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MANDATORY REDUCTION OF WEEKLY
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LABOUR ECONOMICS



Centre for Economic Policy Research

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ABSTRACT

Working 40 Hours or not Working 39: Lessons from the 1981 Mandatory Reduction of Weekly Working Hours*

We use longitudinal individual wage, hours, and employment data to investigate the effect of the 1981 mandatory reduction of weekly working hours in France. A few months after François Mitterrand's election of May 1981, the government, applying its programme, decided first to increase the minimum wage by 5% and, second, to reduce weekly working hours (from 40 to 39) together with mandatory stability of monthly earnings of minimum wage workers and strong recommendations for stability of monthly earnings for other workers (which was, indeed, followed by 90% of the firms). We show that workers directly affected by these changes, those working 40 hours in March 1981, lost their jobs between 1981 and 1983 more often than workers not affected by the changes, those working 39 hours in March 1981; their year-to-year job loss probability increased from roughly 10% to 12.5%. Moreover, workers affected by both minimum wage changes and hours reduction were even more strongly hit: their year-to-year job loss probability increased from roughly 10% to 26%. These results should help us understand the possible effects of the forthcoming mandatory reduction of hours in France, the weekly working hours going from 39 to 35 hours in year 2000. Similar projects are envisaged in other European countries hoping that reduction in working hours is an efficient way of tackling their unemployment problem.

JEL Classification: J23, J31

Keywords: hours reduction, minimum wage, unemployment

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NON-TECHNICAL SUMMARY

The mandatory reduction of weekly hours seems to be gaining ground in the mind of politicians, as well as in the mind of public opinion, as the unique public policy that can efficiently eliminate unemployment. After the passing of a law in 1998 stipulating that they will have to implement a 35 hour working week for year 2002, French firms are in the process of negotiating this, starting from today's 39, with their unions or personnel delegates. The outcome of these various negotiations should help shape the second part of a law that should be passed one year from now. Some Italian or Spanish union leaders or politicians are pushing in the same direction using the French approach as an example to follow. Germany's newly elected government seems also to be following the same route, inspired by the famous Volkswagen agreement.

Even though the media are full of discussions on the potential effects of these laws, there are very few empirical assessments of such ideas: leaving the floor to views based on political prejudices (see however J Hunt (1998) who mostly focuses on the German case). This is all the more frustrating when France have already attempted to manipulate working hours in order to reduce unemployment. In 1981, a few months after François Mitterrand's election, the socialist government, applying its programme, decided to shorten the working week by cutting hours. Hence, the weekly working hours went from 40 to 39. It is fair to say that the election of François Mitterrand was not foreseen by most political analysts. Furthermore, the victory of the socialists at the parliamentary elections a few weeks later, was also difficult to predict. Therefore, even though the reduction in hours was included in the socialist's programme, it was almost totally unexpected six months before the elections. The hours reduction took place at the beginning of 1982, just after a 5% increase in the French minimum wage, the SMIC.

This article investigates the effects of this reduction of the weekly working hours. We will use panel data from the French labour force survey (*Enquête Emploi*). Our results show that workers who were working 40 hours a week in March 1981 are less likely to be employed in 1983 than identical workers who, in 1981, were working 39 hours a week. Even though minimum wage workers were hit the hardest, workers with compensations well above the minimum were also affected. We also investigate employment to non-employment transitions in 1981, before the law was passed and we show that, in March 1981, employers working 40 hours appeared to be less likely to transit through non-employment than those working 39 hours. Hence, we find that the mandatory reduction of weekly working hours can be blamed for the increase in job losses that followed the passing of that law.

Introduction

The mandatory reduction of weekly hours seems to be gaining ground in the mind of politicians as well as in the mind of the public opinion as the unique public policy that can efficiently eliminate unemployment. After the passing of a law in 1998 stipulating that they will have to implement a 35 hours working week for year 2002, French firms are in the process of negotiating the forthcoming 35 hours, starting from today's 39, with their unions or personnel delegates. The outcome of these various negotiations should help shape the second part of a law that should be passed in one year from now. Some Italian or Spanish union leaders or politicians push in the same direction and use the French example as commendable. Germany's newly elected government seems also to follow the same route, inspired by the famous Volkswagen's agreement.

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In the next section, we describe the data that are used in the analysis. Then, we present our estimating methodology and our results. A full section is devoted to robustness checks. Finally, we briefly conclude.

