Potential Benefit Duration and Transitions out of Unemployment for Older Workers: a Regression Discontinuity Approach

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Preliminary version
5 avril 2010

Résumé

This paper investigates the relationship between the length of Unemployment Insurance (UI) entitlement and transitions out of unemployment. Our focus is on older job seekers who usually access to longer benefit periods and may withdraw from the labour force via early retirement. We exploit the 2003 reform of the French UI system that involved substantial cuts in benefits for this specific group. The design of the reform naturally leads us to adopt a Regression Discontinuity framework, comparing the search behaviour of people who became unemployed just before and after the policy change. The validity of this design is empirically assessed and we provide robustness checks accounting for seasonal effects and attrition bias. Our empirical analysis reveals that the reform had a structural impact on the distribution of unemployment duration. The effect on transitions to employment was quite limited and only significant for the more qualified job seekers. The major result of the reform consisted in shifting job seekers from unemployment insurance to unemployment assistance, which largely contributes to explaining the observed spikes in exits from unemployment around the benefit exhaustion date.

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1 Introduction

Since the Lisbon Strategy in 2001, promoting senior employment has explicitly become a priority for most European gouvernements. A series of reforms have been enacted in order to restaure the incentives to work and delay the withdrawals from the labour market. Many of these reforms challenged the unemployment insurance (UI) system to alter - through reductions in benefit generosity - the labour supply of older workers.

A considerable theoretical literature has shown that a less generous unemployment insurance system will increase the optimal job search effort of an unemployed worker and hence result in shorter unemployment duration. Theory also establishes that as the date of benefit exhaustion approaches, job seekers increase the intensity of their job search which is expected to create a "spike" in unemployment exit rate at this point. Empirical studies largely confirm the predictions of job search models concerning the relationship between the generosity of the UI system and the duration of unemployment spells but the effects are quantitatively small, notably when generosity is measured in terms of replacement rates rather than in terms of the maximum duration of benefits[1]. Many studies also report the existence of a spike in the exit rate from unemployment just before benefits expire. However, this fact has recently been questioned by Card et al. [2007], who show that reemployment only accounts for a small part in the emergence of such spike.

Parallel to this mainstream view, Atkinson and Micklewright [1991] stress that the institutional structure of unemployment insurance system has major consequences for both theoretical and empirical analysis. First of all, when analyzing the implications of UI reforms for senior workers one needs to take into account the specificity of this population, which is confronted to the tradeoff between three distinct states, namely unemployment, employment and retirement. For example, Hairault et al. [2008] highlight that the distance to retirement is an important determinant of seniors' labour supply. Although the state supported withdrawal can not be initiated before the pension age is actually reached, in most European countries, the unemployment insurance system offers a variety of early retirement schemes and extended benefit programs for long term unemployed that allow for older workers to exit the labour market well before the legal retirement age. Studies by Lalive [2008] and Kyyrä and Ollikainen [2008] stress the extreme popularity of this indirect pathway to retirement.

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1. See Atkinson and Micklewright [1991], Holmlund [1998], Krueger and Meyer

Second, in European countries characterized by complex welfare states, unemployment insurance is not an isolated system, but largely interacts and often overlaps with other elements of social security. Indeed when unemployment benefits are exhausted, job seekers often shift to either unemployment assistance (UA) or other income support programmes. It is known for a fact that the share of job seekers ending up in these schemes is sensibly higher among seniors compared to younger unemployed, but it is rather difficult to point on the true reasons bringing them in : moral hazard, another pathway to early retirement or serious difficulties to reintegrate the labour market. Pellizzari [2006] suggests that the quantitative importance of these transitions might explain the scant success of reform aiming to enhance labour supply via restrictions in the generosity of unemployment compensation. Unemployed workers would react differently to changes in the rules of the UI system depending on their eligibility to complementary welfare programmes.

This paper investigates the relationship between the length of Unemployment Insurance (UI) entitlement and transitions out of unemployment of older workers. We exploit the 2003 reform of the French UI system that involved substantial cuts in benefits for this specific group. The duration of UI benefits was reduced by 20 % to 66 %, depending on the job seeker former employment history. The reform was processed under high fiscal pressure on the social security system and its main objective was to encourage employment among seniors by mitigating potential disincentive effects of long lasting compensation. Using administrative records of the French National Employment Agency, we consider two sub populations of job seekers, *Filières 6/B* and *Filières 7/C*, who have, respectively, experienced a 22 month and a 9 month reduction in potential benefit duration. Although these two sub populations are not directly comparable due to the selection process based on past labour market history, their parallel analysis remains qualitatively informative on the heterogeneity characterizing older workers. The design of the reform naturally leads us to adopt a Regression Discontinuity framework, essentially comparing the search behavior of people who became unemployed just before and after the policy change. The validity of this design is empirically assessed and we provide robustness checks accounting for seasonal factors by using using pre and post reform cohorts within a combined Regression Discontinuity / Difference-in-Difference approach.

Our empirical analysis reveals that the reform had a structural impact on the distribution of unemployment duration. The effect on transitions to employment was quite

limited and only significant for the more qualified job seekers (Filière 7/C). The major result of the reform consisted in shifting job seekers from unemployment insurance to unemployment assistance, which largely contributes to explaining the observed spikes in exits from unemployment around the benefit exhaustion date.

The reminder of this paper is structured as follows. We first make a point on the organization of French Unemployment Insurance system and the 2003 reform in Section 2. We further describe the data and give some elements of descriptive statistics (Sections 3 and 4). We discuss the empirical strategy in Section 5 and present the results in Section 6. Section 7 finally concludes.

2 Institutional Settings

2.1 The French Unemployment Compensation System

As in most European countries, unemployment compensation in France combines insurance and welfare programs. The Unemployment Insurance system (UI) is funded by contributions from workers and employers and is jointly administrated by representatives of both parts. To qualify for UI benefits, unemployed must register with the local UI agency and be actively searching for work. Additional restrictions require claimants to be under 60, suffer an involuntary job loss and prove at least 4 months of employment in the last 18 months preceding registration. The level of benefits is fully determined by previous earnings. Since the adoption of the *Plan d'Aide au Retour à l'Emploi* in July 2001, benefits are paid at a constant rate and the replacement ratio lies between 57.4% for the highest wages and 75% for the lowest ones. The duration of the entitlement period ranges from 4 to 60 months depending on the age and the employment history of unemployed workers. Non compliance with the eligibility rules is subject to benefit sanctions [2].

The Unemployment Assistance system (UA) is taken on by the State. It grants supplementary income to individuals who have exhausted UI benefits or do not qualify for receiving them. The solidarity allowances are means-tested against household income

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2. Claimants who do not prove active job search, refuse suitable job offers, fail to keep the local UI agency informed about their personal situation and to show to summons at the employment office or make incorrect declarations about everything that is relevant to the payment of the UI benefits may face a temporary or a permanent full or partial reduction of compensation.

and require the unemployed worker to prove 5 years of employment within the 10 previous years before the end of employment. Payments are of fixed amount and may last indefinitely. Workers who do not meet eligibility criteria for unemployment compensation benefits can still apply for other labour market minimum income supports (such as RMI for example).

2.2 Compensation for older workers

Insured unemployed aged above 57 and a half can apply for an exemption from active job seeking[3]. If this claim is satisfied, search activities are no longer mandatory and benefits are paid for the remaining entitlement period. Initially, the main objective of this *Dispense de Recherche d'Emploi* (DRE) scheme was to lower measured unemployment by encouraging early labour force withdrawal. Since the 1990's, DRE is more intensively used than state-financed early retirement programmes. By 2002, it involved about 250 000 older workers, which corresponds to 6% of individuals between 55 and 59 years old.

In addition, the French unemployment compensation system offers a particular pathway to early retirement by providing extended benefits for the oldest unemployed. Job seekers who reach the age of 60 before exhausting their UI entitlement and can prove 100 quarters of contributions to the pension system are allowed to collect benefits until the age of 65 when they automatically become eligible for old-age pension.

