3-5, 6-10 and 11-14 years) the observation's child belongs.

Married	Dummy variable equal to one if the individual is married or lives with the partner.
Employed	Dummy variable equal to one if the individual is employed.
Part-time	Dummy variable equal to one if the individual works part-time.
Weekend	Dummy variable equal to one if the individual was surveyed on a weekend day.

* Hours per week. All activities include also commuting time devoted to each of them.

TABLE 2-Descriptive Statistics and Trends

		mean	sd	Difference 13-02	se
Market work	2002	20.99	30.420	-0.32	0.279
	2008	21.73	30.681		
	2014	20.67	30.061		
	Pooled	21.12	30.394		
Unpaid work	2002	24.77	22.789	-1.5***	0.202
	2008	23.76	21.752		
	2014	23.28	20.759		
	Pooled	23.98	21.843		
Household work	2002	19.63	20.120	-1.49***	0.178
	2008	18.69	19.162		
	2014	18.13	18.268		
	Pooled	18.86	19.255		
Purchase of goods	2002	5.15	8.407	0	0.077
	2008	5.07	8.270		
	2014	5.14	8.345		
	Pooled	5.12	8.344		
Child-care	2002	3.09	7.871	0.39***	0.076
	2008	3.18	8.175		
	2014	3.48	8.643		
	Pooled	3.24	8.219		
Basic child-care	2002	1.95	5.897	0.22***	0.057
	2008	2.03	6.070		
	2014	2.17	6.385		
	Pooled	2.04	6.110		
Quality child-care	2002	1.14	3.634	0.17***	0.035
	2008	1.15	3.769		
	2014	1.31	4.069		
	Pooled	1.20	3.819		

		mean	sd	Difference 13-02	se
Voluntary	2002	2.86	7.676		
	2008	2.56	7.442	-0.2***	0.072
	2014	2.66	7.962		
	Pooled	2.70	7.695		
Selfcare	2002	81.05	16.029		
	2008	80.37	15.403	0.1	0.147
	2014	81.15	15.803		
	Pooled	80.87	15.763		
Sleeping	2002	58.64	12.137		
	2008	59.10	12.084	0.52***	0.114
	2014	59.16	12.563		
	Pooled	58.95	12.258		
Other selfcare	2002	22.41	10.401		
	2008	21.27	9.262	-0.42***	0.093
	2014	22.00	9.657		
	Pooled	21.92	9.825		
Leisure	2002	34.76	21.797		
	2008	35.93	22.096	1.3***	0.202
	2014	36.06	21.863		
	Pooled	35.54	21.922		
Study	2002	0.44	4.260		
	2008	0.46	4.119	0.24***	0.045
	2014	0.69	5.597		
	Pooled	0.52	4.683		
Observations	2002	25,320			
	2008	22,207			
	2014	21,854			
	Pooled	69,381			

TABLE 3-Descriptive Statistics and Gender Gap

		mean	sd	Gender gap (Female-Male)	se
	MEN	28.61	33.518		
Market work	WOMEN	14.13	25.215	-14.48***	0.224
	Pooled	21.12	30.394		
	MEN	12.27	15.551		
Unpaid work	WOMEN	34.92	21.193	22.65***	0.142
	Pooled	23.98	21.843		
	MEN	8.12	12.806		
Household work	WOMEN	28.90	18.854	20.78***	0.123
	Pooled	18.86	19.255		
	MEN	4.15	7.890		
Purchase of goods	WOMEN	6.03	8.649	1.87***	0.063
	Pooled	5.12	8.344		
	MEN	2.12	6.138		
Child-care	WOMEN	4.29	9.654	2.18***	0.062
	Pooled	3.24	8.219		
	MEN	1.04	3.964		
Basic child-care	WOMEN	2.98	7.465	1.94***	0.046
	Pooled	2.04	6.110		
	MEN	1.08	3.715		
Quality-child-care	WOMEN	1.32	3.910	0.24***	0.029
	Pooled	1.20	3.819		
	MEN	2.19	7.291		
Voluntary	WOMEN	3.18	8.024	1.00***	0.058
	Pooled	2.70	7.695		
	MEN	81.34	16.783		
Selfcare	WOMEN	80.42	14.732	-0.92***	0.12
	Pooled	80.87	15.763		

		mean	sd	Gender gap (Female-Male)	se
Sleeping	MEN	59.01	13.222	-0.13	0.093
	WOMEN	58.89	11.282		
	Pooled	58.95	12.258		
Other selfcare	MEN	22.33	9.987	-0.79***	0.075
	WOMEN	21.53	9.656		
	Pooled	21.92	9.825		
Leisure	MEN	41.01	23.743	-10.57***	0.162
	WOMEN	30.44	18.677		
	Pooled	35.54	21.922		
Study	MEN	0.45	4.403	0.15***	0.036
	WOMEN	0.59	4.930		
	Pooled	0.52	4.683		
Observations	MEN	33,524			
	WOMEN	35,857			
	Pooled	69,381			

