

The Effects of the French 35-Hour Workweek Regulation on Intra Household Time-Allocation

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Very preliminary version

Abstract:

In France, as in most developed countries, the reduction of gender inequalities in domestic time is very slow, and mainly due to a decrease in the female participation to housework. France has undergone a major working time reform at the end of the 1990 that may affect male and female time use: the 35 hours legal workweek. This reform gives a natural time chock experiment to analyze how the relaxation of working time constraints may affect the housework time allocation. Using the most recent French time-use survey (2010), we evaluate the effect of this reform by selecting working women and men who benefited from it, and by matching them with control groups using propensity score methods. Men who benefit from the reform spend more time doing housework on weekdays, doing more male-oriented tasks, while women spend more time to care children. Finally, the reform has contributed to reduce gender inequalities in time use.

Keywords:

Workweek reform, housework, childcare, men

1. Introduction

Individuals' use of time has dramatically changed across the last decades in most of industrialized countries. From the 60s, people have on average more free time and spend less time doing housework and less time at work (Gershuny, 2000; Aguiar & Hurst, 2007; Robinson & Godbey, 1997; Huberman & Minns, 2007). Several factors have explained these trends. First these changes partly result from structural variations in the labor market, and in particular the considerable increase in women's labor force participation. The growth of unemployed people due to economic hardship and industrial restructuring might also have affected the allocation of time (Berik and Kongar 2013). Second, demographic factors such as the increase of retired people due to population ageing and the decrease of large families have also affected average times devoted to different activities. Finally, technological progress in home activities has also reduced the domestic workload (Greenwood et al., 2005).

Looking at these historical trends is not helpful in identifying how individuals react to a variation in time allocation and thus to predict how they will react to a permanent cut in market work (Lee et al., 2012). Hence, these major changes were linked and simultaneous, making difficult to infer the sense of causality. It is not clear whether work has more affected private sphere than the reverse. For instance, women have spent less time on domestic activities partly because they have spent more time at work, but women have entered the labor market position because their family duties have been reduced. One way to go around this methodological issue of endogeneity is to use exogenous shock that may modify suddenly one type of time, and analyze how people reallocate time. In our case, we analyze the effect of the reduction of working legal workweek to observe how people use the additional free time.

As far as we know, only one recent study has identified how individuals' time allocation reacts to an exogenous permanent decline in market working time. Lee et al. (2012), using cuts in legislated standard working hours occurring in Japan and South Korea, show that free-up time in Japan was reallocated to leisure and personal maintenance, while in Korea to household production. This type of study is difficult to implement since exogenous shocks on working time are either non-permanent or do not concern the whole population. The recent French reform of the working schedules gives us the rare opportunity to see how people use additional time in the European context.

France has undergone a major working time reform at the end of the 1990ies and beginning of the 2000's: the length of the legal workweek was cut from 39h to 35h in 2000 for large firms and 2002 for small firms. The aim was to reduce working time in order to share work and thus decrease unemployment. The reform consisted in decreasing the working time by 10% with no reduction in income. Several studies have tried to evaluate the impact of the reform on employment. They have found mixed results: either a slight positive effect, no effect or a negative effect on the level of employment (Bunel & Jugnot, 2003; De Coninck, 2004; Schreiber, 2008; Chemin & Wasmer 2011) while working conditions have been worsening (Afsa & Biscourp, 2004). This reduction of work schedule has also had individual consequences in terms of well-being and quality of life. For instance, people declare that their personal quality of life has improved, thanks to a reduction of time constraints (Estrade et al., 2001; Cette et al., 2004).

Beyond the consequences of this reform on employment level, such an exogenous shock is also of great interest to understand how intra-household time allocation evolves. This drop in work time is likely to relax time constraints, and thus to involve time reallocation for the worker himself, but also

for other household members. The aim of this paper is to evaluate how the 35h workweek regulation has affected time allocation of men and women. It analyzes which type of activities has been reallocated: personal maintenance time, housework, childcare or leisure. Do men and women use this extra time to do housework or to spend more enjoyable activities? A key issue we examine is whether the workweek reduction has contributed to greater or lower wellbeing. Since such a reform might have different effects on men and women timetables, the consequences in terms of gender equality are also questioned.

To answer these questions, we use the most recent, and the first one since the 35hours reform generalization, time-use survey performed in 2009-2010. This database gives detailed information on time use. The paper first presents previous studies evaluating the change of working time regulations on time-schedules. Then the principles and timing of the French reform are presented. In a third section, the data and the method used are described, and finally the results are displayed.

2. Literature review

Many countries regulate the work week by law, by stipulating minimum daily rest periods, annual holidays and a maximum number of working hours per week. From the beginning of the 20th century, the legal workweek exists in many European countries. The objective of this regulation was to protect workers' health and safety and to improve their living conditions. A maximum limit to weekly or daily working hours has been implemented and progressively reduced along the century. A weekly rest period of at least one day for each 7-day period and several weeks of paid annual leave have also been introduced during the period.

In most European Union countries, working time has been gradually decreasing over time. In France, the 8 hour day was introduced in 1919, the 40 hour workweek and two week annual leave in 1936, this annual leave was extended to three weeks in 1956 and four in 1969. In 1982, the fifth week of leave and the reduction to the workweek of 39 hours (Jugnot 2013) marked the end of this wish of improving the working conditions and well-being of workers.

In the subsequent standard workweek reforms that have been implemented in some European countries, in particular Germany, France and Sweden, during the 1980s and 1990s, the objective had changed. The main motivation of standard workweek reforms has been "work-sharing". The idea was to improve the level of employment through a reduction in hours per workers in a context of huge increase of the level of unemployment. Most papers dealing with the impact of changes in the legal workweek have then evaluated its effect on employment.