1 The French Labor Force Survey

Every year, 60,000 domiciles are randomly sampled in the stock of all houses and apartments. All corresponding households are interviewed. Each person in the household is surveyed. One third of the sample is renewed every year. Hence, all persons in the household are followed at most three times. Usual household and individual characteristics are available for all surveyed individuals. The employment status of the individuals are defined according to the ILO definitions. Monthly wages (grouped by bands of 500 French Francs, roughly 100

US \$) and usual weekly hours are also available. The survey takes place in March of every year. However, because of the 1982 population Census, the 1982 survey took place in January of the same year. Therefore, the 1982 labor force survey took place just before the law on the « 39 hours » since the law came into force february 1st, 1982. Of course, the march 1983 labor force survey took place just a year after the law came into operation. In what follows, we will use information for years 1981, 1982, and 1983 for the same individual allowing us to characterize his or her situation before, at, and after implementation of the law. To concentrate on these issues, we will restrict attention to workers employed full-time in 1981.¹

Table 1 presents the share of workers who worked less than 38 hours a week, between 38 (non included) and 39 hours, between 39 (non included) and 40 hours,² and strictly more than 40 hours a week in 1981 and in 1983. In addition, for year 1983, a column shows the proportion of non-employed workers as a function of their hours of 1981. This table is the base transition matrix of hours before and after the bill was carried.

Notice first that even before the law, a large share of workers, 60%, already had weekly hours below or equal to 39 hours. This table also shows that the distribution of hours has globally moved to shorter hours. The fraction of workers with durations greater than 39 strongly decreased while the fraction of workers with durations below 39 increased. As expected, many workers who were previously working more than 39 hours in 1981 work 39 hours or below in 1983. However, despite these global changes, more than a fourth of all individuals employed in 1983 work strictly more than 39 hours a week in 1983. A large fraction of those workers with more than 40 hours a week in 1981 still work more than 40 hours a week in 1983, even though a non negligible share works less than 39 hours a week in 1983. The change in the law may have forced some firms to alter the workplace organization.³ Finally, notice that some workers, in a context of decreasing hours, work longer hours in 1983 than in 1981.

Table 1 also shows that the transition rate to non-employment for workers employed between 39 (non included) and 40 hours in 1981 is 3.5% larger than the transition rate for workers with hours between 38 (non included) and 39 in 1981. Interestingly, the transition rate to non-employment of workers working strictly more than 40 hours in 1981 is much smaller than all other transition rates. Such workers appear to be quite different than those working shorter hours.

¹ Very few workers were employed part-time in France at that date.

² In fact, response to hours are most of the time round numbers. Indeed, all workers with hours between 38 (non included) and 39 hours declared exactly 39 weekly working hours. Similarly, all workers with hours between 39 (non included) and 40 hours declared exactly 40 weekly working hours.

³ The fraction of workers employed less than 30 hours, and working full-time, has increased very strongly (non reported table).

**Table 1 : Weekly Hours in 1981 and 1983
and
Employment - Non-Employment Transitions**

Duration in 1981	Non-Employment in 1983	Duration in 1983				Total
		≤ 38]38,39]]39,40]	> 40	
≤ 38	8.70	68.88	13.64	4.20	4.57	12.17
	9.37	35.55	3.88	5.21	4.43	
]38,39]	11.32	18.27	60.51	5.80	4.10	50.11
	50.20	38.83	70.96	29.59	16.36	
]39,40]	14.78	15.94	37.58	22.00	9.70	19.25
	25.18	13.02	16.93	43.11	14.86	
> 40	9.33	16.08	19.05	11.76	43.78	18.47
	15.25	12.60	8.23	22.10	64.36	
Total 1983	11.30	23.58	42.74	9.83	12.56	
Total employed in 1983		26.58	48.18	11.08	14.16	

Source : Enquête Emploi. Workers employed full-time in 1981. In each cell, the first number corresponds to the fraction of all workers with the 1981 duration given in the row that have a duration in 1983 given by the column. The second number corresponds to the fraction of all workers with the 1983 duration given in the column that had the 1981 duration given in the row. Number of observations : 11,143.

As such, these results do not constitute definitive evidence of the adverse impact of the 1981 mandatory reduction in hours on employment - non-employment transitions. Obviously, they may stem from the skill composition of the group of workers employed 40 hours vis-à-vis the skill composition of the group employed 39 hours in 1981. In particular, one must bear in mind that the period was also a period of increase of the minimum wage (see Abowd, Kramarz, Lemieux, and Margolis, 1999 and Abowd, Kramarz, and Margolis, 1999). Hence, if the fraction of minimum workers is larger for those working 40 hours, results from Table 1 would be easy to interpret. Table 2 presents the 1981 characteristics of workers employed between 38 (non included) and 39 hours in the first column and of workers employed between 39 (non included) and 40 hours. Two differences emerge : the share of male workers is larger for those employed 40 hours, the fraction of workers with wages between 1.1 and 1.2 times the minimum wage (SMIC) is much larger for those employed 40 hours, while those employed 39 hours earn more often between 1.2 and 1.3 times the minimum wage. But, none of these categories were directly affected by the increase of the SMIC, 5%, that took place in 1981 after François Mitterrand's election.