FIGURE 1
Trends in Gender gap (Female-Male)

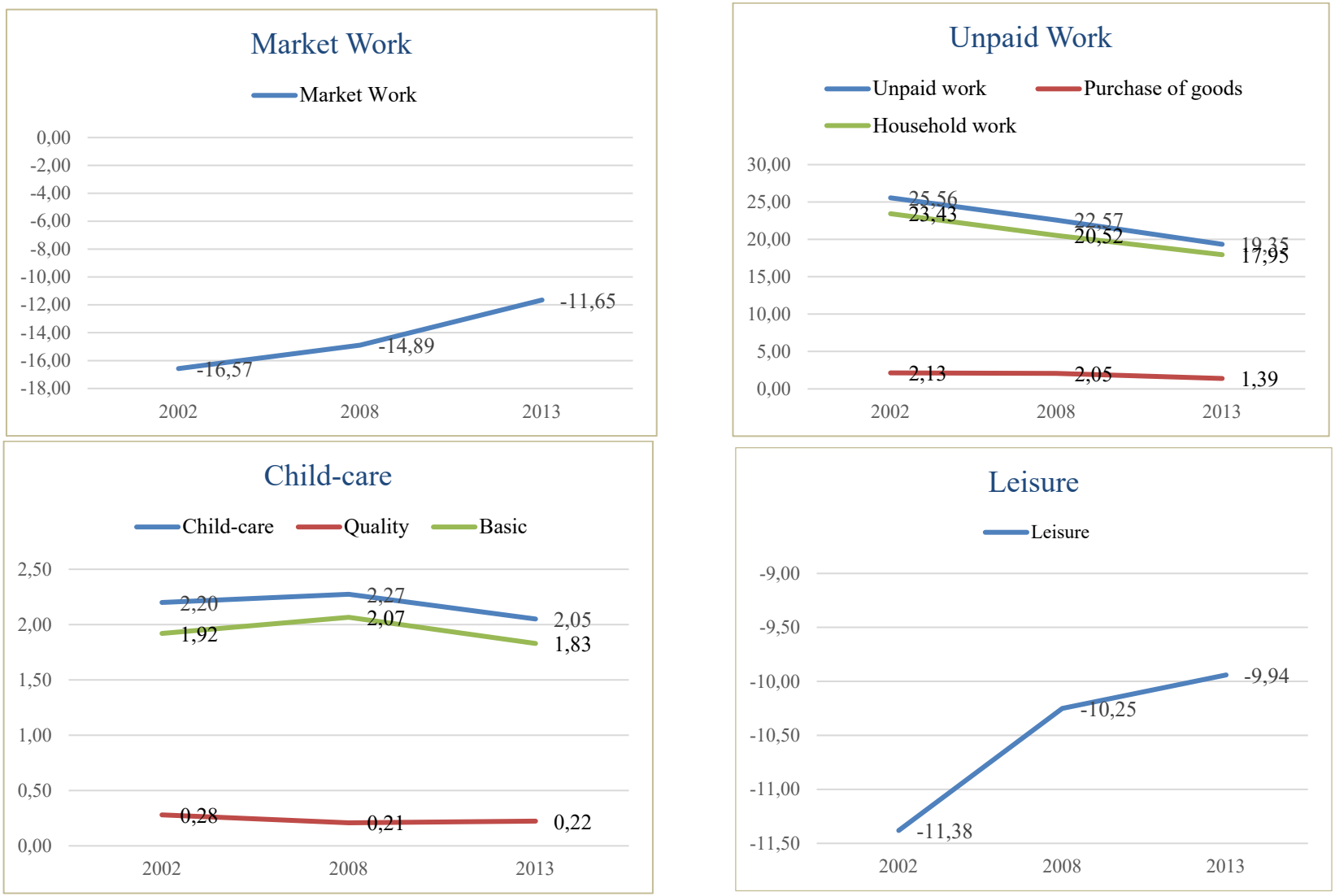


TABLE 4-GENDER GAP IN MARKET WORK

OLS results - Hours per Week

Year	COMPLETE SAMPLE			FULL-TIME WORKING PARENTS		
	Male Average	Estimated Gender Gap (Female-Male)		Male Average	Estimated Gender Gap♦ (Female-Male)	
2002	29.61	-16.57***	-16.40***	35.68	-10.99***	-11.71***
		(0.371)	(0.366)		(0.861)	(0.896)
2008	29.36	-14.89***	-14.87***	35.90	-9.866***	-10.31***
		(0.396)	(0.391)		(1.017)	(1.049)
2014	29.69	-11.65***	-11.70***	29.39	-4.425***	-4.946***
		(0.399)	(0.394)		(1.072)	(1.124)
Change 2014-2002		4.915***	4.695***		6.563***	6.769***
		(0.545)	(0.538)		(1.375)	(1.385)
Controls		NO	YES*		NO	YES▲
Obs.		69,381			6,220	

*Controls: age, education level, geographical distribution and marital status.

▲Controls: age, education level, geographical distribution, number of children and children age.

♦ Standard errors are clustered at the family level.

OLS results - Hours per Day

Year	COMPLETE SAMPLE				FULL-TIME WORKING PARENTS			
	WEEKDAY		WEEKEND		WEEKDAY		WEEKEND	
	Male Average	Estimated Gender Gap (Female-Male)	Male Average	Estimated Gender Gap (Female-Male)	Male Average	Estimated Gender Gap♦ (Female-Male)	Male Average	Estimated Gender Gap♦ (Female-Male)
2002	7.255	-3.990***	2.579	-1.460***	8.768	-2.588***	3.029	-0.994***
		(0.0919)		(0.0547)		(0.216)		(0.145)
2008	7.379	-3.621***	2.371	-1.251***	8.372	-1.957***	3.071	-1.065***
		(0.0965)		(0.0590)		(0.237)		(0.183)
2014	6.777	-2.929***	2.222	-0.959***	7.769	-1.022***	2.253	-0.414**
		(0.0995)		(0.0587)		(0.273)		(0.183)
Change 2014-2002		1.061***		0.501***		1.566***		0.580**
		(0.135)		(0.0803)		(0.348)		(0.234)
Controls		NO		NO		NO		NO
Obs.		24,443		44,938		2,292		3,928