Findings about the effects of work-sharing on employment are however ambiguous. For instance, Raposo and Van Ours (2010b), who exploit regional, sectoral and firm-size variation in the share of workers affected by the reform, find a positive impact on employment of the working time reduction from 44h to 40h introduced in Portugal in 1996. Jacobsen and Ohlsson (2000) using a VAR model with cointegration constraints over 1970-90, that employment is not affected by the decrease of hours per workers in Sweden. But most papers find a negative effect on employment level. Hunt (1998, 1999) using cross-industry variation in reduction in standard hours finds that the reduction in hours that occurred in 1985 decreased male employment in Germany in the period 1984-94. Crépon and Kramarz 2002 studied the effect of the 1982 law in France find an increase in the probability of

making a transition from employment to unemployment. Evaluations of the impact of the 35 h reform on employment level in France also find mixed results, depending on the method and data. Crépon, Leclair and Roux (2005) use firm-level data compare firms that reduce the workweek to 25 hours relative to those that maintained it at 39h. They find that employment increased by 9.9% in firms that reduced the workweek relative to the others. On the other hand, Chemin and Wasmer (2011) benefiting from the geographic disparity in the implementation of the 35h reform in France, find no impact of the reform on the employment growth. Schreiber (2008), using a structural VAR model also finds adverse employment effects.

Not surprisingly, the reforms have reduced the individual working time and workers who are affected by the reform have shorter working hours (Hunt, 1998 for Germany; Raposo and van Ours, 2010a in Portugal, Goux et al., 2011 in France), but the decreasing legal working time has also had indirect effects on working conditions as previous reforms along the century, and general well-being. Hunt (1998) shows that reduction of standard hours of full-time male workers induced small reduction in the hours of their spouse, possibly due to complementarity of leisure between spouses. Similarly, Goux et al. (2011) demonstrate that husbands of wives who were affected by the 35h were also impacted by the reform (Goux et al., 2011). They have reduced their labor supply by about half an hour per week. On the other hand, no significant effect was found for women whose husbands were treated.

Another possible effect of the reduction of working time is changes in time allocation. Up to now, only few studies have tried to evaluate the effect of the working time on private time use. The difficulty remains that most of changes in working time were gradual and generally concomitant to other in changes such as income or other technological change that might affect the time-allocation decision process of individuals. To overcome these methodological difficulties, one can use the legislative changes, that have the huge advantage to be exogenous to individual behavior. But such changes are quite scarce. As far as we know, only Lee, Kawaguchi and Hamermesh (2012) analyze how Japanese and South Korean workers spend their time on leisure and personal care after a reform respectively in the 1990's and in the beginning of 2000's in South Korea. They show that free-up time in Japan was reallocated to leisure and personal maintenance, while in Korea free-up time was reallocated to household production. In France, in a survey conducted just after the reform, individuals, women more than men, declared they have more time for rest, small repairs and gardening, and more time with children (Estrade & Meda, 2002; Cette et al., 2004). 60% of dual earners parents with young children said it has improved their work-family balance (Fagnani and Letablier, 2004). But this survey was based on self-declaration and does not allow measuring the precise impact of the 35 hours legal workweek on time use.

Finally, if the impact of the reform on employment level is ambiguous, such reforms have generally improved quality of life since their leisure time has increased and actual working hours are closer to desired hours (Hunt, 1998). It also affects working time preferences. Hence, using exogenous variation in the length of the standard workweek of West-German civil servants and public sectors employees, Loog et al. (2012) show that this reduction generates a decrease in desired hours worked, that remains even in the long run. However, results differ by gender. Estevao and Sa (2008) show that after the reform men were less happy with their workweek while women were happier. This last study is a rare one that analyses the impact of the reform by gender, in spite of huge differences in time use by gender. Our aim will be to shed light on changes in time allocation by gender.

3. The French working time reforms

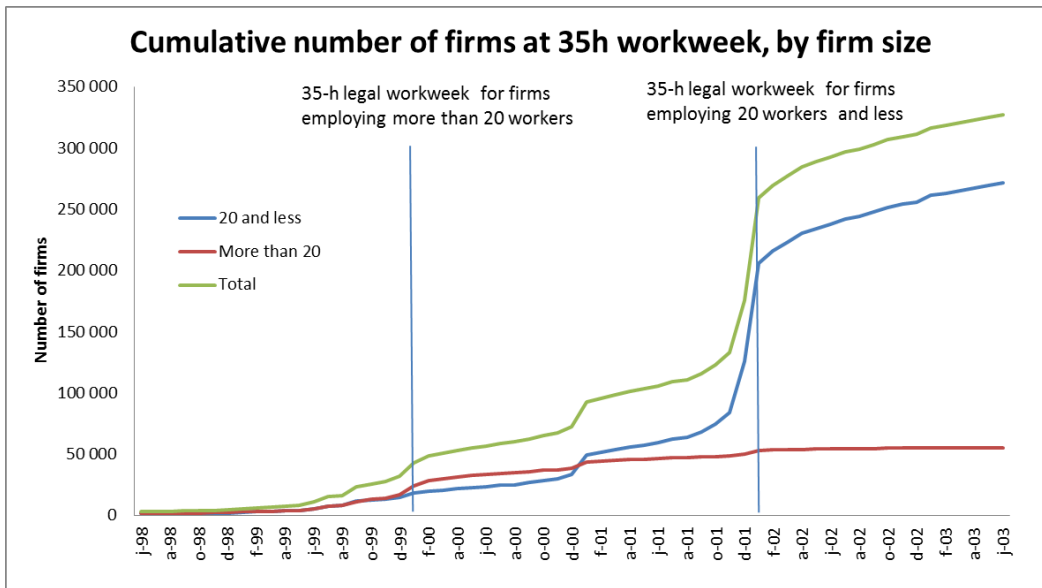
The reduction of working hours has been a sequential process in France, with two main objectives improving workers well-being and reducing unemployment. After a series of agreements at the industry level during the 1960ies and 1970ies, a legislation proposed by the new socialist government was voted in 1982. The legal workweek was cut from 40 hours to 39 hours with full wage compensation, and a fifth paid week of vacation was introduced. In this framework, overwork was allowed, with a maximum of 130 hours a year and a bonus of 25% was set for overtime. The conservative government relaunched the process of workweek reduction in 1996. In a context of economic crisis, the Robien law was passed in order to give incentives to firms that reduce working time and hire workers. Payroll contributions were lowered for firms that reduced working time and increased employment by 10%. But the impact of this reform was very limited, only 3000 agreements were passed, affecting 280 000 workers, i.e. only 2% of the workforce.