2.3 The 2003 Unemployment Insurance Reform

The introduction of the reform took place in the context of degrading economic conditions and under high fiscal pressure on Unemployment Insurance System (ref. table 1). The 2001 economic downturn has provoked an important increase in unemployment inflow and resulted in a growth (+10 percentage points) in coverage rate[4]. Moreover, the preceding period was characterized by a stable economic environment and favorable market conditions, which allowed most workers to build their right for a fresh UI period. By the end of 2002, the Unemployment Insurance recorded the operating deficit of

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3. This age limit can be brought to 55 for insured job seekers who have already contributed to the pension system for at least 160 quarters before the claim.

4. In two years, the coverage rate jumped from from 43 to 53% and approached the level observed in 1992 before the instauration of digressive (over time) unemployment benefits, further suppressed in 2001.

3,7 billions euros, while the stagnation in the labour market stoked the doubts on the financial viability of the system. In the urgent need to restore the financial balance, it was decided by social partners to restructure the compensatory system.

TABLE 1: **Labour market developments**

Year	Real GDP growth, %	Employment growth, %	Unemployment rate, %	UI coverage rate, %	Budget balance, bln. EUR
2000	3,9	3,6	8,6	42,2	1,3
2001	1,9	2,6	7,8	45,7	0,2
2002	1,0	0,6	7,9	50,3	-3,7
2003	1,1	-0,4	8,5	53,4	-4,3
2004	2,5	0,0	8,9	53,2	-4,4
2005	1,9	0,6	8,9	50,1	-3,2
2006	2,2	1,2	8,9	47,9	3,4
2007	2,3	1,8	8,0	48,0	3,5

Ratified by Agreement Protocol of 20 December 2002, the reform was enacted by the Ministry Decree of 5 February 2003 (with publication in OJ on 8 February 2003). Effective from the 1st January 2003, this reform restricts the access to the Unemployment Insurance and substantially lowers all potential benefit durations. The new legislation operates immediately on the totality of insured individuals entering unemployment after 1st January 2003, and the retroactive application is planned for the unemployed in stock, i.e. with contracts ending before this date. Benefit recipients aged 50 years old or above, receiving benefit payments on the date of 31 December 2002 and with initially announced entitlement period exceeding 45 months were not subject to any revision of benefit duration. For all other individuals, retroactive conversions started on 1st January 2004, but were abolished few months later under the social pressure ; all concerned individuals have restored their initial rights.

The changes introduced by the 2003 reform were particularly penalizing for the older workers. The duration of UI benefits was cut by 20 % to 66 %, depending on the job seeker past employment history. The reform's main objective was to promote employment and encourage re-employment of seniors by mitigating potential disincentive effects of long lasting indemnization. Taking into account the particular proximity of this target population to retirement, this policy measure has also affected pension calculations.

TABLE 2: The 2003 Unemployment Insurance Reform

(a) UI System before the 2003 Reform

Category	1	2	3-4		5-6		7-8	
Employment record (months worked)	4 in last 18 months	6 in last 12 months	8 in last 12 months		14 in last 24 months		27 in last 36 months	
			below 50 years old	50 years old or above	below 50 years old	50 years old or above	50 years old or above	55 years old or above and 100 quarters of payments to pension system
Maximum benefit duration	4 months	7 months	15 months	21 months	30 months	45 months	45 months	60 months

(b) UI System before the 2003 Reform

Category	A	B	C	D
Employment record (months worked)	6 in last 22 months	14 in last 24months	27 in last 36 months	27 in last 36 months
			50 years old or above	57 years old or above and 100 quarters of payments pension system
Maximum benefit duration	7 months	23 months	36 months	42 months

3 Data

The empirical analysis is based on the records of French National Employment Agency. The *Fichier Historique Statistique* is an administrative dataset covering all registered unemployed since 1993[5]. It contains exhaustive information on individuals' dates of inflow into and outflow out of the register, socio-demographic characteristics and, most importantly, UI benefits entitlement status. However, we do not have information on employment histories (employment duration, dates and type of contracts) nor insured job seekers' financial situation (previous wage, replacement ratio).

In order to cope with possible inconsistencies in unemployment registration, we assume that unemployment periods less than one month apart belong to the same spell. Unemployment spells can end through the take up of a new job, withdrawal of the labour force or deregistration for administrative reasons. This latter type of exit can be viewed as non random censoring and will therefore be dealt with in the statistical model.

We consider the inflow of workers aged between 50 and 54 years old, who became unemployed between October 2002 and March 2003. We further distinguish two sub populations, based on individuals working history and UI entitlement.

On the one hand, we look at the unemployed who have previously worked for at least 14 months in the two years preceding their registration with the unemployment agency. For this group, the 2003 reform drastically reduced the entitlement period by 22 months depending on the date of contract ending. Workers who lost their job before January 1, 2003 maintained a 45 months UI benefits entitlement period (Filière 6) while those who became unemployed after this date were only granted with 23 months (Filière B).

On the other hand, we examine the individuals who have previously worked for at least 27 months in the 36 months preceding unemployment. For some of those individuals the 2003 reform was associated with a reduction of the UI entitlement period of 9 months. Thus benefits are still paid for 45 months for those with contracts ending before January 1, 2003 (Filière 7), but are only granted for 36 months for those who lost their jobs after this date (Filière C).

Such policy change provides a quasi-experimental setting for studying the causal relationship between potential benefits duration and transitions out of unemployment,

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5. According to Chardon and Goux [2003] estimation based on labor force surveys, 90% of ILO-unemployed would also register at the employment offices.

identification being achieved within each group by comparing the search behaviour of individuals registered before and after January 1st 2003.

Although the individuals belonging to the two distinct subpopulations described above share the same UI entitlement duration before the 2003 reform, they are not directly comparable. In fact, they are selected on different labour market histories (longer record for Filières 7/C, compared to Filières 6/B), possibly related to unobserved characteristics, which might also affect the job finding rates. Inference will therefore be conducted separately on each of sub samples.

Job seekers are observed until December 31, 2007. In order to focus on a homogeneous sample, we make a number of additional sample restrictions. First, we remove from the database the few observations with incomplete information. We also drop disabled job seekers as well as people classified as "non immediately available for work". Lastly, we eliminate benefit recipients who are covered by a different set of unemployment compensation regulations (such as the intermittent du spectacle in the entertainment industry).

In order to account for seasonal factors, we replicate the sample selection scheme and consider two cohorts comparable to the population of interest but belonging to the time periods one year before and one year after the reform. The pre-reform cohort consists of the individuals entering the unemployment between October 2001 and March 2002 and entitled to 45 months of unemployment benefits (for both Filière 6 and Filière 7). By contrast, the post reform cohort covers the individuals, entering the unemployment between October 2003 and March 2004, with the access to unemployment benefits for 23 months (for Filière B) or 36 months (for Filière C). It is important to note that for those two extra cohorts the date of the 1 January 2002 or 2004, respectively, is not associated with any change in benefit entitlement duration.

For all cohorts, we censor the ongoing spells at 48 months to ensure their comparability over the same time span. The information becomes less reliable after four years.

We end up with 6 sub-samples (3 cohorts for each UI category). The distribution of the final sample over those sub populations is displayed in Table 3.

Remarkably, the number of UI recipients entitled to Filière 7/C is 5 times bigger than those entitled to Filière 6/B. Generally, the number of inflows is equally balanced on both sides of the January 1 threshold for pre and post reform cohorts. The difference observed for the reform cohort (2002-2003) might be related to a seasonal decrease in

TABLE 3: **Constitution of cohorts**

Cohort 2001/2002 :	2212 in Filière 6 (1166/1046)	13849 in Filière 7 (7078/6771)
Cohort 2002/2003 :	2276 in Filières 6/B (1354/922)	11214 in Filières 7/C (8066/3148)
Cohort 2003/2004 :	2254 in Filière B (1105/1149)	14633 in Filière C (7285/7348)

Note : The numbers in brackets indicate the number of individuals registered before/after January 1st of the respective year.

size of inflows, to the exclusion from the sample of individuals registered after the 1st January, but entitled to previous (more generous) benefit system, or to other unidentified factors[6].