♦ Standard errors are clustered at the family level.

TABLE 5-GENDER GAP IN HOUSEHOLD WORK

OLS results - Hours per Week

Year	COMPLETE SAMPLE			FULL-TIME WORKING PARENTS		
	Male Average	Estimated Gender Gap (Female-Male)		Male Average	Estimated Gender Gap♦ (Female-Male)	
2002	7.433	23.43***	23.24***	7.289	18.71***	19.23***
		(0.203)	(0.192)		(0.496)	(0.505)
2008	8.171	20.52***	20.46***	8.526	15.45***	16.05***
		(0.217)	(0.205)		(0.573)	(0.580)
2014	8.858	17.95***	17.97***	9.149	14.02***	14.76***
		(0.219)	(0.207)		(0.615)	(0.624)
Change 2014-2002		-5.477***	-5.265***		-4.691***	-4.471***
		(0.299)	(0.282)		(0.790)	(0.792)
Controls		NO	YES*		NO	YES▲
Obs.		69,381			6,220	

*Controls: age, education level, geographical distribution and marital status.

▲Controls: age, education level, geographical distribution, number of children and children age.

♦ Standard errors are clustered at the family level.

OLS results - Hours per Day

Year	COMPLETE SAMPLE				FULL-TIME WORKING PARENTS			
	WEEKDAY		WEEKEND		WEEKDAY		WEEKEND	
	Male Average	Estimated Gender Gap (Female-Male)	Male Average	Estimated Gender Gap (Female-Male)	Male Average	Estimated Gender Gap♦ (Female-Male)	Male Average	Estimated Gender Gap♦ (Female-Male)
2002	0.880	3.584***	1.161	3.219***	0.667	2.573***	1.253	2.730***
		(0.0491)		(0.0360)		(0.103)		(0.0944)
2008	0.925	3.124***	1.306	2.820***	0.851	2.002***	1.449	2.337***
		(0.0516)		(0.0387)		(0.118)		(0.111)
2014	1.050	2.698***	1.381	2.492***	0.915	1.860***	1.526	2.083***
		(0.0532)		(0.0386)		(0.130)		(0.116)
Change 2014-2002		-0.886***		-0.727***		-0.713***		-0.647***
		(0.0724)		(0.0527)		(0.166)		(0.149)
Controls		NO		NO		NO		NO
Obs.		24,443		44,938		2,292		3,928

♦ Standard errors are clustered at the family level.