Table 2 : Characteristics of Workers Employed 39 Hours and 40 Hours

	duration in 81 \in]38,39]	duration in 81 \in]39,40]
male (1=yes)	0.60	0.66
experience	20.9	20.1
seniority < 5 (1=yes)	0.31	0.39
hourly wage/smic < 1.1 (1=yes)	0.08	0.10
hourly wage/smic \in [1.1,1.2[(1=yes)	0.15	0.34
hourly wage/smic \in [1.2,1.3[(1=yes)	0.45	0.26
hourly wage/smic \in [1.3,1.4[(1=yes)	0.14	0.13
hourly wage/smic \geq 1.4 (1=yes)	0.18	0.17
less than high school (1=yes)	0.85	0.86
high school-baccalauréat (1=yes)	0.10	0.08
some university (1=yes)	0.04	0.07
works in manufacturing (1=yes)	0.54	0.57
short-term contract (1=yes)	0.015	0.017

Source : Enquête Emploi. Number of observations : 6192, of which 4,465 have a duration of 39 hours and 1,727 have a duration of 40 hours.

We take the same data and perform a logistic regression to further examine differences between workers employed 39 hours and workers employed 40 hours in 1981. Results are presented in Table 3.

Estimation results confirm what was apparent in Table 2. Education, sex, and hourly wage are important determinants of hours. More senior workers tend to work 39 hours. Finally, the industry or the experience do not seem matter.

Table 3 : Working 40 Hours in 1981

variable	coefficient	standard error
leaves in Ile de France	0.07	(0.07)
male	0.51*	(0.19)
works in manufacturing	0.05	(0.06)
high school graduate - male	-0.26	(0.15)
some university - male	0.37*	(0.18)
high school graduate - female	0.06	(0.17)
some university - female	0.86*	(0.22)
experience	0.01	(0.04)
experience ²	0.29	(0.38)
experience ³	-0.15	(0.13)
experience ⁴	0.02*	(0.01)
seniority	-0.03*	(0.01)
seniority ²	0.04	(0.03)
hourly wage/smic(81) ∈ [1.1,1.2[- male	0.53*	(0.17)
hourly wage/smic(81) ∈ [1.2,1.3[- male	-0.93*	(0.16)
hourly wage/smic(81) ∈ [1.3,1.4[- male	-0.44*	(0.18)
hourly wage/smic(81) ≥ 1.4 - male	-0.54*	(0.18)
hourly wage/smic(81) ∈ [1.1,1.2[- female	0.51*	(0.15)
hourly wage/smic(81) ∈ [1.2,1.3[- female	-0.88*	(0.16)
hourly wage/smic(81) ∈ [1.3,1.4[- female	-0.42*	(0.21)
hourly wage/smic(81) ≥ 1.4 - female	-0.31	(0.21)
short-term contract - male	-0.36	(0.30)
short-term contract - female	-0.19	(0.37)
apprenticeship contract	0.20	(0.80)

Logistic regression. Explained variable : «duration in 1981 ∈]39,40]». Only workers employed 40 hours or 39 hours in 1981 are included. Number of observations : 6,192 .

2 Statistical Framework and Results

The law reducing working time became effective february 1st, 1982. It stipulated that the legal week was 39 hours, it was 40 hours previously, and changed the prevailing regulation on overtime (maximum hours went from 50 to 48 hours, for more details see Marchand, Rault et Turpin, 1983). The government also recommended that monthly pay be unchanged, but no special arrangement was included in the law to enforce this recommendation except for workers paid the minimum wage and working 40 hours. For those workers, full compensation was mandatory. Hence, a worker paid the SMIC and working 40 hours before the law came into force received the same monthly wage after february 1st for 39 hours. But, any newly hired worker i.e. hired after february 1st, also paid the SMIC and working 39 hours received a

monthly paid corresponding to his or her exact number of hours. Therefore, newly hired workers were approximately 100 Francs a month (20 US \$) cheaper than their more senior counterparts.

Furthermore, a 5% mandatory increase in the hourly SMIC was one of the first decisions taken by the newly elected government in mid-1981. The hourly cost of minimum wage workers increased by 7.5% between mid-1981 and mid-1982.

Finally, for all other categories of workers, recommendations of leaving monthly pay unchanged seem to have been followed by firms. A survey carried out in september 1982 shows that more than 90% of workers had their monthly pay unchanged after implementation of the law (Marchand, Rault et Turpin, 1983).

Economic theory tells us that a job is created as soon as the expected returns generated are larger than the expected costs, inclusive of fixed hiring and firing costs as well as all variable costs. Again, once created, to be maintained a job must generate more returns than costs. In this context of mandatory reductions of weekly working hours, all tradeoffs have to be reconsidered. Two opposite effects operate. The first one is the obvious increase in costs since, as mentioned above, monthly pay remained unchanged but hours decreased for workers employed 40 hours a week in 1981. On the other hand, a productivity effect can offset part or all of the costs increase. Changes in productivity come both from potential workplace reorganization following changes in hours and from increased worker productivity due to decreased fatigue. If this last effect is too small, any decrease in hours will lead to employment losses. Indeed, in the institutional context that we examine, substituting newly hired minimum wage workers for relatively more senior workers also paid at the minimum wage is one among many possible routes leading to employment losses.