At the end of the 1990es, two laws were passed to generalize the reduction of working time without wage reduction, i.e. the Aubry I and Aubry II Laws (from the name of the Ministry of Labor, Martine Aubry). The new workweek was phased in slowly. The Aubry I law, voted in June 1998, set the length of the legal workweek at 35 hours in the private firms employing more than 20 workers beginning in February 2000 and in January 2002 for smaller firms and gave firms incentive for reduction of working time (for instance subsidies per workers on condition that firm's employment increased by at least 9%). In order to boost the process, a second law was voted in October 1999. From the 1st January 2001, all firms in the private sector employing more than 20 workers had to negotiate agreements with their employees in order to decrease weekly working time to 35 hours with full wage compensation – which represents a fall of 10% of working time–, the other firms had to start the negotiation from the 1st January 2002. The legal workweek was 35 hours, and overtime was set to a maximum of 48 hours a week and 130 hours a year, overtime bonus being 25%. To ease the transition for small firms, overtime bonus was reduced to 10% in small firms until 2003. In exchange to working time reduction, trade-unions accepted a more flexible accounting of working time from a weekly to an annual basis that could enhance productivity. Concretely, all workers affected by the reform do not work 35 hours a week. Some workers, mainly executives, can work longer hours, these extra-hours being cumulated and used as half or full days off, called "RTT days" (with a maximum of 4 hours a week). In April 2002, according to the data of the Ministry of labor, 284 770 have applied the reform, 9,633,000 employees were covered, representing 57 % of workers potentially affected by the reform (see figures 1 and 2). The coverage rate was much higher in large firms than in firms employing 20 workers and less (respectively 23% and 74% in April 2003 according to data from the Ministry of Labor).

In April 2002, the Conservative government came back to power and stopped the process. Then the government passed several laws to increase overtime contingent (up to 48 hours in any week) and to maintain the reduced overtime bonus of 10% in small companies, but did not cancelled the 35 hours legal workweek.

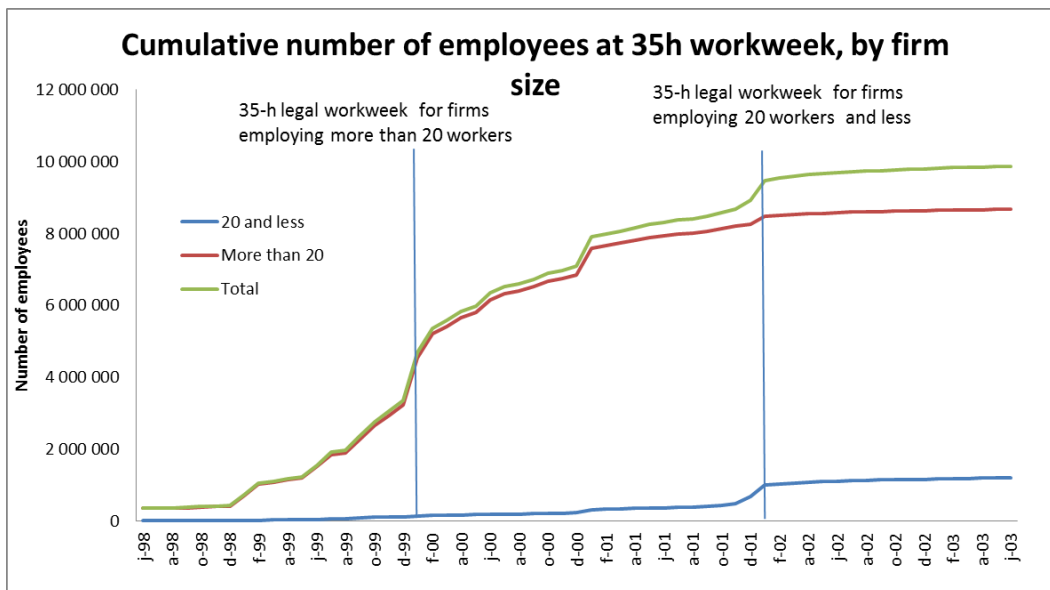
Our empirical analysis will take profit of discrepancies in the reform implementation. As seen above, all workers have not been affected by the reform in the same way. Employees can be in different situations after the reform in 2010. In case of firm application, they can work 35h and keep the same day-offs as before or they can work more than 35h a week with compensating day-offs.

Figure 1



Data: DARES-URSSAF database

Figure 2



Data: DARES-URSSAF database

4. Data

Time Use Surveys represent a unique and precious source of information on daily activities. They use the time diary technique, whereby individuals report their time use during a period of 24 hours – day randomly distributed – providing extremely detailed information on the activities performed during that day, based on a grid of 10 minute-intervals of time, with a description of the main activity carried out by the respondent, the concurrent activity, their location and the presence of other

persons. Besides the diary, all the data sets contain rich sets of information on the background and socio-economic situation of individuals and households. We use the most recent time use survey that was conducted in 2009-2010 by the French national statistical Institute of Statistics (INSEE). Two household members aged 11 + at the most were interviewed and they filled a diary for both a weekday and a week-end day. We also use former time use surveys (1985 and 1998) to display the long term evolutions in time use.

We concentrate on main activity carried out by the respondent, using standard definitions of activities:

- *Paid work*: Employment-related activities, work breaks, + transport associated to these activities
- *Unpaid work*: home maintenance, shopping, paying bills and household management, transports related to these activities, care of other family members and childcare.
- *Leisure including sleeping*
- *Self-care*: eating, washing etc.