TABLE 6-GENDER GAP IN BASIC CHILD-CARE

OLS results - Hours per Week

Year	COMPLETE SAMPLE			FULL-TIME WORKING PARENTS		
	Male Average	Estimated Gender Gap (Female-Male)		Male Average	Estimated Gender Gap♦ (Female-Male)	
2002	0.950	1.918***	1.851***	3.353	4.057***	3.970***
		(0.0759)	(0.0719)		(0.281)	(0.284)
2008	0.971	2.066***	1.999***	3.247	4.548***	4.382***
		(0.0810)	(0.0768)		(0.340)	(0.343)
2014	1.222	1.829***	1.761***	4.525	3.514***	3.312***
		(0.0817)	(0.0774)		(0.404)	(0.407)
Change 2014-2002		-0.0894	-0.0905		-0.543	-0.657
		(0.111)	(0.106)		(0.492)	(0.489)
Controls		NO	YES*		NO	YES▲
Obs.		69,381			6,220	

*Controls: age, education level, geographical distribution and marital status.
▲Controls: age, education level, geographical distribution, number of children and children age.
♦ Standard errors are clustered at the family level.

OLS results - Hours per Day

Year	COMPLETE SAMPLE				FULL-TIME WORKING PARENTS			
	WEEKDAY		WEEKEND		WEEKDAY		WEEKEND	
	Male Average	Estimated Gender Gap (Female-Male)	Male Average	Estimated Gender Gap (Female-Male)	Male Average	Estimated Gender Gap♦ (Female-Male)	Male Average	Estimated Gender Gap♦ (Female-Male)
2002	0.121	0.391***	0.144	0.212***	0.429	0.731***	0.508	0.494***
		(0.0191)		(0.0131)		(0.0675)		(0.0497)
2008	0.132	0.404***	0.143	0.234***	0.495	0.816***	0.444	0.545***
		(0.0200)		(0.0141)		(0.0835)		(0.0588)
2014	0.145	0.355***	0.190	0.212***	0.522	0.523***	0.716	0.490***
		(0.0206)		(0.0141)		(0.0917)		(0.0740)
Change 2014-2002		-0.0366		0.000574		-0.208*		-0.00392
		(0.0281)		(0.0192)		(0.114)		(0.0892)
Controls		NO		NO		NO		NO
Obs.		24,443		44,938		2,292		3,928

♦ Standard errors are clustered at the family level.

TABLE 7-GENDER GAP IN QUALITY CHILD-CARE

OLS results - Hours per Week

Year	COMPLETE SAMPLE			FULL-TIME WORKING PARENTS		
	Male Average	Estimated Gender Gap (Female-Male)		Male Average	Estimated Gender Gap♦ (Female-Male)	
2002	0.998	0.279***	0.240***	2.973	0.313*	0.220
		(0.0480)	(0.0459)		(0.179)	(0.188)
2008	1.047	0.209***	0.171***	3.306	-0.127	-0.229
		(0.0512)	(0.0490)		(0.200)	(0.203)
2014	1.197	0.223***	0.184***	4.083	-0.391	-0.567**
		(0.0517)	(0.0494)		(0.265)	(0.272)
Change 2014-2002		-0.0563	-0.0557		-0.705**	-0.788**
		(0.0705)	(0.0674)		(0.320)	(0.323)
Controls		NO	YES*		NO	YES▲
Obs.		69,381			6,220	

*Controls: age, education level, geographical distribution and marital status.

▲Controls: age, education level, geographical distribution, number of children and children age.

♦ Standard errors are clustered at the family level.