To evaluate these effects, we compare workers who, in March 1981, had identical characteristics but one : some were working 40 hours a week while the others were working 39 hours a week. In addition, because a minimum wage increase occurred during the same period, we must control for this latter effect. To do so, we apply and extend to mandatory changes in hours the methodology first proposed by Abowd, Kramarz, Lemieux, and Margolis (1999) and Abowd, Kramarz, and Margolis (1999) in the context of real minimum wage increases or decreases in France and in the United States. We present our statistical framework using the terms of controlled experiments. This will make our identification strategy very clear.

An individual i can be affected by the change in durations ($D_i=1, 0$ otherwise) and (or) can be affected by the change in the SMIC ($S_i=1, 0$ otherwise). More precisely, for each individual i , we define four possible situations. She can be affected neither by the change in hours (from 40 to 39) nor by the SMIC increase. Denote this situation (0). She can be solely affected by the SMIC increase (situation (1)). She can be solely affected by the change in hours (situation (2)). She can be affected by both changes (situation (1,2)). Let us denote the employment status in these four situations as $y(0)$, $y(1)$, $y(2)$, and $y(1,2)$, with $y(k)$ equal to 1 if the individual is in situation k and is non-employed and 0 otherwise. The effective state of an individual can be written as follows :

$$y_i = y_i(0) + S_i(1 - D_i)[y_i(1) - y_i(0)] + D_i(1 - S_i)[y_i(2) - y_i(0)] + S_i D_i [y_i(1,2) - y_i(0)]$$

In this framework, $E(y_i)$, the expectation of y_i , is the probability of losing one's job.

Therefore, we try to evaluate the expectation of these unobservable quantities $y_i(1)-y_i(0)$, $y_i(1,2)-y_i(0)$, $y_i(2)-y_i(0)$, and $y_i(1,2)-y_i(0)$. These quantities correspond to the individual differences between those states in which workers are affected by at least one of the changes (in hours or minimum wage) and the state in which they are affected by none of these changes. These quantities are a priori different for each individual and, as mentioned above, unobservable since each individual is observed only in one of these four situations. To identify these various quantities, we assume that conditionally on a set of control variables x_i , being affected by changes in the SMIC or being affected by changes in the hours is independent of the employment status in each of the four possible situations. Hence, the following relation holds :

$$\begin{aligned} E(y_i | x_i, S_i, D_i) &= E(y_i(0) | x_i) + S_i(1 - D_i)E[y_i(1) - y_i(0) | x_i] + \\ &\quad D_i(1 - S_i)E[y_i(2) - y_i(0) | x_i] + S_i D_i E[y_i(1,2) - y_i(0) | x_i] \\ &= g_0(x_i) + S_i(1 - D_i)e_S(x_i) + D_i(1 - S_i)e_D(x_i) + S_i D_i e_{SD}(x_i) \end{aligned}$$

where functions $e_S(x_i)$, $e_D(x_i)$, $e_{SD}(x_i)$, represent the average treatment effect of the various treatment when they are applied respectively one at a time or simultaneously to an individual with characteristics x_i . In the application, our control variables, the x_i , are the sex, the experience (measured as age minus age at the end of schooling), seniority, education (in four categories of diploma), region (Ile de France or not), the employment contract (short-term contract - CDD, apprenticeship contract, long-term contract - CDI). All are measured in March 1981. All the above variables are included in function $g_0(x_i)$ with experience and seniority entering as quadratic functions. However, given the rather small number of individuals with hourly wage comprised between the 1981 real minimum wage and the new 1983 real minimum wage, we constrain functions $e_S(x_i)$ and $e_{SD}(x_i)$ to be constant, i.e. they do not depend on x_i . Therefore, the impact of the SMIC increase and the joint impact of the reduction of hours and of the SMIC increase will be the same for all individuals (non reported tests show that these assumptions appear to be verified in our data). For our pure effect of weekly hours reduction, we consider each variable x in turn. The final estimating equations are as follows:

$$E(y_i | x_i, S_i, D_i) = g_0(x_i) + S_i(1 - D_i)e_S + S_i D_i e_{SD} + D_i(1 - S_i) \sum_k e_D^{k,l} 1(x_i^l \in A_{k,l})$$

where $1(\cdot)$ is a function equal to 1 when the condition between parentheses is verified and 0 otherwise, where there are k categories, $A_{k,l}$ for l th variable (sex, education,...), and where $\sum_k 1(x_i^l \in A_{k,l}) = 1$.

For those workers that were not affected by the changes in the SMIC, we also examine the following equation :

$$\begin{aligned} E(y_i | x_i, S_i = 0, D_i) &= E(y_i(0) | x_i) + D_i E[y_i(2) - y_i(0) | x_i] \\ &= g_0(x_i) + D_i e_D(x_i) \end{aligned}$$

and, therefore, estimate the following regressions :

$$E(y_i | x_i, S_i = 1, D_i) = g_0(x_i) + D_i \sum_k e_D^{k,l} 1(x_i^1 \in A_{k,l})$$