In a second step of the analysis we distinguish several activities among unpaid work:

- Care includes childcare (Interactive childcare, physical care, transports and minding only with the children in the household) and care for adults
- Cooking
- Cleaning
- Purchasing goods
- Maintenance, repairs
- Household management
- Others (care for animals, ...)

In a third step, in order to analyze how the reform has affected workers' well-being, we use subjective information on i) fatigue (due to work hardness or work intensity), ii) life satisfaction (satisfaction regarding couple, leisure, time with children, social relation), iii) gender division of housework, and iv) time for oneself.

Sample

Our sample consists of male and female full-time wage earners. Self-employed are excluded since they were not affected by the reform. The reform has been applicable for part-time workers, but we are not able to quantify the effect of the reform for them. Workers who work less than 35 hours are also excluded, which concerns mainly teachers. The first reason is that the reform has almost not affected teachers, at least public or assimilated teachers. The second reason is that their working weekly time is not precisely known and heterogeneous. When they are asked about the amount of their working hours, some declare the number of hours they spend with pupils, whereas others answer the legal hours, or the time they spend working at the whole, including lessons preparation (that we can also calculate from the daily booklet). Therefore, no legal hours are available for them.

5. Method

To answer the question to what extent benefiting from the reform has changed the individual time-allocation, the identification strategy exploits the fact that some workers were not eligible for the 35 h workweek relies on matching. We implement a matching analysis whose principle is to compare outcomes of two comparable populations, one of which benefited from the reform called the treated, i.e. employees working in firms which implemented the 35 hours reform, and one “similar” control group, i.e. employees working in firms which did not. Observable firm characteristics, such as size or sector, were major determinants of the probability of having benefited from the reform¹. Thus, matching analysis using propensity scores² is well suited for constructing a control group on the basis of these observable criteria (see Brodaty et al., 2007, Givord 2010).

The main hypothesis implies that assignment to the treatment becomes independent, conditioned on observable variables. From an individual point of view, being affected and the way of being affected are quite exogenous since it was not possible to anticipate which firm would implement the reform before 2002. After 2002, workers could have searched for firms which have already implemented the reform but we consider this as marginal. As French labor market is quite rigid with a high level of unemployment, moves are relatively risky, and might concern very privileged workers. In this context, professional moves motivated by the only wish to benefit from the reform are probably rare. Then, under the hypothesis that these groups are “similar” on all observables except the variable of interest, any differences observed between these two groups are therefore attributable to the implementation of the reform. The impact of the reform is obtained by calculating the sample mean of the differences in time-allocation between reform beneficiaries and non-beneficiaries.

Table 1 summarizes the different cases in which one full-time employee can be, and the number of observations in the survey. The amount of weekly legal hours in the firm which ranges from 35h to 39 h and more (columns) is balanced by the possibility of benefiting from additional day-offs (lines). To define treated and controls, we use individual information on usual weekly working hours and “RTT days” since we have unfortunately no direct information on legal workweek in the firm. However, such information at the firm-level would not be necessary better suited for the analysis since the application of reform might differ according to the professional status within a given firm.³ Our group of treated is made of individuals who work 35 hours a week, declare they work full-time, with no RTT days. For sure these employees belong to firms that have benefited from the reform. Our control group is composed of people who work 39 hours and more and do not have RTT days (see boxes in table 1). For sure this last group is not affected by the reform.

At this stage, firms that have opted for mixed solution, such as not reducing or reducing only partly the working hours and giving additional day-offs (first line of table 1) are not taken into account. The idea is that the reform has more visible effects on time-allocation if the changes are regular such as

¹ For instance the percentage of companies that applied the reform was 27% in industry, 22% in construction and 18% in service industry.

² As, it is not easy to match individuals on the basis of the characteristics X, Rosenbaum and Rubin (1983) used a function of those variables on the probability of being treated, called the propensity score.

³ The common situation is that only manual workers work 35 hours a week whereas executives in the same firm are concerned by another legislation and would benefit from additional day-offs instead of a reduction of hours.

in case of daily or weekly hour reduction rather than occasional such as in case of yearly additional day-offs. The free time regular gift given by the 35 reform is more likely to affect sustainably the family organization.

Table 1: Sample size of different group of workers according to the firm workweek legislation

	Workweek		
	35 h	36h-38h	39h +
RTT days		RTT N = 830	RTT & overtime N = 1956
No RTT days	35h N = 1840	35h+Overtime N =373	Overtime or no reform of working time N = 1798

In order to select comparable groups within our sample, we include several characteristics that might affect both the treatment (belonging to a firm having implemented the reform) and the outcomes (time-allocation after the reform). The set of conditional covariates used to compute this propensity score are: sex, education level (5 levels), type of household (single, childless couples or couples with children), type of position (manual worker, clerk or executives) and several indicators describing the job types and the firm: the size of the firm (4 sizes) and the branch of activity (in nine categories).

Propensity score estimations are presented in appendix 1. Figures in appendix 2 report the smoothed densities of the propensity scores for both beneficiaries and non-beneficiaries. The common support is very good. Treated and controls populations share enough common traits. In other words, employees who benefited from workweek regulation do not differ so much in terms of observable characteristics from workers who did not, and we can easily find a twin. Of course, they can still differ by non-observable individual characteristics.

It is clear from appendix 1 that firm characteristics play a greater role in the propensity to work 35h than individuals' ones. It means than, from an individual point of view, belonging to a firm which implemented 35 h reform is almost random and that matching analysis are particularly suited in that case. It remains that people may orient preferably toward firms which have implemented the reform. For robustness check, we have implemented an additional estimation on the specific sample of wage-earners that were employed in the same company at the time of the reform, i.e. with at least eight years tenure.

Each treated observation is matched with one or a set of observations of the controls. Three different algorithms have been used to match treated and controls: the k nearest neighbors (here two neighbors), all the neighbors within a defined distance called caliper matching (here we took

0.01 as a distance) and a kernel estimator⁴. Bootstrap method resampling with 200 iterations was used for the latter. Since obtained results are robust to the different specifications, we present and comment here only results based on a kernel estimator. We observe the Average treatment effect on the treated (ATT).