4 Descriptive statistics

4.1 Sample description

Tables 10 and 11 in the annexe report key background statistics on the job seekers entering unemployment before and after January 1, by cohorts and UI entitlement. The distribution of individual characteristics appears quite stable between cohorts within each of the two UI categories (Filières 6/B and Filières 7/C), but given that the entitlement status is determined by previous work histories, the two UI groups naturally differ in this respect.

While the UI recipients entitled to Filières 6/B mostly enter unemployment after the end of a temporary contract (50%), a layoff is the quasi exclusive reason of a job loss for the individuals of Filères 7/C (80% of entrees).

All individuals entitled to Filières 6/B have, by definition, already been unemployed for at least 10 months in the 36 months preceding the registration with the Unemployment Agency. In the Filière 7/C, on the contrary, only 15% of beneficiaries have experienced an unemployment spell since 1993 (and for the 80% of them this spell was the sole). More generally, Filière 6/B is more affected by unemployment recurrence : 20 % of

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6. This mostly concerns the Filière 7/C which displays a more important gap that can not be solely explained by the two previous arguments.

repeated unemployed undergo through more than 3 spells versus only 5% in Filière 7/C.

The individuals entitled to Filières 7/C are also more educated and qualified.

As to the ongoing unemployed experience, more than half of all registered job-seekers are long term unemployed. Between UI groups, the unemployment duration is 3 months longer for those insured under Filières 7/C on average.

Regarding the exits from unemployment, their number is generally decreasing with unemployment duration but figures X and X provide some interesting evidence on the existence (in both UI groups) of a significant spike in unemployment duration distribution around the time of benefit exhaustion. One should however keep in mind that this evidence is not directly conclusive and may be subject to Card et al. [2007] critics : we consider here all exits from unemployment (and not exits to jobs solely) thus ignoring that large part of these transitions may occur purely mechanically (exits to other support systems after UI exhaustion, for example).

The differences between two UI categories persists when considering the ways the job-seekers leave unemployment. Table 4 displays the distribution of outflow directions for different cohorts separated by the individuals' registration date.

The share of exits to employment is relatively stable across different cohorts of the Filière 6 and varies around 36%. In the Filière 7 this share is initially smaller (29%), but one can easily observe a catch up after January 1, 2003 (new UI benefit regulation) when the proportion of exits to jobs increases to almost 33%.

The exits due to sickness make between 8 and 10 % of all exits for both UI categories and this number remains stable over time.

This stability across cohorts also characterizes the exits to training. Those are however more frequently observed among Filière 7 beneficiaries (10 % versus 7% for Filière 6), which is consistent with higher qualification of these individuals.

The direct transitions to retirement are virtually inexistant (below 1% of exits), which is not surprising taking into account that we consider "young" seniors (aged 50-54), who are far below the legal retirement age and still have time and incentives to search for a new job. However, a significant of those unemployed part - around 9% for Filières 6/B and 14% for Filières 7/C - have access to *Dispenses de Recherche d'Emploi* (DRE), that can be viewed as an early retirement scheme. A striking feature of exits to DRE is

TABLE 4: **Exits from unemployment, by destination state**

	Filières 6/B					
	Cohort 2001/2002		Cohort 2002/2003		Cohort 2003/2004	
	Before	After	Before	After	Before	After
Employment	37,2	37,9	35,3	36,1	35,9	35,4
Training	7,7	8,6	5,6	6,2	5,9	6,5
Sickness	9,2	8,0	9,0	7,7	7,5	7,3
DRE	12,3	9,4	14,3	6,3	9,4	4,3
Retirement	0,4	0,2	0,3	0,0	0,1	0,0
Attrition	29,5	31,2	29,8	32,6	31,8	34,3
Assistance	3,3	4,6	5,4	10,3	7,9	9,7
Censoring	0,3	0,2	0,3	0,8	1,5	2,4

	Filières 7/C					
	Cohort 2001/2002		Cohort 2002/2003		Cohort 2003/2004	
	Before	After	Before	After	Before	After
Employment	28,7	29,2	29,3	32,7	32,6	33,3
Training	9,6	11,3	9,1	9,5	9,7	9,7
Sickness	9,6	10,4	9,5	10,3	8,9	9,6
DRE	19,8	15,6	20,0	8,2	14,6	7,6
Retirement	0,4	0,5	0,5	0,3	0,5	0,5
Attrition	23,6	22,8	23,5	26,7	21,3	23,9
Assistance	8,2	9,9	7,7	11,9	10,0	9,3
Censoring	0,2	0,3	0,3	0,5	2,5	6,1

their strong seasonal pattern : for all cohorts and all UI categories the appeal to DRE is much more frequent among the unemployed registered at the end of the year (before January 1).

The major drawback of our data is the importance of attrition which concerns almost one third of the exits. DARES [2001] shows that at least half of such exits are due to an undeclared take up of a new job, which might explain the larger attrition in Filières 6/B, since outflows to jobs are also more frequent in this category.

An important number of exits in both UI categories occur through the Unemployment Assistance (UA) system. While on average the beneficiaries of the Filières 7/C use this type of exit more frequently than then their peers from the Filières 6/B, both UI categories have experienced an important jump in exits to UA after the introduction of a new legislation. This shift in exits was is in part mechanically dragged by the reduction in benefit duration. Indeed, individuals concerned by the reform and who have not found jobs before the end of their UI entitlement period were almost automatically [7] redirected to the UA system. For the UI categories with larger reduction in benefit duration the time span before switching to UA was even shorter.

4.2   Validity of the design

In this section we report descriptive evidence on the effect of the reform on unemployment duration. We begin with graphical overview and then empirically assess the validity of our identifying assumptions.

Figures 1 and 2 plot the average unemployment duration as a function of the registration day over the period October 2002-March 2003. The dashed vertical line represents the January 1, 2003 cutoff date associated with the policy change. To the left of this assignment threshold insured job seekers were entitled to 45 months of UI benefits (for Filières 6 and 7 indistinctively); to the right, they only were granted with 23 months (Filière B) or 36 months (Filière C). The same figures are plotted for pre and post reform cohorts as graphical falsification test.

For simplicity, we ignore censoring (only 5% of the observations). Besides, we superimpose a linear regression model fit separately to points on each side of the assignment threshold.

The figure shows a clearly discernible jump of about 150 days for the Filières 6/B and of 30 days for Filières 7/C in the average unemployment duration at the date of reform implementation. We do not find similar jumps in the cohorts which are not concerned by the reform.

Apart from seasonal variations, the shape of the graphs seems rather smooth away from the threshold. Moreover, the average unemployment durations on the left the January 1, 2003 threshold are comparable to those observed for the pre reform cohort, while the

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7. Under condition of eligibility to this means tested income support.