By analogy, the previous framework can be extended to logistic regressions:

$$P(y_i = 1 | x_i, S_i, D_i) = F\left(g_0(x_i) + S_i(1 - D_i)e_S + S_i D_i e_{SD} + D_i(1 - S_i) \sum_k e_D^{k,l} 1(x_i^1 \in A_{k,l})\right)$$

and

$$P(y_i = 1 | x_i, S_i = 0, D_i) = F\left(g_0(x_i) + D_i \sum_k e_D^{k,l} 1(x_i^1 \in A_{k,l})\right)$$

where F is such that $F(z) = 1/(1 + \exp(-z))$. Indeed, resulting estimates are less direct to interpret. For instance with the latter equation, we compare the probabilities of losing their job between 1981 and 1983 of workers employed 40 hours in 1981 and workers employed 39 hours at the same date. This writes as $P(y_i = 1 | x_i, S_i = 0, D_i = 1) - P(y_i = 1 | x_i, S_i = 0, D_i = 0)$. Since estimated effects are small enough and the proportion of workers becoming non-employed is also small, the following relation holds:

$$\frac{P(y_i = 1 | x_i, S_i = 0, D_i = 1) - P(y_i = 1 | x_i, S_i = 0, D_i = 0)}{P(y_i = 1 | x_i, S_i = 0, D_i = 0)} \approx \sum_k e_D^{k,l} 1(x_i^1 \in A_{k,l})$$

Therefore, the estimated coefficients must be interpreted as an elasticity.⁴

The estimates of the linear probability model are presented in Table 4 while the estimates of the logistic model are presented in Table 5. Both tables have the same structure. Both equations are estimated on workers employed either 39 or 40 hours in 1981. Column (1) presents estimates for all such workers while column (2) restricts attention to workers with 1981 hourly wage not included in the 1981 real minimum wage and the 1983 real minimum wage interval. Hence, abstracting from substitution effects, this latter group is not affected by the minimum wage change (we adopt here the same type of identification restriction as the one adopted in Abowd, Kramarz, Lemieux, and Margolis, 1999 and Abowd, Kramarz, and Margolis, 1999). Each different panel gives the estimates of a different equation, each corresponding to different x variables. In both tables, the first panel presents aggregate results, the next panels present estimates of hours reduction respectively for both sexes, for manufacturing and service industries, for various seniority levels, for various experience levels, and, finally, for various education levels.

Estimates in the two tables and in both columns of each table give the same picture. First, workers employed 40 hours in March 1981 have lost their jobs between 1981 and 1983 more often than workers employed 39 hours at the same date. The mere passage from 40 to 39

⁴ Remember that all workers with hours strictly above 39 and inferior or equal to 40 declared exactly 40 hours at the survey. The same holds for workers in the other category, they all declared 39 hours. Hence, the reduction in hours entails a 1 hour decrease for all treated workers in our sample.

hours for workers above the minimum wage (columns (1) and (2) of Table 4) explains 2 of the 3 points observed in the raw differences (Table 2). In terms of probability, the difference is roughly 25% (Table 5), consistent with the previous numbers. Furthermore, workers who were affected by both changes, in hours and in the minimum wage, were even more affected : the raw transition probability is increased by 11 points (Table 4) or 85% (Table 5) of the initial probability. Individuals, paid in 1981 above the 1983 future real minimum wage, most affected by the passage from 40 to 39 hours worked in the service sector industries, were workers with long tenure (above 6 years, Table 4 or even above 10 years, Table 5), with long experience, and low education (lower than high-school diploma). Note also that men and women were equally affected. Hence, minimum wage workers, in relatively small fraction of workers, were the most hardly hit by the joint increase in SMIC and decrease in hours. The institutions initially designed to protect them, such as the minimum wage, shorter hours, and monthly wage rigidity – remember that their monthly pay after the law had to be identical to the one received before, therefore increasing their hourly wage rate – indeed hurt them disproportionately. In addition, workers with higher wages in 1983 were affected. Note that this last group of workers comprises workers with long tenure and low education, maybe slightly overpaid given their productivity and the new number of hours. For all these affected workers, the way the law was set seems to have induced substitution away from them in favor of newly hired workers who could be paid on the basis of their real number of weekly hours.

In the next section, we examine the robustness of these conclusions.