OLS results - Hours per Day

Year	COMPLETE SAMPLE				FULL-TIME WORKING PARENTS			
	WEEKDAY		WEEKEND		WEEKDAY		WEEKEND	
	Male Average	Estimated Gender Gap (Female-Male)	Male Average	Estimated Gender Gap (Female-Male)	Male Average	Estimated Gender Gap♦ (Female-Male)	Male Average	Estimated Gender Gap♦ (Female-Male)
2002	0.132	0.0914***	0.148	0.0124	0.382	0.0833**	0.449	0.0230
		(0.0111)		(0.00871)		(0.0420)		(0.0323)
2008	0.122	0.0923***	0.165	-0.00551	0.468	0.0107	0.475	-0.0362
		(0.0116)		(0.00938)		(0.0451)		(0.0369)
2014	0.133	0.0893**	0.192	0.00130	0.399	0.104*	0.686	-0.145***
		(0.0120)		(0.00934)		(0.0560)		(0.0497)
Change 2014-2002		-0.00209		-0.0111		0.0211		-0.168***
		(0.0163)		(0.0128)		(0.0700)		(0.0593)
Controls		NO		NO		NO		NO
Obs.		24,443		44,938		2,292		3,928

♦ Standard errors are clustered at the family level.

TABLE 8-GENDER GAP IN LEISURE

OLS results - Hours per Week

Year	COMPLETE SAMPLE			FULL-TIME WORKING PARENTS		
	Male Average	Estimated Gender Gap (Female-Male)		Male Average	Estimated Gender Gap♦ (Female-Male)	
2002	40.68	-11.38***	-11.27***	33.35	-11.81***	-11.46***
		(0.268)	(0.263)		(0.529)	(0.551)
2008	41.18	-10.25***	-10.15***	33.62	-10.71***	-10.54***
		(0.286)	(0.281)		(0.610)	(0.628)
2014	41.20	-9.938***	-9.862***	34.44	-10.85***	-10.67***
		(0.288)	(0.284)		(0.663)	(0.696)
Change 2014-2002		1.446***	1.412***		0.963	0.793
		(0.393)	(0.387)		(0.848)	(0.856)
Controls		NO	YES*		NO	YES▲
Obs.		69,381			6,220	

*Controls: age, education level, geographical distribution and marital status.

▲Controls: age, education level, geographical distribution, number of children and children age.

♦ Standard errors are clustered at the family level.

OLS results - Hours per Day

Year	COMPLETE SAMPLE				FULL-TIME WORKING PARENTS			
	WEEKDAY		WEEKEND		WEEKDAY		WEEKEND	
	Male Average	Estimated Gender Gap (Female-Male)	Male Average	Estimated Gender Gap (Female-Male)	Male Average	Estimated Gender Gap♦ (Female-Male)	Male Average	Estimated Gender Gap♦ (Female-Male)
2002	4.168	-0.789***	6.709	-2.095***	3.065	-0.944***	5.726	-2.108***
		(0.0558)		(0.0471)		(0.109)		(0.0982)
2008	4.177	-0.686***	6.860	-1.920***	3.215	-1.133***	5.802	-1.781***
		(0.0585)		(0.0507)		(0.127)		(0.116)
2014	4.396	-0.765***	6.684	-1.784***	3.500	-1.212***	5.714	-1.738***
		(0.0604)		(0.0505)		(0.141)		(0.124)
Change 2014-2002		0.0236		0.311***		-0.268		0.369**
		(0.0822)		(0.0691)		(0.178)		(0.158)
Controls		NO		NO		NO		NO
Obs.		24,443		44,938		2,292		3,928

♦ Standard errors are clustered at the family level.

Appendix

TABLE A1-Description of ISTAT time-use surveys

SURVEY NAME	SURVEY COVERAGE	SAMPLE STRUCTURE	SIZE	ACTIVITIES
Istat Uso del Tempo	Apr.2002- Mar. 2003	Individuals aged 3 years old and over (we select those in the age range 25-64). The activities are recorded by the individual using a diary form survey, both on working days and on weekends. Intervals are of 10 minutes, with a total of 144 records for each diary. We only consider primary activity.	51.206	262
Istat Uso del Tempo	Feb. 2008-Jan. 2009	Individuals aged 3 years old and over (we select those in the age range 25-64). The activities are recorded by the individual using a diary form survey, both on working days and on weekends. Intervals are of 10 minutes, with a total of 144 records for each diary. We only consider primary activity.	40.944	258
Istat Uso del Tempo	Nov. 2013-Oct. 2014	Individuals aged 3 years old and over (we select those in the age range 25-64). The activities are recorded by the individual using a diary form survey, both on working days and on weekends. Intervals are of 10 minutes, with a total of 144 records for each diary. We only consider primary activity.	41.229	147