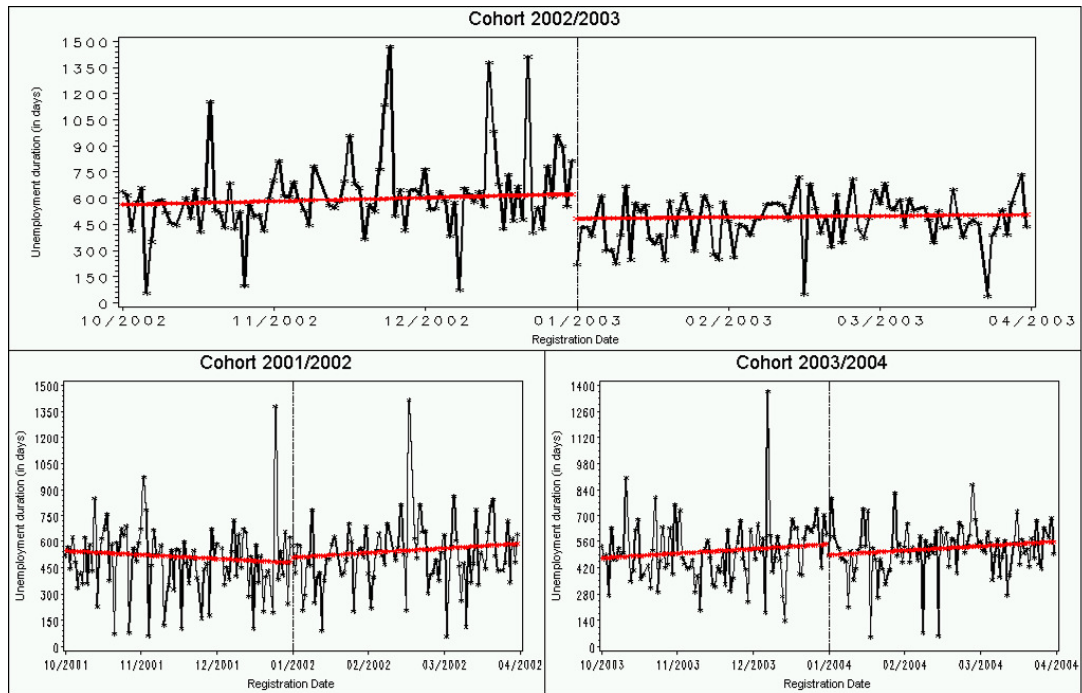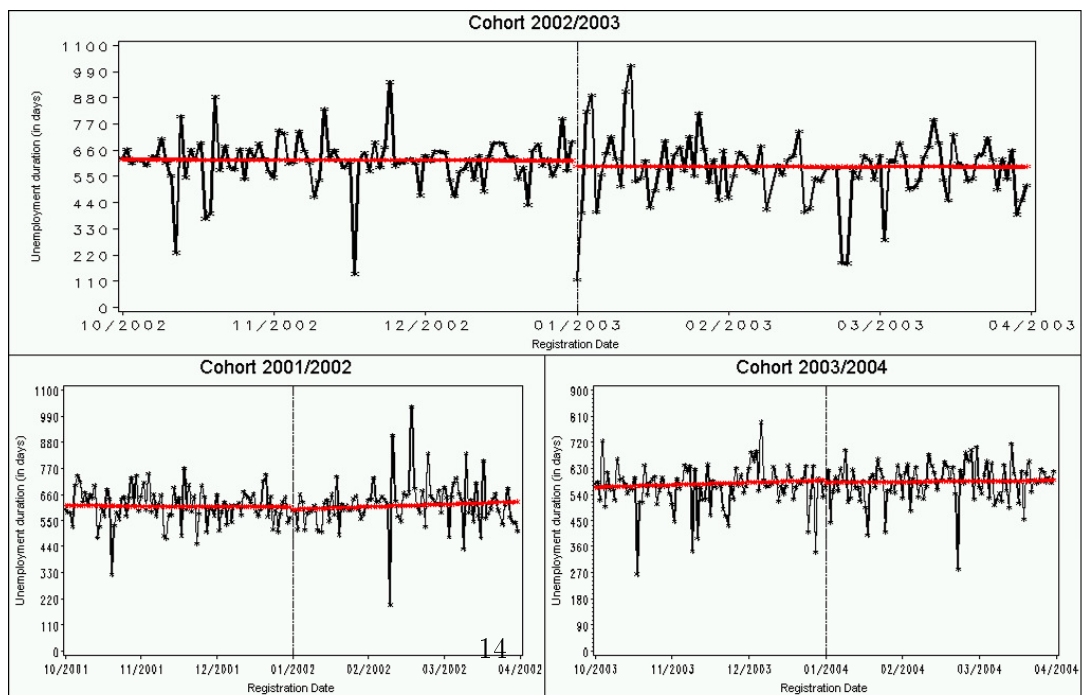Figure 1: Mean unemployment duration by inflow date, Filière 6/B

Figure 2: Mean unemployment duration by inflow date, Filière 7/C

durations on the right of the threshold are of the same order then the ones reported for the post-reform cohort, which suggests a structural change in unemployment duration distributions.

Although the continuity assumption cannot be fully tested, its validity can still be empirically assessed. We follow Lee and Lemieux [2009] and inspect successively the density of the forcing variable and the distribution of observed baseline covariates.

We first investigate the existence of a discontinuity in inflows into unemployment at the January 1, 2003 threshold. Such discontinuity would compromise identification, since it would suggest that individuals might control their entitlement status by manipulating the date of their job loss. Recall that in our case, the timing of the reform was very tight (voted December 20, 2002 ; introduced January 1, 2003), leaving virtually no room for anticipation.

Figures 3 and 4 shows a fairly smooth pattern of unemployment inflow and displays no sign of behavioral response around the time of reform implementation.

Moreover, we have previously shown that for each cohort the sub-populations of unemployed registered just before and after the January 1, 2003 threshold are similar in terms of observed baseline covariates. These results suggest that eligibility status might therefore be considered as locally randomized.

4.3   Exploratory analysis

We continue the descriptive analysis by presenting the empirical hazards and survivor functions, most appropriate for censored data. As they become very noisy at longer durations, the functions are only depicted over the time span until 12 months after benefit exhaustion.

Figures 5 and 6 in annexe display the unemployment hazards and survivor functions for different cohorts (pre-reform 2001-2002, reform 2002-2003, post-reform 2003-2004) and UI categories (Filières 6/B and Filières 7/C).

The shape of the hazard functions, similar for all six sub populations, suggests that for the specific population of older workers, the probability of leaving the unemployment stands constant (about 4 %) over the whole entitlement period, but shows an important upturn (to 24 %) around the date of benefit exhaustion (45 months for Filière 6, 45

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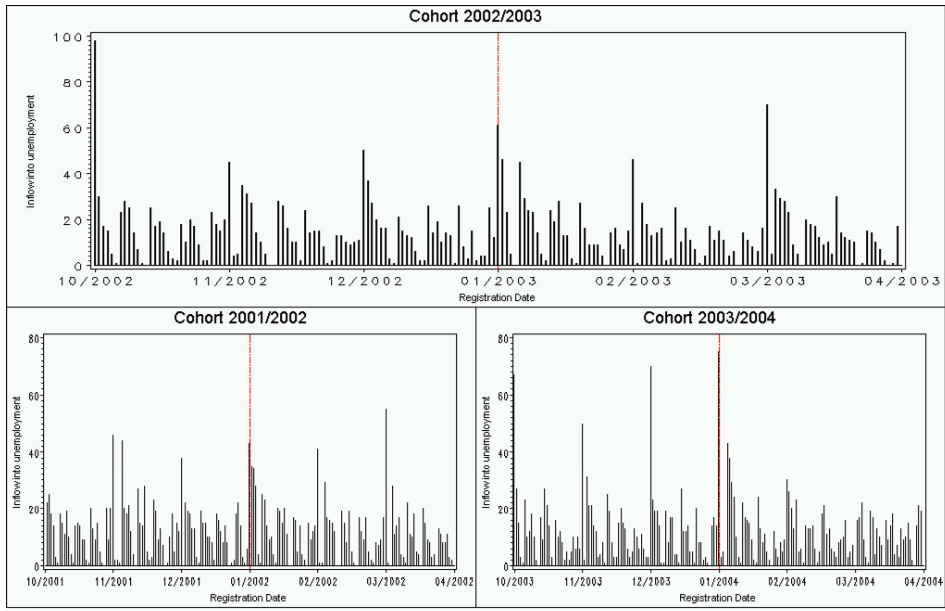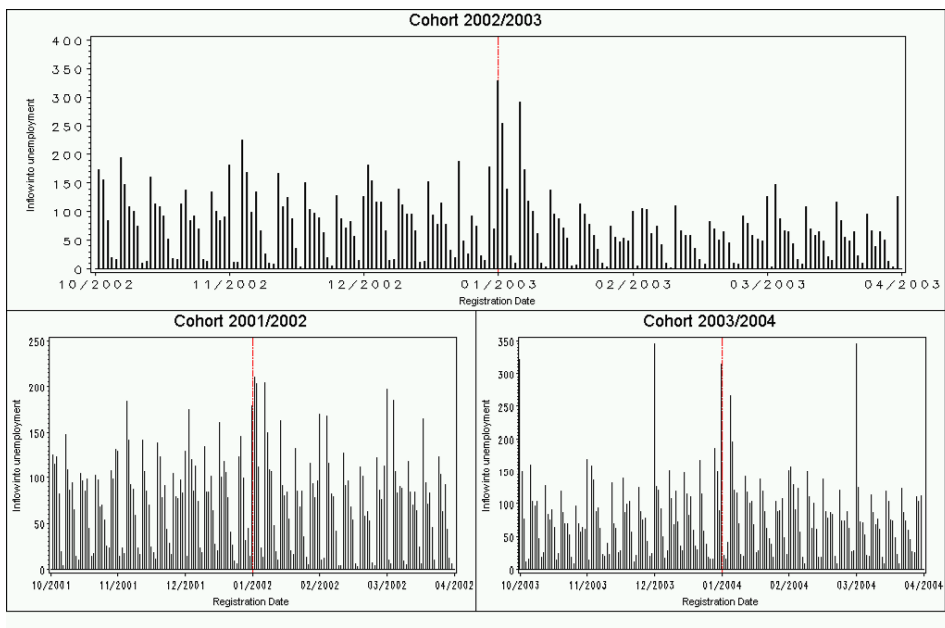FIGURE 3: Inflows into registered unemployment, Filière 6/B