**Table 4 : Reduction of Weekly Working Hours
and
Employment - Non-Employment Transitions
(Linear Probability Model)**

	(1)		(2)	
e _S	-0.058	(0.052)	-	-
e _{SD}	0.114	(0.033)	-	-
e _D	0.021	(0.009)	0.022	(0.009)
e _S	-0.058	(0.052)	-	-
e _{SD}	0.114	(0.033)	-	-
e _D (male)	0.021	(0.011)	0.023	(0.011)
e _D (female)	0.023	(0.017)	0.021	(0.017)
e _S	-0.059	(0.052)	-	-
e _{SD}	0.114	(0.033)	-	-
e _D (manufacturing industries)	0.015	(0.013)	0.016	(0.013)
e _D (service industries)	0.028	(0.013)	0.029	(0.013)
e _S	-0.059	(0.052)	-	-
e _{SD}	0.112	(0.032)	-	-
e _D (seniority < 6 years)	0.008	(0.015)	0.010	(0.015)
e _D (seniority ∈ [6,10[years)	0.032	(0.018)	0.033	(0.018)
e _D (seniority ≥ 10 years)	0.030	(0.014)	0.030	(0.014)
e _S	-0.061	(0.052)	-	-
e _{SD}	0.113	(0.033)	-	-
e _D (experience < 6 years)	-0.031	(0.029)	-0.031	(0.029)
e _D (experience ∈ [6,21[years)	0.041	(0.012)	0.041	(0.012)
e _D (experience ≥ 21 years)	0.016	(0.014)	0.017	(0.014)
e _S	-0.058	(0.052)	-	-
e _{SD}	0.114	(0.033)	-	-
e _D (dipl. lower than high-school)	0.019	(0.010)	0.020	(0.010)
e _D (dipl. equiv. to high-school)	0.040	(0.028)	0.037	(0.028)
e _D (dipl. greater than high-school)	0.025	(0.036)	0.025	(0.036)

Source : Enquête Emploi. The explained variable is « non-employed in March 1983 ». Number of Observations : 6,192 (column (1)) and 5,991 (column (2)). Observations in column (1) include all workers employed in March 1981 and working 40 or 39 hours a week (full-time). In column (2), we exclude workers with a 1981 wage between the 1981 and 1983 real minimum wage. In addition to the variables shown in the table, explanatory variables include the sex, education (3 categories), experience (quadratic form), seniority (quadratic form), contract type (short-term contract, long-term contract, apprenticeship), an indicator for leaving in the Ile de France region. Standard errors, given between parentheses, are robust to heteroskedasticity.

Table 5 : Reduction of Weekly Working Hours
and
Employment - Non-Employment Transitions
(Logistic Model)

	(1)		(2)	
e _S	-0.610	(0.676)	-	-
e _{SD}	0.847	(0.198)	-	-
e _D	0.235	(0.096)	0.241	(0.097)
e _S	-0.609	(0.676)	-	-
e _{SD}	0.848	(0.199)	-	-
e _D (male)	0.218	(0.119)	0.241	(0.120)
e _D (female)	0.266	(0.161)	0.241	(0.162)
e _S	-0.614	(0.676)	-	-
e _{SD}	0.845	(0.199)	-	-
e _D (manufacturing industries)	0.163	(0.124)	0.167	(0.125)
e _D (service industries)	0.343	(0.150)	0.352	(0.152)
e _S	-0.625	(0.676)	-	-
e _{SD}	0.830	(0.199)	-	-
e _D (seniority < 6 years)	0.119	(0.142)	0.135	(0.142)
e _D (seniority ∈ [6,10[years)	0.272	(0.221)	0.281	(0.221)
e _D (seniority ≥ 10 years)	0.348	(0.147)	0.343	(0.147)
e _S	-0.628	(0.677)	-	-
e _{SD}	0.840	(0.199)	-	-
e _D (experience < 6 years)	-0.028	(0.244)	-0.030	(0.246)
e _D (experience ∈ [6,21[years)	0.404	(0.163)	0.426	(0.163)
e _D (experience ≥ 21 years)	0.220	(0.125)	0.221	(0.125)
e _S	-0.613	(0.676)	-	-
e _{SD}	0.843	(0.199)	-	-
e _D (dipl. lower than high-school)	0.200	(0.104)	0.211	(0.104)
e _D (dipl. equiv. to high-school)	0.622	(0.354)	0.565	(0.355)
e _D (dipl. greater than high-school)	0.276	(0.381)	0.276	(0.381)

Source : Enquête Emploi. The explained variable is « non-employed in March 1983 ». Number of Observations : 6,192 (column (1)) and 5,991 (column (2)). Observations in column (1) include all workers employed in March 1981 and working 40 or 39 hours a week (full-time). In column (2), we exclude workers with a 1981 wage between the 1981 and 1983 real minimum wage. In addition to the variables shown in the table, explanatory variables include the sex, education (3 categories), experience (quadratic form), seniority (quadratic form), contract type (short-term contract, long-term contract, apprenticeship), an indicator for leaving in the Ile de France region. Standard errors are given between parentheses.

3 Robustness of the Results

All of the above results are dependent on the quality of the sample that we studied as well as the quality of the responses that were provided, more particularly for the number of hours question. Therefore, we conducted various robustness tests.

First, the sample that we used comprises all individuals surveyed for the first time at the March 1981 labor force survey and who could be followed in 1982 and in 1983. Hence, if some of these individuals left the sample (after moving from their house, for instance) and have specific employment behavior, different from the rest of the sample, our estimation results may well be biased. It is difficult to correct for this attrition bias, save comparing observed characteristics of the two subsamples. We conducted this comparison between characteristics of workers present at all dates and those of workers leaving the sample after 1981. It revealed no difference. Another method rests on the following fact : the 1982 survey took place exactly when the law was instituted. Therefore, we reestimated the same equations on two different panel datasets. For the first one, we concentrate on the 1981-1982 transitions. For the second one, we concentrate on the 1982-1983 transitions. In this last case, individuals belong to households that were surveyed for two different waves of the French labor force survey, the 1981-1983 wave and the 1982-1984 wave. For the first wave, 1981-1983, individuals were surveyed for the second and third time, while, for the second wave, 1982-1984, individuals were surveyed for the first and second time. Hence, in terms of attrition bias, this second subsample possesses better properties.