TABLE A2-Descriptive Statistics of covariates - by year

		mean	sd
Woman	2002	0.52	0.500
	2008	0.51	0.500
	2014	0.52	0.500
	Pooled	0.52	0.500
Age Range 25-34	2002	0.25	0.431
	2008	0.21	0.406
	2014	0.19	0.391
	Pooled	0.22	0.411
Age Range 35-44	2002	0.29	0.452
	2008	0.29	0.454
	2014	0.27	0.442
	Pooled	0.28	0.449
Age Range 45-54	2002	0.25	0.433
	2008	0.27	0.442
	2014	0.30	0.458
	Pooled	0.27	0.445
Age Range 55-64	2002	0.22	0.413
	2008	0.24	0.424
	2014	0.25	0.430
	Pooled	0.23	0.422
University	2002	0.09	0.291
	2008	0.14	0.344
	2014	0.18	0.381
	Pooled	0.13	0.340
South	2002	0.37	0.481
	2008	0.38	0.486
	2014	0.39	0.487
	Pooled	0.38	0.485
Employed	2002	0.64	0.479
	2008	0.67	0.472
	2014	0.67	0.470
	Pooled	0.66	0.474
Part-time Job	2002	0.05	0.224
	2008	1.13	0.339
	2014	0.11	0.315
	Pooled	0.08	0.275
Married	2002	0.71	0.454
	2008	0.64	0.479
	2014	0.59	0.492
	Pooled	0.65	0.477

		mean	sd
Number of children	2002	0.50	0.805
	2008	0.46	0.782
	2014	0.44	0.766
	Pooled	0.47	0.786
Number of children 0-2 y.o.	2002	0.09	0.300
	2008	0.08	0.295
	2014	0.08	0.279
	Pooled	0.08	0.292
Number of children 3-5 y.o.	2002	0.10	0.314
	2008	0.09	0.309
	2014	0.09	0.303
	Pooled	0.09	0.309
Number of children 6-10 y.o.	2002	0.13	0.381
	2008	0.13	0.370
	2014	0.15	0.409
	Pooled	0.14	0.387
Number of children 11-14 y.o.	2002	0.18	0.441
	2008	0.16	0.414
	2014	0.13	0.373
	Pooled	0.16	0.412
Weekend	2002	0.65	0.477
	2008	0.64	0.480
	2014	0.65	0.476
	Pooled	0.65	0.478
Number of observations	2002	25320	
	2008	22207	
	2014	21854	
	Pooled	69381	

TABLE A3-Descriptive Statistics of covariates -by gender

		mean	sd
Age Range 25-34	MEN	0.22	0.412
	WOMEN	0.21	0.410
	Pooled	0.22	0.411
Age Range 35-44	MEN	0.28	0.449
	WOMEN	0.28	0.449
	Pooled	0.28	0.449
Age Range 45-54	MEN	0.27	0.445
	WOMEN	0.27	0.444
	Pooled	0.27	0.445
Age Range 55-64	MEN	0.23	0.421
	WOMEN	0.23	0.424
	Pooled	0.23	0.422
University	MEN	0.12	0.328
	WOMEN	0.14	0.351
	Pooled	0.13	0.340
South	MEN	0.38	0.484
	WOMEN	0.38	0.485
	Pooled	0.38	0.485
Married	MEN	0.64	0.481
	WOMEN	0.66	0.472
	Pooled	0.65	0.477
Employed	MEN	0.80	0.402
	WOMEN	0.53	0.499
	Pooled	0.66	0.474
Part-time Job	MEN	0.03	0.180
	WOMEN	0.13	0.335
	Pooled	0.08	0.275

		mean	sd
Number of children	MEN	0.47	0.787
	WOMEN	0.47	0.785
	Pooled	0.47	0.786
Number of children 0-2 y.o.	MEN	0.08	0.295
	WOMEN	0.08	0.289
	Pooled	0.08	0.292
Number of children 3-5 y.o.	MEN	0.09	0.311
	WOMEN	0.09	0.308
	Pooled	0.09	0.309
Number of children 6-10 y.o.	MEN	0.14	0.386
	WOMEN	0.14	0.388
	Pooled	0.14	0.387
Number of children 11-14 y.o.	MEN	0.15	0.408
	WOMEN	0.16	0.416
	Pooled	0.16	0.412
Weekend	MEN	0.64	0.479
	WOMEN	0.65	0.477
	Pooled	0.65	0.478
Observations	MEN	33,524	
	WOMEN	35,857	
	Pooled	69,381	