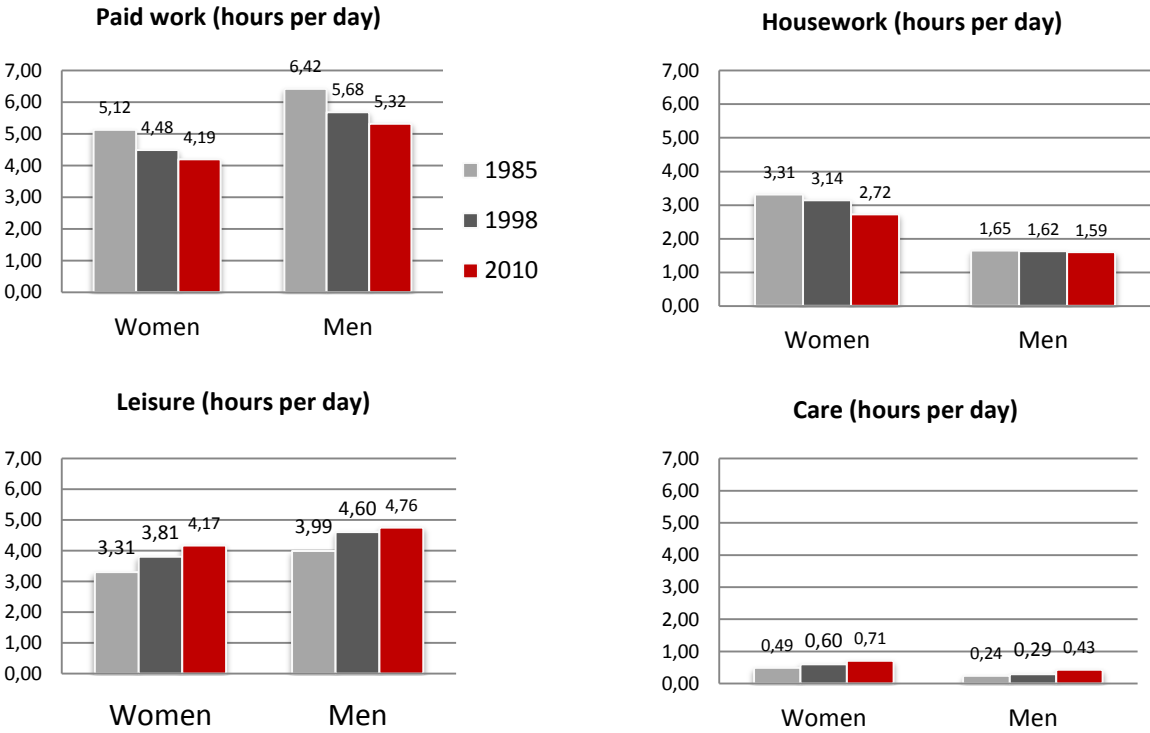
The balancing tests in Appendix 3, that check the quality of the match, are satisfied. T-tests for equality of means between the treated and non-treated groups show no differences after matching, proof of a good balancing. The variances in both populations are also similar (expressed by the % bias). The standardized bias after matching is also less than 5% after matching. This is less true when propensity distributions are separated into several blocks: in some case, the mean of propensity score in each block is not systematically equal between treated and controls.

6. Results

6.1. Descriptive statistics

Figure 3 displays the evolution of time use from the 1980s. It shows a trend in decreasing working time and increasing leisure for men and women since the 80s. We note that the decrease in working time started before the 35 hour workweek regulation, and that the decrease was higher during the 1990s than later. Housework has decreased for women while it is stable for men. On the other hand, childcare time has slightly increased, both for men and women.

Figure 3: Evolution of time main activities



⁴ Kernel estimator relates each worker who benefited from the 35h reform to all the workers who did not benefit and work full-time, by assigning to the latter a weight inversely proportional to their distance from the 35h beneficiaries.

6.2. Matching analysis results

Table 2 reports the results for the whole population, according to the day of the diary was filled in (either on weekdays and week-end days), and according to sex. We present time use for the treated population, i.e. employees whose firm applied 35 hours workweek regulation and for controls, i.e. similar persons whose firm has not implemented the reform.

Of course, workers who benefited from the reform spend less time on work, around half an hour per day (34 minutes) in average, then four hours ($34 \times 7 = 238$ min) weekly which corresponds to the workweek reduction from 39 to 35 hours. Workers who benefit of the reform spend one additional quarter (16 minutes) on leisure per day, which represents an increase of 5%, they spend around 10 minutes more on housework. Beneficiaries of the reform also spend more time on personal care, but the difference is not significant.

Since the reform concerns working time, it should have affected more strongly weekday schedules rather than week-end schedules. But a new organization of time use between weekdays and week-end days might emerge: as people have more time during workweek, they can do domestic tasks previously performed during the week-end, and thus have more time for leisure on week-ends. However, such reallocation of time over week days does not appear to have occurred: our results show no significant effect of the workweek regulation reform on leisure, physiological or unpaid, or working times on week-ends. All the significant changes occurred on week-days. Workers who work 35 hours per week enjoy more leisure and personal care and do more unpaid work.

The reform has modified time use quite differently according to gender. Men who benefit from the reform spend more time on leisure than men who work 39h and more, around half an hour per day, whereas the effect on leisure is very weak and not significant for women. Men also spend more time on unpaid work (domestic plus childcare). The effect is only significant during weekdays, with around 20 minutes more spent on unpaid work. This effect is quite considerable relatively to the long term evolution of male participation in domestic sphere. For instance, between 1985 and 1999, time spent by men on housework has increased by 6 minutes, and childcare by 6 minutes (Champagne et al., 2014). For women, the effects (the whole and on weekday) are also positive for unpaid work but with small magnitude, and the effects are not strong enough to be significant.