FIGURE 4: Inflows into registered unemployment, Filière 7/C

months for Filière 7, 36 months for Filière C and 23 months for Filière B). After this upwards shift the unemployment hazard does not return to its initial level , but either remains well above (between 8 and 12 %) or even continues to grow (some cohorts of the Filière 7/C). The existence of a spike in exits from unemployment is equally confirmed by the bend observed in the survivor functions around the end of the entitlement period. Generally, the number of individuals surviving in unemployment after this date is quite low - around 10 %.

When comparing the unemployment situation of individuals within different cohorts, we do not observe any remarkable differences in the speed or timing of exits from unemployment between those registered before and after January 1 as long as the cohort is not concerned by the reform (2001-2002 and 2003-2004). When reform operates (cohort 2002-2003)), we observe quite the opposite : for the unemployed registered after January 1, 2003 and thus being subject to the reduction of benefit duration (treated), there is a distinct peak in exits from unemployment around the new upper bound of benefit duration (23rd month for Filières 6/B and 36th month for Filières 7/C), while no such peak is noted for the UI recipients registered before January 1, 2003, who are concerned by the reform and enjoy longer entitlement periods (untreated). The visual analysis of the survivor functions also confirms this finding : a year after benefit exhaustion for the treated population - only 10% of treated individuals are still unemployed, while this share reaches 30% in the untreated population.

The existante of the peaks in exits from unemployment abound the date of benefit exhaustion is well documented in the littérature. While some associate these peaks with the outflows to jobs (Boone and van Ours [2009]), others suggest that the peaks are rather created by the (sometimes mechanical) transitions to other states (social assistance, inactivity) and argue that the contribution of exits to employment in creating these spikes is only marginal (Card et al. [2007]). In order to better understand the nature of the upturns observed in our data, we decompose the unemployment hazard into hazards to main outflow destinations, i.e. employment, attrition, *Dispenses de Recherche d'Emploi* (DRE) and unemployment assistance (UA) (Figures 7 and 8 in annexe).

We start with the hazards to employment : constant or slightly decreasing during the entitlement period, the instant probability of transition to jobs doubles around the date of benefit exhaustion (from 2 to 4 %). Similarly shaped for treated (registration before January 1) and untreated (registration after January 1) populations within the pre and post reform cohorts, the hazards to employment feature important differences between

the two groups when analyzing the cohort touched by the reform. Thus, a strong (from 2 to 8%) upward shift in probability of exit to employment is only observable for the individuals with reduced benefits. In addition, one may remark the absence of the usually observed overshooting, in our case the employment probability stays close to the level reached during the jump.

As to the transitions to attrition, the instant probability of exit towards this state is constant and of order of 1,5 % while benefits are paid, it by contrast jumps to 8 % as soon as the benefits are exhausted and remain at this level in the following months. Again, the peak in exits observed at the new maximum benefit duration is only visible for treated individuals, while hazard remains flat for their untreated peers. It is interesting to remark that after benefit exhaustion the profiles of hazard to attrition and hazard to employment are very similar.

Regarding the transitions to social assistance, during the entitlement period the hazard is null by definition : a UI recipient can access UA only when benefits payments are exhausted. The sharp increase observed at this date (of order of 8%) is however followed by an important drop (almost to initial level).

Another interesting outflow direction is *Dispense de Recherche d'Emploi* - a scheme adjourning older unemployed from the active job search. The hazard to DRE is increasing with the time spent in unemployment, which is not surprising since individuals come closer to fulfill the DRE eligibility criteria (being aged 55) over time. We once again observe an important spike in hazard to DRE around the time when UI payments are suspended. The existante of this peak is related to the fact that the periods of non insured unemployment contribute to the calculation of individuals' pensions. Therefore even when benefits are exhausted, older individuals are interested in claiming the DRE in ordre to maintain the unemployment status while taking the indirect path to early retirement. The magnitude of the observed spike is higher for the pre-reform cohort simply because it comprises more individuals reaching the age of 55 while receiving the UI benefits. Similarly, the difference observed in hazard functions of treated and untrteated individuals can be explained by a slight age difference between those registrer before and after January 1.

Finally, we analyse the duration of subsequent employment for those transited to jobs, figures 9 and 10 display the corresponding hazard and survival functions.

For the individuals formerly insured with the Filière 6/B, the probability to exit the

employment state progressively decreases from about 6% in the first 6 months of tenure to 1 % after 2-3 years of employment. An interesting observation concerns the periodicity of exit spikes observed every 6 months, which perfectly coincides with the usual periodicity of temporal employment contracts in France. On average, two out of three individuals transited from unemployment to jobs face a new unemployment episode in the 4 years following this transition. The difference between treated and untreated groups is weak and can probably be explained by seasonal factors as suggested by the lagged pattern observed for certain peaks.

As for those previously registered with the Filière 7/C, the hazard out of subsequent employment is also decreasing, but the instantaneous probability to exit the state in the beginning of the employment spell is weaker comparing to the Filière 6/B (4% versus 6%). The peaks in exits are observable every 3 months in the years following the take up of a job and then 2 years after. The rest of the peaks by contrast are rather clipped, meaning that after a year on the job, the chances to return to unemployment decrease smoothly. On average, 60 % of individuals transiting from unemployment to jobs are still working 4 years after the exit, which attests higher stability of jobs found by the individuals belonging to of Filière 7/C. When examining the difference in exits from employment of treated and untreated groups, the gap appears rather weak.

5   Empirical strategy

5.1   Identification

Our empirical strategy exploits the quasi-experiment created by the reform of the French Unemployment Insurance system to identify the impact of potential benefit duration (PBD) on transitions out of unemployment. The design of the reform naturally leads us to adopt a Regression Discontinuity framework, essentially comparing the search behavior of people who became unemployed just before and after January 1, 2003 [8]. Cohort based identification is also used by Lalive and Zweimüller [2009] and McCrary and Royer [2010].

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8. As discussed earlier, the reduction in potential benefit duration concerned all groups of workers. It therefore compromises a classic differences-in-differences approach frequently used in studies with similar purpose (see Card and Levine [2000], van Ours and Vodopivec [2006] or Kyyrä and Ollikainen [2008] for examples).