TABLE A4-OLS RESULTS FOR MARKET WORK

Hours per Week		
Variables	Model I	Model II
Woman	-16.57***	-16.40***
	(0.371)	(0.366)
2008	-0.25	-0.26
	(0.390)	(0.385)
2014	-2.92***	-2.98***
	(0.393)	(0.390)
Woman*2008	1.68***	1.53***
	(0.543)	(0.535)
Woman*2014	4.91***	4.70***
	(0.545)	(0.538)
Age range 35-44	29.61***	2.13***
	(0.268)	(0.326)
Age range 45-54		0.90***
		(0.334)
Age range 55-64		-9.43***
		(0.347)
University		2.67***
		(0.329)
South		-1.74***
		(0.228)
Married		-2.00***
		(0.248)
Constant	50.78***	32.56***
	(0.462)	(0.362)
Controls*	NO	YES
R-squared	0.146	0.0843
Obs.	69,381	69,381

Controls: age, education level, geographical distribution and marital status

Hours per Day		
Variables	Weekday	Weekend
Woman	-27.93***	-10.22***
	(0.643)	(0.383)
2008	0.87	-1.46***
	(0.668)	(0.406)
2014	-3.34***	-2.50***
	(0.680)	(0.406)
Woman*2008	2.58***	1.46***
	(0.933)	(0.563)
Woman*2014	7.43***	3.50***
	(0.948)	(0.562)
Constant	50.78***	18.05***
	(0.462)	(0.277)
Controls*	NO	NO
R-squared	0.146	0.0309
Obs.	24,443	44,938

TABLE A5-OLS RESULTS FOR HOUSEHOLD WORK

Hours per Week		
Variables	Model I	Model II
Woman	23.43***	23.24***
	(0.203)	(0.192)
2008	0.74***	0.92***
	(0.214)	(0.202)
2014	1.43***	1.78***
	(0.215)	(0.205)
Woman*2008	-2.91***	-2.78***
	(0.297)	(0.281)
Woman*2014	-5.48***	-5.26***
	(0.299)	(0.282)
Age range 35-44		3.59***
		(0.171)
Age range 45-54		6.79***
		(0.176)
Age range 55-64		9.62***
		(0.182)
University		-4.71***
		(0.173)
South		1.45***
		(0.120)
Married		5.26***
		(0.130)
Constant	7.43***	-1.12***
	(0.147)	(0.190)
Controls*	NO	YES
R-squared	0.295	0.370
Obs.	69,381	69,381

*Controls: age, education level, geographical distribution and marital status

Hours per Day		
Variables	Weekday	Weekend
Woman	25.09***	22.53***
	(0.344)	(0.252)
2008	0.31	1.02***
	(0.357)	(0.266)
2014	1.19***	1.54***
	(0.363)	(0.266)
Woman*2008	-3.22***	-2.79***
	(0.499)	(0.370)
Woman*2014	-6.20***	-5.09***
	(0.507)	(0.369)
Constant	6.16***	8.13***
	(0.247)	(0.182)
Controls*	NO	NO
R-squared	0.322	0.281
Obs.	24,443	44,938

TABLE A6-OLS RESULTS FOR BASIC CHILD-CARE

Hours per Week		
Variables	Model I	Model II
Woman	1.92***	1.85***
	(0.076)	(0.072)
2008	0.02	0.30***
	(0.080)	(0.076)
2014	0.27***	0.82***
	(0.080)	(0.077)
Woman*2008	0.15	0.15
	(0.111)	(0.105)
Woman*2014	-0.09	-0.09
	(0.111)	(0.106)
Age range 35-44		-0.28***
		(0.064)
Age range 45-54		-3.23***
		(0.066)
Age range 55-64		-4.18***
		(0.068)
University		0.55***
		(0.065)
South		-0.23***
		(0.045)
Married		2.64***
		(0.049)
Constant	0.95***	0.95***
	(0.055)	(0.071)
Controls*	NO	YES
R-squared	0.0254	0.125
Obs.	69,381	69,381

*Controls: age, education level, geographical distribution and marital status

Hours per Day		
Variables	Weekday	Weekend
Woman	2.74***	1.48***
	(0.133)	(0.092)
2008	0.08	-0.01
	(0.139)	(0.097)
2014	0.17	0.32***
	(0.141)	(0.097)
Woman*2008	0.09	0.16
	(0.193)	(0.135)
Woman*2014	-0.26	0.00
	(0.197)	(0.135)
Constant	0.84***	1.01***
	(0.096)	(0.066)
Controls*	NO	NO
R-squared	0.322	0.281
Obs.	24,443	44,938