Table 2: Global effect of 35h reform, by sex, on weekday and week-ends (minutes per day)

	All (n=3579)							
	Treated	Control	ATT	se				
Paid work	233	268	-34 ***	8.9				
Leisure	314	298	16 **	7.5				
Personnal care	636	630	6	5.4				
Unpaid work	167	156	11 **	5.5				
	Week (n=1997)				Week-end (n=1582)			
	Treated	Control	ATT	se	Treated	Control	ATT	se
Paid work	351	406	-54 ***	10.5	90	82	8	10.5
Leisure	236	217	19 ***	7.3	407	406	1	10.1
Personnal care	611	600	12 **	6.0	666	671	-5	7.9
Unpaid work	149	125	24 ***	6.6	190	196	-6	8.7
	Women (n=1546)				Men (n=2033)			
	Treated	Control	ATT	se	Treated	Control	ATT	se
Paid work	221	245	-24	14.8	249	283	-34 **	14.4
Leisure	282	281	1	11.5	342	315	28 **	11.7
Personnal care	643	638	5	7.5	628	624	4	7.9
Unpaid work	204	193	11	8.3	133	127	6	7.3
	Week Women (n=852)				Week Men (n=1145)			
	Treated	Control	ATT	se	Treated	Control	ATT	se
Paid work	330	374	-45 ***	15.9	375	428	-53 ***	16.0
Leisure	213	206	7	10.8	257	227	30 ***	11.0
Personnal care	621	609	12	8.4	601	593	8	7.7
Unpaid work	183	168	15	10.8	115	95	21 **	8.0

Unpaid work includes housework and childcare tasks

Standards errors are computed by bootstrap estimations on 200 iterations.

The 35h workweek regulation has affected differently workers regarding their family situation (table 3). The main significant result is that men, in particular men in couple with children, have a higher participation to domestic work on weekdays (+ 25 minutes). In this case, the reform has contributed to reduce of gender inequalities in domestic workload division. There is also a huge increase of leisure time for single men and women. However, the limits of our sample sizes are reached here and most of results are not significant because of reduced sample sizes.

Table 3 Effect of 35h reform for men and women on weekday according family situation

	Women in childless couple				Men in childless couple			
	Treated 35h	Control no	ATT	se	Treated 35h	Control no	ATT	se
Paid work	331	407	-76	** 37.3	410	422	-11.7	
Leisure	232	190	41.7		256	238	17.7	
Personnal care	634	624	10		590	606	-16	
Total unpaid work	158	151	7.8		101	78	22.4	
	Women in couple with children				Men in couple with children			
Paid work	331	345	-14.5		353	427	-7.4	*** 24.1
Leisure	180	202	-21.8		246	224	21	
Personnal care	628	609	18.9		613	592	21.5	* 12.0
Total unpaid work	213	206	7.2		132	106	25	** 11.3
	Women alone				Men alone			
Paid work	318	421	-10.3	** 42.0	382	452	-71	
Leisure	276	224	52.7	* 27.6	280	187	93	*** 92.1
Personnal care	616	611	5		600	594	6.5	
Total unpaid work	136	94	41.5	* 24.0	90	82	8	

Unpaid work includes housework and childcare tasks

Standards errors are computed by bootstrap estimations on 200 iterations.

Table 4 presents the results for detailed type of domestic tasks. Seven tasks are distinguished among domestic work: childcare, cooking, cleaning, purchasing goods or services for the household, the maintenance and repairing, gardening. Women clearly spend more time in caring activities, around one quarter per day, i.e. one hour and half a week. This care time concerns mainly childcare, as caring for adult included in the category remains rare. The time saved thanks to the reform is dedicated to children first. This result is in line with the increasing trend of parental activities over time, observed in US and other developed countries (Bianchi & al., XXX; Pailhé et al., 2014). Childcare seem to be a time that parents are not ready to substitute easily because of its emotional dimension. In case on unemployment, Pailhé and Solaz (2008) showed that parental activities were only partly transferable from the working spouse to the unemployed partner because of its emotional dimension. In our case, the “gift of time”⁵ offered by the 35 hours reform to women is devoted mainly to children. It is not the case for men, who spend more time on leisure activities as previously showed, and on maintenance, repairs or gardening activities, around 9 minutes daily. Men profit from the free time to take care of their home, activities considered as semi-leisure activities, they do not benefit from more time during the week thanks to the workweek reduction to perform the core of domestic tasks. Results during weekdays confirm and reinforce previous results. Women spend more time on childcare whereas men devote to maintenance and to a lesser extend to purchasing goods and services for the household. Thus, the traditional division of housework is not modified, and even reinforced by the 35h reform.

⁵ The expression comes from the paper of Hamermersh et al (XXXX)

Table 4: Effect of 35h reform on type of unpaid work by sex and type of day (minutes per day)

	Women				Men			
	Treated	Control	se		Treated	Control	se	
	35h	no	ATT		35h	no	ATT	
Total unpaid work	204	193	11	8.3	133	127	6	7.3
Care	43.1	29.8	13.3 ***	3.7	25.3	27.6	-2.4	2.9
Cooking	55.8	56.8	-0.9	3.3	24.0	23.5	0.5	1.9
Cleaning	62.6	62.7	-0.1	4.1	16.5	19.1	-2.6	2.2
Purchasing goods	25.2	30.1	-4.9	3.6	18.0	17.0	1.0	2.2
Maintenance, repairs	11.0	7.5	3.5	2.1	41.5	32.3	9.2 **	3.8
Household management	4.9	5.1	-0.2	1.2	5.7	4.6	1.1	1.8
Others	1.4	0.7	0.7	0.7	1.7	2.9	-1.3	1.3
	Women weekday				Men weekday			
	Treated	Control	se		Treated	Control	se	
	35h	no	ATT		35h	no	ATT	
Total unpaid work	183	168	15	10.8	115	95	21 **	8.0
Care	45.8	31.1	17.7 ***	5.2	24.6	26.1	-1.5	3.2
Cooking	51.7	50.8	0.9	4.2	21.0	18.8	2.2	1.8
Cleaning	50.4	51.1	-0.7	5.2	11.2	11.5	-0.3	2.1
Purchasing goods	19.5	21.9	-2.4	3.7	14.1	9.3	4.9 **	2.1
Maintenance, repairs	8.7	6.9	1.8	2.7	37.2	21.3	16.0 ***	5.0
Household management	5.9	5.0	0.8	2.2	6.3	4.2	2.0	2.2
Others	1.4	1.4	0.0	1.2	1.0	3.6	-2.6	1.6

Unpaid work includes housework and childcare tasks

Standards errors are computed by bootstrap estimations on 200 iterations.