Let Y be the duration of unemployment in days. We denote by D the entitlement status of a job seeker, where $D = 1$ if UI benefits have been reduced by the reform and $D = 0$ otherwise. Following the notations of the potential outcome approach to causal inference, $(Y(0), Y(1))$ represents unemployment durations one would experience under each of these two alternatives. Moreover, the entitlement status depends in a deterministic way on the date of contract ending T :

$$D_i = 1 \left[T_i \succeq c \right] \tag{1}$$

where c corresponds to the date of reform implementation, *i.e.* January 1, 2003. Since the design we consider is "sharp", the average causal effect of a reduction in PBD can be identified at the assignment threshold by the discontinuity in the conditional expectation of the outcome.

$$\tau_{SRD} = E[Y_i(1) - Y_i(0)|T_i = c] = \lim_{t \downarrow c} E[Y_i|T_i = t] - \lim_{t \uparrow c} E[Y_i|T_i = t] \tag{2}$$

The key identification assumption is that $E[Y(0)|T = t]$ and $E[Y(1)|T = t]$ are smooth (continuous) functions in t. It ensures that the groups of individuals that became unemployed just before and after January 1, 2003 are comparable and would thus have similar average unemployment duration if they shared the same entitlement status. However, in our case we have to impose an additional assumption to properly measure the main effect of interest. More specifically, identification requires labor market conditions to be the same for every worker at the assignment threshold in order to disentangle the impact of the reform from business cycle effects. We therefore need to restrict the comparison to individuals sufficiently close to the cut-off date to suppose they face equivalent reemployment opportunities. By doing so, we also address the endogeneity of policy change which was triggered by economic downturn and could induce quantitatively significant bias in the impact estimates (see Card and Levine [2000], Besley and Case [2000] or Lalive and Zweimuller [2004] on this specific topic).

However, although this strategy allows mitigating the endogeneity policy bias, it is not suited to properly account for seasonal factors. Abbring et al. [2002] show that the quarter of inflow into unemployment influences exit rates *ceteris paribus*. In order to improve identification, we combine the Regression Discontinuity framework with a Difference-in Difference approach (RD-DID) by including pre and post reforms cohorts to better pin down seasonal factors. Formally, we can write :

$$\tau_{SRD-DID} = E[Y_i(1) - Y_i(0)|T_i = s, G = 1] - E[Y_i(1) - Y_i(0)|T_i = s, G = 0] \qquad (3)$$

$$= (\lim_{t \downarrow s} E[Y_i|T_i = t, G = 1] - \lim_{t \uparrow s} E[Y_i|T_i = t, G = 1]) -$$
$$- (\lim_{t \downarrow s} E[Y_i|T_i = t, G = 0] - \lim_{t \uparrow s} E[Y_i|T_i = t, G = 0])$$

where s now corresponds to the common assignment date (January 1) and G stands for the reference group, *i.e.* $G = 1$ for the reform cohort (10/02-03/03) and $G = 0$ for the control cohort presumably unaffected by the 2003 reform. This extended RD-DID strategy requires a third identifying assumption that seasonal factors are time invariant and common to all cohorts.

It is important to note that the effect we measure is not exactly the Average Treatment Effect for the entire population. Meanwhile, Hahn et al. [2001] point out that this local effect might be highly relevant to policy makers who are contemplating either expanding or limiting entitlement to UI benefits for a given group of workers. Besides, Lee (2008) shows that as long as individuals have some imprecise control over the variable determining treatment assignment, the RD design can identify impact estimates that share the same internal validity as those available from a randomized experiment. An important implication of this local randomization is that it makes it possible for researchers to empirically assess the validity of their design.

5.2 Measurement error

So far, we have supposed that the triplet (Y, D, S) was perfectly observable. Our data nevertheless suffer from measurement error as we do not have precise information on the forcing variable - the date of contract ending - but instead possess a slightly noisy measure of it - the registration date. Blasco (2009) shows that this latter variable can be seen as a good proxy since 80% of the claims are initiated within the month following the job loss. In what follows, it is important to keep in mind that the entitlement status D is correctly notified and allows deducting the year of contract ending. It is therefore not affected by the measurement error.

Formally, we can write $S = S^* + \varepsilon$ where S and S* denote respectively the registration and contract ending dates. To ensure the consistency of estimates, we need to assume that the measurement error is not correlated with individual characteristics and that

registrations occur in the same order than job losses, *i.e* that $S^*_{t'} > S^*_t$ implies $S_{t'} > S_t$ [9]. These assumptions cannot be formally tested but appear relatively weak and empirically plausible. The duration of entitlement to UI benefits being exclusively determined by the date of contract ending, no gains can be expected from the manipulation of registration dates.

5.3 Estimation

Social experiments in which the outcome of interest is a duration variable are more difficult to analyze than those with time-independent outcomes (see Abbring and van den Berg [2005] for an extensive exposition). First, the outcome may be censored. Second, Ham and LaLonde [1996] have shown that despite (local) randomization at the beginning of the (quasi-) experiment ($t = 0$), there might be a dynamic selection bias resulting from differential sorting between those concerned by a reform and those who are not. In our case, dynamic selection is based on the eligibility status since individuals who enter unemployment after January 1 will adapt their search behavior according to the shorter benefits they are entitled to. Consequently, the composition of survivors (*i.e.* the remaining unemployed) in two groups will differ over time, so that it will not be possible anymore at $t > 0$ to infer the effect of interest by simply comparing the hazard rates of both sub-populations.

Our identification strategy should account for these specific features. This can be done in the duration model framework where the hazard rates - the selection process out of the state of interest - are explicitly modeled (Rosholm [2008]). We hence estimate a series of proportional hazard models :

$$h_d^{RDD} = \lambda_d \exp \left(\beta X + \tau D + \sum_{j=1}^{p} \alpha_i \left(T - c \right)^j + \gamma_i D \left(T - c \right)^j \right) V \tag{4}$$

where d denotes the destination state, λ_d the baseline hazard function and V the unobserved heterogeneity component. In this specification, the parameter of interest

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9. This assumption is not satisfied for UI recipients entitled to the former system (*i.e.* whose date of contract ending is prior to December, 31 2002) but registered after January,1 2003. Since there are only few of them and their characteristics are very similar to the rest of the sample, we discard such individuals from our analysis.

is τ which captures the causal impact of a reduction in maximum benefit duration on the hazard rate from registered unemployment.

As previously discussed, seasonal factors could have a proper impact and influence exit rates *ceteris paribus*. To address this issue, we combine the Regression Discontinuity and Difference-in-Difference approaches and estimate the elasticity of unemployment duration to UI entitlement by using pre and post reform cohorts. To deal with the specific effect of the registration date and the fact that it is correlated with the eligibility status for the reform cohort, we keep a smooth function of this variable included in the regression.

$$h_d^{RD-DID} = \lambda_d \exp(\beta X + \delta_1 S + \delta_2 G_2 + \delta_3 G_3 + \tau G_2 S + \delta_4 G_3 S + \tag{5}$$
$$+ \sum_{j=1}^{p} \alpha_i (T-s)^j + \gamma_i D * (T-s)^j) V$$

where S is a dummy indicating whether unemployed registered after January 1, G_2 is a dummy for unemployed registered between 10/2002 and 03/2003, G_3 is a dummy for unemployed registered between 10/2003 and 03/2004 and reference group G_1 consists of unemployed registered between 10/2001 and 03/2002.

Although one extra cohort would be sufficient for identification, we choose to use two of them (the pre-reform 2001/2002 and post-reform 2003/2004 cohorts) in order to better pin down seasonal factors while increasing the number of observations used for estimations which improves the computation of standard errors. Here, it is important to note that fixed effects G_2 and G_3 do not only reflect cohort effects but also include business cycles and UI generosity effects [10]. They are hardly interpretable but are essentially needed for the identification of the causal effect.