The analyses that were made on the 1981-1982 as well as on the 1982-1983 transitions confirm all of the above results (not reported here but available from the authors). All effects have the same magnitude. There is only one noticeable difference. At both dates, women were more affected than men. To understand how this last result is consistent with the absence of difference between men and women for the 1981-1983 transitions, we must examine how the 1981-1982 transition process took place in reality.

First, it is no surprise to find effects of the decrease in the weekly working hours as early as January 1982 (date at which the 1982 labor force survey took place). Indeed, the Mauroy government announced the forthcoming law as far back as mid-1981. Firms have had time to react to the future law. A proof of this quick reaction comes from the 1981-1982 transition matrix between hours categories (equivalent to Table 1, not reported here). In fact, examination of this transition matrix shows that a large fraction of workers employed 40 hours in 1981 are going to work 39 hours in January 1982, i.e. before mandatory application of the law. Furthermore, inspection of the same data shows that most of these workers that change hours between those two dates are women. Hence, relatively more men are going to be employed 40 hours in January 1982, the date at which the law enters in force.

Simultaneously, as mentioned previously, econometric analysis shows that only women lose employment, men employed 40 hours in 1981 are not affected yet.⁵ Hence, in 1982, few women still work 40 hours. But, as before, these women are going to lose employment more often than men, even though the number of men who lose employment between 1982 and

⁵ The same econometric model (see Section 2) is estimated on the 1981-1982 transitions. The dataset contains slightly more observations than the one used for the 1981-1983 transitions since attrition has less bite.

1983 is much larger. This double effect, sequential and composition, explains that we find no differential effect for men and women in the 1981-1983 transitions (Tables 4 and 5).

The most important characteristic of the mandatory reduction in hours is that it was totally unexpected before the May 1981 election. In particular, in March 1981, date of the survey, it was almost impossible to foresee the outcome of the election and, more importantly for us, the advent of such of a law. But, as mentioned above, the law started to have effects before February 1982, its date of promulgation, since it was fully expected by firms since May 1981. This has an important consequence. We cannot use the 1981-1982 results to assess the pre-treatment behavior of workers employed 40 hours versus the pre-treatment behavior of workers employed 39 hours when investigating the effects of the law. This also explains why we interpreted all the above results in light of the changing institutions : mandatory hours reduction has adversely affected workers employed 40 hours in 1981, in comparison to those employed 39 at the same date.

However, it is still possible that, by nature or for some reason unobservable to us, the pre-treatment behavior (employment - non-employment transitions in our application) of workers with 40 weekly working hours in 1981 differs from the pre-treatment behavior of workers with 39 weekly working hours in 1981. Ideally, we would like to pursue the same estimating strategy, i.e. take data from 1979 or 1980 to 1981 and examine the structure of transitions from employment to non-employment. Unfortunately, this is not possible. Indeed, the French labor force survey program as we know it existed before 1981 but it contained no information on hours as well as no information on wages. No other data source exist with the necessary information (for instance the DAS covers the period of interest but give no information on hours, see Abowd, Kramarz, and Margolis, 1999).

Hence, we follow a slightly different route. We use the March 1981 labor force survey. And, we assume that transitions between labor market states were in stationary regime. We distinguish between 4 states : non-employment (N), employment with a 39 hours duration (E39), employment with a 40 hours duration (E40), employment with any other duration (EA). Let us denote $P_{X,Y}$ the transition probability from state x to state y. Therefore, we will try to compare the following probabilities $P_{E39,N}$ et $P_{E40,N}$. Given our stationarity hypothesis, the following relation holds :

$$\Pi_N = P_{N,N} \Pi_N + P_{N,E39} \Pi_{E39} + P_{N,E40} \Pi_{E40} + P_{N,EA} \Pi_{EA}$$

where Π_X denotes the proportion of workers in state X. Since $\Pi_N + \Pi_{E39} + \Pi_{E40} + \Pi_{EA} = 1$, we can rewrite the previous equation as follows:

$$\Pi_N = \frac{P_{N,EA}}{1 - (P_{N,N} - P_{N,A})} + \frac{P_{N,E39} - P_{N,A}}{1 - (P_{N,N} - P_{N,A})} \Pi_{E39} + \frac{P_{N,E40} - P_{N,A}}{1 - (P_{N,N} - P_{N,A})} \Pi_{E40}$$

To estimate this equation, we first define 40 cells based on sex, diploma (4 categories), and age (5 categories).⁶ Then, we regress the proportion of non-employed workers in the cell on the proportion of workers employed 39 and 40 hours. According to the above equation, if workers with 40 hours do not differ in terms of their employment - non-employment transitions from workers with 39 hours, then the coefficients of the regression should be identical. However, there is obvious heterogeneities between cells. In particular, without