Finally, we examine how the reduction of the workweek time has affected worker's well-being. This question is not trivial. Indeed, on the one hand, it may have reduced well-being because work intensity has increased, employers asking for the same results in less time (XXX). Do they really enjoy better time or do their work day are so intense that they are as tired as others at the end of the work day?

Benefiting from the 35 h workweek has small effect on subjective well-being. Concerning working conditions, beneficiaries of the workweek reform are as tired as others. They do not declare more fatigue due to hard work or more intense work than non-beneficiaries. They are not more satisfied with housework sharing and with their own personal time. Interestingly, women are more satisfied with their leisure, whereas men are more satisfied with their social relations with friends and parents and time with children. Even if men do not spend significantly more time to care their children, they are more satisfied with the time they spend together. Men probably enjoy more time with the whole family and with their friends. Women have perhaps more time to organize better quality leisure.

Table 5 **Effect of 35h reform on well-being**

	Women				Men			
	Treated	Control	ATT	se	Treated	Control	ATT	se
	35h	No			35h	No		
Often tired	0.30	0.31	-0.05		0.29	0.31	-0.02	
Because work hardness	0.17	0.15	0.02		0.19	0.21	-0.02	
Because work intensity	0.25	0.28	-0.03		0.22	0.23	-0.02	
Couple satisfaction	5.23	5.33	-0.10		5.37	5.27	0.10	
Leisure satisfaction	3.48	3.00	0.48	* 0.25	3.79	3.65	0.14	
Social relation satisfaction	4.59	4.55	0.03		4.69	4.43	0.26	** 0.13
Time with children satis.	4.13	3.90	0.24		4.33	3.92	0.41	** 0.16
More housework share	0.61	0.61	0.01		0.04	0.02	0.02	
Time for oneself	0.66	0.62	0.04		0.63	0.57	0.06	

Unpaid work includes housework and childcare tasks

Standards errors are computed by bootstrap estimations on 200 iterations.

Robustness checks

Working in a firm in which the reform has been implemented might be a choice for workers after the beginning of the reform. Workers who have a preference for leisure rather work might try to find a job in such a firm. Even if the high rate of unemployment and rigidity of the French labor market makes this assumption to be far from plausible, it could exist. As a robustness check, we restricted the estimation to the subsample of wage-earners who were already in the firm when the workweek reform has been implemented (before 1st January 2001). Of course, this selection involves other drawback and possible bias, as selecting more stable and older workers. However, our results on this specific sample are very close to those previously found for leisure and working time of men, even not significant because of sample size reduction. Women still use their additional time to spend more time on care activities, with their children.

Table 6 Effect of 35h reform for workers with at least 8 year tenure

	All			
	Treated	Control	ATT	Se
	35h	no		
Paid work	231	268	-37 ***	15.2
Leisure	311	284	27.6 **	
Personnal care	636	633	2	8.1
Unpaid work	181	177	4	8.4
Care	24.9	23.7	1.2	

	Women				Men			
	Treated	Control	ATT	Se	Treated	Control	ATT	se
	35h	no			35h	no		
Paid work	215	239	-24	21.0	245	277	-32	23.5
Leisure	278	266	12	15.4	336	309	27	17.8
Personnal care	644	640	4	11.1	627	630	-3	12.6
Unpaid work	217	213	4	12.5	146	139	7	12.5
Care			13 ***	4.8			-7.4	5

Unpaid work includes housework and childcare tasks

Standards errors are computed by bootstrap estimations on 200 iterations.

Conclusion

Finally, who profit from the reform? Both men, who spend more time on leisure, and women who spend more time with their children, and children as well, who are more likely to spend time with their working mother, especially during weekdays. Since men spend more time on semi-leisure activities, such as repairing and gardening, the home and the garden should be also in better shape, thus living environment may be improved.

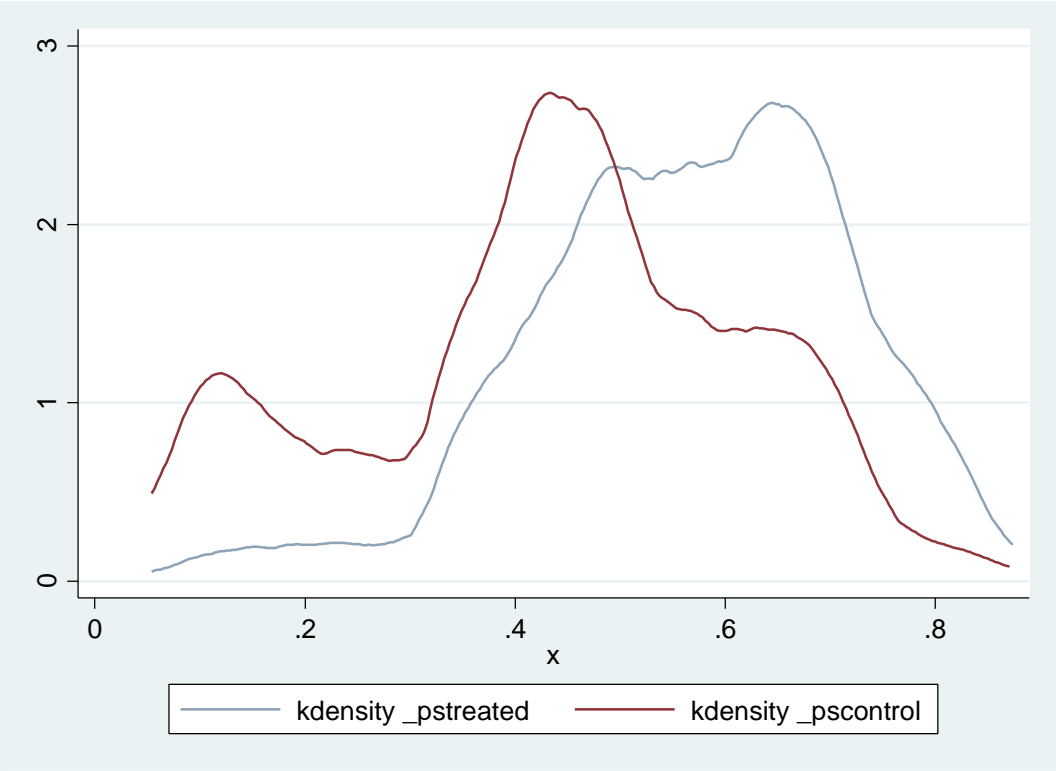
Concerning gender equality, our results are twofold. First, changes correspond to gender stereotypes and norms, women additional activities being mainly devoted to their maternal role, and men performing the most “male-oriented” activities such as repairs and gardening, or already shared activities such as purchase rather than “feminine oriented tasks”. However, men are a little more engaged on housework activities at the end.