6 Results

This section presents the econometric estimates of the effects of reduction in UI entitlement on transitions out of unemployment (tables 5 and 6). Two sub-populations of UI recipients, those entitled with Filières 6/B and Filières 7/C, are analyzed separately.

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10. Since those are by definition associated with different UI set of rules.

The upper part of table X displays impact estimates on unemployment durations while lower block reports the estimated effect on transitions to different exit states.

The different columns of tables 5 and 6 correspond to model specifications with varying polynomial order in modeling the effects of the assignment variable on average unemployment duration. The last columns report estimates for piecewise constant hazard model and Cox proportional hazard model in order test the sensitivity of the results with respect to the specification of duration dependence.

TABLE 5: **Estimation results, Filières 6/B**

	Piecewise constant hazard model										Cox model	
	RD					RD-DID					RD	RD-DID
Unemployment	**0,33**	**0,37**	**0,65**	**0,54**	0,52	**0,37**	**0,38**	**0,38**	**0,39**	**0,39**	**0,37**	**0,39**
Employment	**0,17**	0,19	**0,67**	0,47	0,46	0,16	0,17	0,19	0,18	0,19	0,19	0,18
Attrition	**0,34**	**0,41**	**0,90**	0,72	0,72	**0,28**	**0,29**	**0,32**	**0,32**	**0,32**	**0,40**	**0,30**
DRE	0,16	-0,46	-0,05	-0,04	-0,30	**0,76**	**0,69**	**0,61**	**0,63**	**0,65**	-0,55	**0,71**
UA	**1,74**	**1,55**	**1,52**	**1,67**	**1,71**	**1,40**	**1,49**	**1,43**	**1,43**	**1,45**	**1,79**	**1,62**
Polyn. order	0	1	2	3	4	0	1	2	3	4	1	1

Note : The estimates statistically significant at 5% confidence level are marked by bold style.

TABLE 6: **Estimation results, Filières 7/C**

	Piecewise constant hazard model										Cox model	
	RD					RD-DID					RD	RD-DID
Unemployment	**0,19**	0,08	0,07	0,06	0,07	**0,22**	**0,22**	**0,23**	**0,23**	**0,22**	**0,13**	**0,31**
Employment	**0,26**	**0,24**	**0,35**	0,34	0,29	**0,19**	**0,20**	**0,21**	**0,20**	**0,20**	**0,24**	**0,21**
Attrition	**0,28**	0,15	0,27	0,27	0,25	**0,31**	**0,31**	**0,32**	**0,31**	**0,31**	0,17	**0,35**
DRE	**-0,70**	**-1,09**	**-1,42**	**-1,48**	**-1,34**	-0,05	-0,12	-0,11	-0,11	-0,13	**-1,05**	**0,23**
UA	**1,11**	**0,97**	**0,83**	**0,90**	**0,81**	**1,04**	**1,03**	**1,03**	**1,04**	**1,03**	**1,45**	**1,70**
Polyn. order	0	1	2	3	4	0	1	2	3	4	1	1

Note : The estimates statistically significant at 5% confidence level are marked by bold style.

Results indicate that the reduction in potential benefit duration has increased the transition rates out of unemployment by 46% for Filières 6/B (exp(0.38)-1) and 25% for Filières 7/C (exp(0.22)-1). We rely here on the results emerging from an estimation combining RDD and DID approaches (columns 6-10), as those appear more stable vis-à-vis to varying polynomial degree.

When decomposing these outflows by exit destinations, we remark that for Filières 6/B, the effect of the reform on exits to employment is not significant. In contrast, the 23

months cuts in benefit duration produced by the reform have raised the transition rates to attrition and DRE by, respectively, 35% and 92%, while the hazard to unemployment assistance (UA) has been multiplied by 4.

As for Filières 7/C, the 9 months reduction in benefit entitlement had a positive effect transitions to employment - the exit rate has raised by 22%. The effect on hazard to attrition is of about 35%, while the effect on hazard to UA remains massive (182%). No significant change is observed in transitions to early retirement.

Again, when considering the robustness of the estimates to the polynomial modeling, the results obtained with RDD-DID (columns 6-10) estimation strategy are clearly more stable comparing to those obtained with simple RDD (columns 1-5). This is related to the fact that simple RDD strategy does not allow to fully take into account the effects of seasonal factors, which seem to be non negligible in our case (in particular for highly seasonal transitions such as those to DRE). To assert this point, we realize the falsification tests which consist in running the simple RDD estimation on pre and post reform cohorts, which are not subject to the reform. The test is accepted if the estimated treatment effect is null for these cohorts. When the considered outcome is unemployment duration, we accept the tests in most cases, with the exception of cohort 2001-2002 for Filières 7/C. However, when the exits are decomposed by destination, the falsification tests are often rejected, in particular for Filières 7/C, which underlines the existence of seasonal factors that affect the exits *ceteris paribus*. Hence, falsification tests which consider the unemployment duration as outcome might lead to spurious conclusion : one can accept the test for unemployment duration, but reject it for differentiated exits. When comparing job seekers who enter unemployment just before and after January 2003, our conclusions are close to Lalive and Zweimüller [2009] : we find little evidence of seasonality in the composition of cohorts, but strong seasonality in the outflows from unemployment.

TABLE 7: **Falsification test**

	Control cohorts			
	Filières 6B		Filières 7C	
	2001-2002	2003-2004	2001-2002	2003-2004
Unemployment	-0,14	0,13	**-0,12**	0,01
Employment	-0,16	**0,37**	**0,14**	**0,12**
Attrition	0,14	0,17	-0,01	**0,22**
DRE	**-1,64**	**-2,16**	**-1,29**	**-1,03**
UA	0,54	-0,03	**-0,41**	0,07

The comparison of piecewise constant and Cox models shows that the specification of baseline hazard does not induce any significant changes in the results.

As in Caliendo et al. [2009], we identify the time varying causal effect on the hazard rate by interacting the eligibility status dummy with unemployment duration grouped in intervals. Such modeling allows spotting to what extend benefit reduction influences time profile of exit rates and opens the black box of the spike around the date of benefit exhaustion.

For both UI categories, those entitled to a reduced benefits exhibit significantly higher outflow rates close to benefit expiring date : the difference between those registered after and before January 1, 2003 is therefore positive. The results are consistant with graphical evidence in the sense that the impact of the reform is most apparent at the point of benefit exhaustion (23 months for Filières 6B and 36 months for Filières 7C). We have previously showed that exit rates are very flat at the beginning of the entitlement period and jump significantly as the date of exhaustion approaches ; it is therefore not surprising for the effect of the reform to be concentrated around this point.

This result holds when the estimated effects are differentiated according to the exit state. However, while for the outflows to jobs the effect stands positive during the first year of unemployment, for three other states it only becomes positive at the date of benefit exhaustion. The strongest effect is observed for the exits to unemployment assistance, suggesting that the major impact of the reform consisted in shifting the job seekers from unemployment insurance to unemployment assistance. This result is in line with Pellizzari [2006] conclusions and echoes the Card et al. [2007] argument on the true mechanisms underlining the emergence of spikes in outflows from unemployment around the date of benefit exhaustion.

In order to test the sensitivity of our results to unobserved heterogeneity, we have considered two distinct specifications : one continuous - gamma à la Meyer [1990]) and one discrete - mass points à la Heckman and Singer [1984]. However, convergence could not be properly achieved under any of these two options. This is hardly surprising since we use a very large set of observable characteristics and since our specification for baseline hazard is highly flexible. Besides, the selection operated via compensation rules is very specific and thus tends to homogenize the population within each UI category so that only few characteristics explicitly contribute to dynamic selection and govern transitions out of unemployment.