⁶ We tried the same exercise with 80 cells further decomposing age and education. All results are identical.

heterogeneity, we should see no difference between the various proportions of workers in the 4 states. A quick look at the data contradicts this simple view. Hence, we include observable variables in the regression. We also allow the coefficients of interest to vary either by sex, or by education groups (2 groups, high-school and above versus lower than high-school), by age (2 groups). For instance, when we allow for different coefficients for men and women, we estimate the following equation :

$$\begin{aligned}\Pi_N(S) = & C_{0,F} 1_{(S \in F)} + C_{0,H} 1_{(S \in H)} \\ & + C_{0,F} 1_{(S \in F)} \Pi_{E39}(S) + C_{0,H} 1_{(S \in H)} \Pi_{E39}(S) \\ & + C_{1,F} 1_{(S \in F)} \Pi_{E40}(S) + C_{1,H} 1_{(S \in H)} \Pi_{E40}(S)\end{aligned}$$

Results are presented in Table 6. Each line corresponds to a different regression. They show that the coefficients associated with the proportion of workers employed 40 hours in 1981 in the cell are always weaker than those associated with proportion of workers employed 39 hours in 1981. Of course, coefficients associated with 40 hours are always less precisely estimated since the fraction employed 40 hours in each cell is smaller than the fraction employed 39 hours. Therefore, the employment - non-employment transition probability is always weaker before the new government was elected and before the law was implemented in cells with a larger share of workers employed 40 hours. Hence, even though this methodology is imperfect, no other one being available given the data constraints, it seems that the results presented in the previous section may even be downward biased, potentially showing an under-evaluation of the effects of the mandatory change in hours after the 1982 law.

Table 6 : The Proportion of Non-Employed and the Proportion of 39 and 40 Hours Workers

duration in 81 ∈]38,39]	duration in 81 ∈]39,40]	duration in 81 ∈]38,39]	duration in 81 ∈]39,40]
Women		Men	
-1.04 (0.29)	-1.62 (0.58)	-0.79 (0.26)	-1.42 (0.62)
Age < 36		Age ≥ 36	
-1.16 (0.37)	-1.34 (0.62)	-0.94 (0.24)	-2.52 (0.60)
High-School and above		Less than High-School	
-0.97 (0.19)	-1.47 (0.51)	-1.39 (0.38)	-1.30 (0.76)

Source : 1981 labor force survey. Number of Observations : 40. Each line corresponds to a different regression. Standard errors between parentheses.

4 Conclusion

The mandatory reduction of hours, from 40 to 39, that took place at the beginning of 1982, less than a year after François Mitterrand's election, associated with a 5% increase in the French minimum wage, the SMIC, and mandatory (or strongly recommended) stability of monthly wages has led to large employment losses for workers that were affected by these changes. Contrarily to the apparent belief of politicians, firms base their employment decisions on workers labor costs as well as workers productivity. Gains of hourly productivity associated with the reduction of hours appear to have been insufficient to compensate firms for the increase in the hourly pay. Of course, we provide no evidence of potential substitution effects where such workers would be replaced by more efficient ones. In addition, we do not provide evidence on the possible substitution of part-time workers for full-time workers. However, there is no evidence of an increase in the fraction of part-time workers around these dates. The macroeconomic consequences of these changes on total employment are left somewhat undetermined. However, given the structure of French unemployment where the fraction of long-term unemployed is very large, the employment losses that have their origin in these institutional changes must have had large redistributive consequences on the affected workers. In particular, workers most affected were, on one side, minimum wage workers that all such policies are trying to protect and, on the other side, relatively low-educated and senior workers who have greater difficulties once unemployed of finding a new job. In fact, the effect were much stronger for the former category of minimum wage workers with 40 weekly working hours in 1981. Given the mandatory stability of monthly pay for these workers, a decrease in hours and an increase in the minimum wage, it was strongly cost reducing to separate from them and hire new workers, also paid at the minimum but on the basis of their real hours. And firms indeed followed this strategy.

The reader may legitimately wonder whether these conclusions apply to today's French, or more generally European, situation. Remember that firms and unions are in the process of negotiating a further mandatory reduction of hours, from 39 to 35. A first law has been passed forcing firms to negotiate with their unions or personnel delegates. The final law will be voted in one year from now based on outcomes of past negotiations. Indeed, the length of the new process will help firms to accommodate the changes of a potentially sufficient period of time, as opposed to the 1981 situation which was totally unexpected. But, low-wage workers, more precisely minimum wage workers are likely to be adversely affected by the forthcoming change, as their predecessors were, since it appears that their monthly wage should not decrease, inducing a hike in their hourly wage. The effects of the new law would go against some positive recent changes, described in Kramarz and Philippon (1999), resulting from an 18% decrease in employer-paid social contributions for workers paid the SMIC.⁷

⁷ In 1996, employer-paid contributions - health insurance, pensions,... - decreased from roughly 40 % of the wage to 20% of the wage.

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