Up to now, we looked at the effect of the reform for beneficiaries only. We would like to see how the reform by giving another value to work might have also have affected also pairs. In a further work, we will take into account both partners in the couple by first introducing some characteristics on the time constraints and work schedule of the possible partner since schedules should interact themselves as Goux et al. found. Secondly, we could see if spouses of beneficiaries have different time use patterns than spouse from non-beneficiaries to see spill-over effect of the reform. Finally, we could also evaluate the global effect of the reform (intention to treat) for the whole population using differences in differences methods.

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Appendix 1 Common support of propensity score (men and women together)



Appendix 2: Estimation of the propensity score for being 35hours workweek beneficiaries

	all	
	Coef.	Std. Err.
sex	0,347 ***	0,049
No diploma	0,033	0,093
professional	0,084	0,081
general	0,229 **	0,096
First degree	0,157 *	0,090
University	ref	
Manual worker	1,144 ***	0,091
Clerk	1,066 ***	0,083
Executives	ref	
Firm size <50	-0,048	0,218
50-199	0,487 **	0,222
200-499	0,499 **	0,228
>=500	0,365	0,226
farm industry	0,289 ***	0,070
Construction	0,094	0,085
grocery	0,331 ***	0,075
finance	0,200	0,127
administrative	0,133	0,109
tourism	0,159 *	0,095
other services	0,483 ***	0,090
leisure	0,534 ***	0,106
_cons	-1,905 ***	0,244
pseudoR2	0,100	
N	3579	

Appendix 3: Balancing tests

Variable	Unmatched Matched	Mean		%bias	%reduct bias	t-test	
		Treated	Control			t	p> t
sex	U	1.4897	1.3736	23.6		7.06	0.000
	M	1.4897	1.4968	-1.4	93.9	-0.42	0.672
No diploma	U	.16787	.1573	2.9		0.86	0.392
	M	.16787	.17569	-2.1	26.0	-0.62	0.534
professional	U	.46304	.41517	9.7		2.89	0.004
	M	.46304	.45886	0.8	91.3	0.25	0.802
general	U	.12451	.09719	8.7		2.60	0.009
	M	.12451	.11338	3.5	59.2	1.03	0.302
First degree	U	.14619	.12528	6.1		1.83	0.068
	M	.14619	.14914	-0.9	85.9	-0.25	0.803
University	U	.09839	.20506	-30.1		-9.00	0.000
	M	.09839	.10293	-1.3	95.7	-0.45	0.651
Manual worker	U	.43191	.34888	17.1		5.11	0.000
	M	.43191	.43098	0.2	98.9	0.06	0.955
Clerk	U	.51973	.42247	19.6		5.85	0.000
	M	.51973	.52037	-0.1	99.3	-0.04	0.969
Executives	U	.04836	.22865	-54.1		-16.19	0.000
	M	.04836	.04865	-0.1	99.8	-0.04	0.968
Firm size <50	U	.51529	.64831	-27.2		-8.14	0.000
	M	.51529	.53216	-3.5	87.3	-1.01	0.311
50-199	U	.2418	.1573	21.3		6.36	0.000
	M	.2418	.23209	2.4	88.5	0.68	0.494
200-499	U	.11506	.07472	13.8		4.12	0.000
	M	.11506	.102	4.5	67.6	1.26	0.208
>=500	U	.1184	.10955	2.8		0.83	0.405
	M	.1184	.12371	-1.7	39.9	-0.49	0.625
farm industry	U	.20345	.1736	7.6		2.28	0.022
	M	.20345	.19009	3.4	55.3	1.01	0.314
Construction	U	.0945	.13258	-12.0		-3.60	0.000
	M	.0945	.09591	-0.4	96.3	-0.14	0.885
Grocery	U	.15564	.1309	7.1		2.11	0.035
	M	.15564	.14802	2.2	69.2	0.64	0.525
finance	U	.03224	.03708	-2.6		-0.79	0.429
	M	.03224	.03286	-0.3	87.2	-0.10	0.916
administrative	U	.04225	.07191	-12.8		-3.83	0.000
	M	.04225	.04458	-1.0	92.1	-0.34	0.731
tourism	U	.06337	.06685	-1.4		-0.42	0.673
	M	.06337	.07111	-3.1	-122.2	-0.93	0.354
other services	U	.10728	.0573	18.3		5.46	0.000
	M	.10728	.10558	0.6	96.6	0.17	0.869
leisure	U	.06392	.04157	10.0		2.99	0.003
	M	.06392	.05927	2.1	79.2	0.58	0.562