TABLE A7-OLS RESULTS FOR QUALITY CHILD-CARE

Hours per Week		
Variables	Model I	Model II
Woman	0.28***	0.24***
	(0.048)	(0.046)
2008	0.05	0.20***
	(0.050)	(0.048)
2014	0.20***	0.51***
	(0.051)	(0.049)
Woman*2008	-0.07	-0.07
	(0.070)	(0.067)
Woman*2014	-0.06	-0.06
	(0.071)	(0.067)
Age range 35-44		0.27***
		(0.041)
Age range 45-54		-1.54***
		(0.042)
Age range 55-64		-2.14***
		(0.043)
University		0.28***
		(0.041)
South		-0.30***
		(0.029)
Married		1.54***
		(0.031)
Constant	1.00***	0.78***
	(0.035)	(0.045)
Controls*	NO	YES
R-squared	0.00140	0.0884
Obs.	69,381	69,381

Controls: age, education level, geographical distribution and marital status

Hours per Day		
Variables	Weekday	Weekend
Woman	0.64***	0.09
	(0.077)	(0.061)
2008	-0.07	0.12*
	(0.080)	(0.064)
2014	0.00	0.30***
	(0.082)	(0.064)
Woman*2008	0.01	-0.13
	(0.112)	(0.090)
Woman*2014	-0.01	-0.08
	(0.114)	(0.089)
Constant	0.93***	1.04***
	(0.056)	(0.044)
Controls*	NO	NO
R-squared	0.00770	0.000894
Obs.	24,443	44,938

TABLE A8-OLS RESULTS FOR LEISURE

Hours per Week		
Variables	Model I	Model II
Woman	-11.38***	-11.27***
	(0.268)	(0.263)
2008	0.50*	0.00
	(0.281)	(0.277)
2014	0.51*	-0.42
	(0.283)	(0.280)
Woman*2008	1.14***	1.13***
	(0.391)	(0.385)
Woman*2014	1.45***	1.41***
	(0.393)	(0.387)
Age range 35-44		-3.17***
		(0.235)
Age range 45-54		-0.79***
		(0.241)
Age range 55-64		4.53***
		(0.250)
University		1.41***
		(0.237)
South		0.84***
		(0.164)
Married		-5.60***
		(0.178)
Constant	40.68***	44.28***
	(0.193)	(0.260)
Controls*	NO	YES
R-squared	0.0589	0.0887
Obs.	69,381	69,381

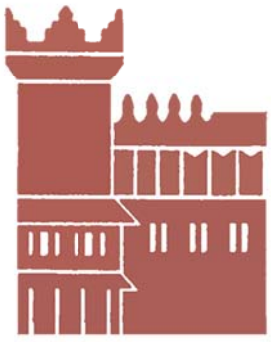
Controls: age, education level, geographical distribution and marital status

Hours per Day		
Variables	Weekday	Weekend
Woman	-5.52***	-14.67***
	(0.390)	(0.330)
2008	0.06	1.06***
	(0.405)	(0.349)
2014	1.59***	-0.17
	(0.412)	(0.349)
Woman*2008	0.72	1.23**
	(0.566)	(0.485)
Woman*2014	0.17	2.18***
	(0.575)	(0.484)
Constant	29.18***	46.96***
	(0.280)	(0.238)
Controls*	NO	NO
R-squared	0.0214	0.0949
Obs.	24,443	44,938

TABLE A9 -Descriptive Statistics of Subsample of full-time working parents* 2002, 2008, 2014 POOLED

Time Categories	Mean	sd
Market work	29.69	31.907
Household work	16.39	15.928
Basic child-care	5.66	8.965
Quality child-care	3.37	5.755
Leisure	28.12	20.260
Age Range 25-34	0.18	0.383
Age Range 35-44	0.54	0.498
Age Range 45-54	0.26	0.438
Age Range 55-64	0.02	0.134
University	0.21	0.408
South	0.34	0.474
Number of children	1.45	0.592
Children 0-2 y.o.	0.25	0.463
Children 3-5 y.o.	0.28	0.481
Children 6-10 y.o.	0.42	0.582
Children 11-14 y.o.	0.50	0.600
Weekend	0.63	0.482
Observations	6,220	

* This subsample has been obtained as follows: households without any child under the age of 14 have been dropped; households with more than one family unit have been dropped; household with only one parent or with only one parent reporting the time-use diary, have been dropped; individuals who were not the reference individual and his/her partner, have been dropped. Finally, we only keep in this subsamples families where both parents are employed in a full-time job.



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