TABLE 8: **Estimation results by unemployment duration, Filière 6/B**

| | Exit state | | | | | | | | | |
| | Unemployment | | Employment | | Attrition | | DRE | | UA | |
	RD	RD-DID	RD	RD-DID	RD	RD-DID	RD	RD-DID	RD	RD-DID
0-3 months	0,13	0,18	0,39	**0,32**	-0,13	-0,11	-11,51	**-7,57**	-7,33	-3,12
4-6 months	**-0,39**	-0,23	**-0,67**	**-0,40**	-0,19	-0,13	-1,98	**-0,50**	-0,56	-0,16
7-9 months	**0,51**	**0,62**	0,43	**0,46**	**0,62**	**0,69**	-4,17	-0,82	-0,50	-0,14
10-12 months	0,02	-0,02	-0,01	-0,10	0,10	0,06	-2,64	-0,55	-0,43	-0,12
13-15 months	0,04	0,05	-0,20	-0,16	0,04	-0,17	-2,66	-1,10	-0,40	-0,11
16-18 months	-0,12	0,11	-0,19	0,19	-0,13	-0,29	-0,77	1,15	-0,36	-0,10
19-21-months	0,30	**0,33**	0,39	0,36	0,18	0,15	-5,64	-4,34	-0,32	-0,09
22-24 months	**1,04**	**0,65**	**0,81**	0,33	0,09	0,01	-1,04	0,20	6,15	**2,06**
25-27 months	**1,85**	**1,14**	**0,72**	**0,63**	**2,06**	**1,08**	**2,37**	**1,77**	6,54	**1,96**
28-30 months	**1,33**	**0,82**	0,06	0,21	**1,99**	**0,72**	0,63	**1,54**	5,63	**2,01**
> 30 months	**0,42**	**0,47**	**0,79**	**0,60**	**1,32**	**0,87**	**-1,37**	-0,03	-0,18	0,32

Note : The estimates statistically significant at 5% confidence level are marked by bold style.

TABLE 9: **Estimation results by unemployment duration, Filière 7/C**

| | Exit state | | | | | | | | | |
| | Unemployment | | Employment | | Attrition | | DRE | | UA | |
	RD	RD-DID	RD	RD-DID	RD	RD-DID	RD	RD-DID	RD	RD-DID
0-3 months	0,13	**0,22**	**0,41**	**0,37**	-0,17	0,06	-9,87	-4,59	-2,95	-1,17
4-6 months	-0,10	0,02	-0,09	-0,05	0,02	0,19	**-3,53**	-2,21	-0,19	-0,05
7-9 months	**0,16**	**0,30**	**0,34**	**0,33**	-0,11	0,20	-5,78	-2,43	-0,17	-0,05
10-12 months	**-0,31**	0,01	-0,03	0,05	-0,18	0,19	**-1,76**	-0,70	-0,15	-0,04
13-15 months	0,04	**0,20**	**0,37**	0,19	-0,19	0,09	**-1,44**	-0,37	-0,13	-0,04
16-18 months	-0,20	0,04	-0,07	-0,04	0,10	**0,45**	**-1,13**	-0,16	-0,12	-0,03
19-21-months	**0,22**	**0,23**	0,33	**0,29**	0,24	**0,40**	**-1,45**	**-0,95**	-0,11	-0,03
22-24 months	-0,02	0,08	0,20	-0,04	-0,22	0,09	**-0,82**	-0,04	-0,10	-0,03
25-27 months	-0,20	-0,03	-0,21	-0,15	-0,24	0,07	-0,54	0,23	-0,09	-0,03
28-30 months	-0,15	-0,04	-0,25	-0,42	-0,17	-0,14	**-1,18**	-0,26	-0,09	-0,02
> 30 months	**0,34**	**0,45**	**0,38**	**0,39**	**0,82**	**0,80**	**-0,95**	-0,03	**0,95**	**1,04**

Note : The estimates statistically significant at 5% confidence level are marked by bold style.

7 Conclusions

To be completed.

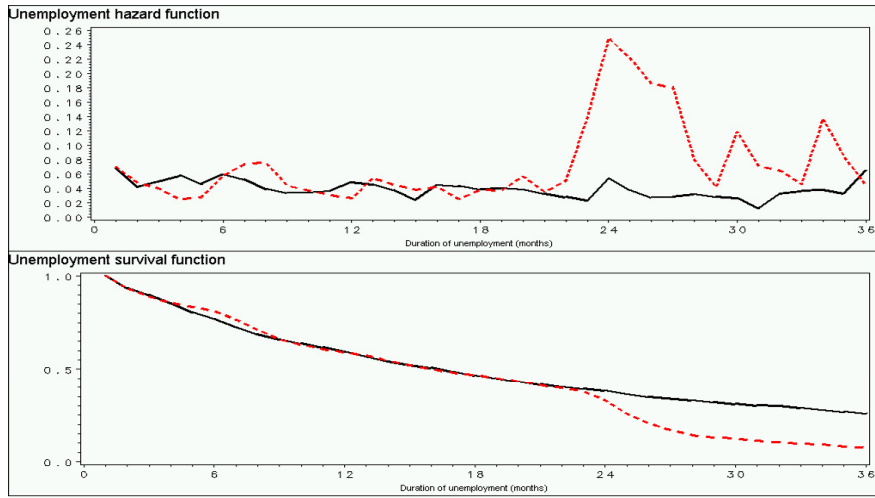# 8 Annexe

TABLE 10: **Baseline caracteristics, Filère 6/B**

	Cohorte 01/02 (témoin)			Cohorte 02/03 (traité)			Cohorte 03/04 (témoin)		
	Avant	Après	p-value	Avant	Après	p-value	Avant	Après	p-value
Age	52,0	52,2	**<.0001**	52,0	51,9	0,21	51,8	51,8	0,57
Sexe (ref: Homme)									
Femme	46,5	46,4	0,96	55,5	57,5	0,34	60,5	60,5	0,98
Enfants (ref : Sans enfant)									
Moins de trois enfants	38,1	41,0	0,16	40,3	44,1	0,07	44,2	40,1	**0,05**
Trois enfants et plus	15,9	15,6	0,86	13,7	14,4	0,64	15,6	15,5	0,96
Nationalité (ref : Français)									
Etranger	16,4	16,4	0,98	14,8	13,2	0,27	15,9	14,7	0,42
Statut marital (ref : Célibataire, veuf ou divorcé)									
Marié ou vie maritale	66,9	65,5	0,49	64,6	67,4	0,18	66,4	64,5	0,33
Diplôme (ref : BEPC)									
Niveaux I et II	6,4	6,6	0,88	5,8	6,4	0,53	6,3	7,6	0,25
BAC+2	7,3	6,9	0,71	6,4	6,4	0,98	7,2	7,8	0,59
BAC Généraliste, Techno ou Pro	11,7	10,5	0,39	10,7	10,5	0,89	13,4	12,3	0,43
BEP CAP	34,0	34,3	0,86	31,6	33,7	0,29	33,3	35,2	0,35
Qualification (ref : Manoeuvre et OS)									
Ouvrier qualifié	23,6	23,2	0,84	18,2	16,1	0,19	15,2	14,9	0,83
Employé non qualifié	10,6	9,9	0,59	12,4	12,9	0,73	14,2	14,3	0,96
Employé qualifié	38,1	37,0	0,60	43,4	45,7	0,28	43,9	43,1	0,70
Technicien, agent de maîtrise	7,6	7,4	0,87	5,8	5,9	0,92	6,3	7,0	0,55
Cadre	11,5	12,0	0,74	10,7	9,7	0,41	11,2	10,8	0,74
Motif d'inscription (ref : Licenciement économique)									
Autre licenciement	22,0	24,4	0,18	23,8	21,0	0,12	25,4	25,2	0,88
Démission	2,1	1,9	0,70	1,4	1,5	0,82	1,0	1,1	0,75
Fin de contrat	40,1	37,9	0,27	44,5	48,4	0,07	44,0	43,4	0,79
Fin intérim	8,5	8,7	0,86	4,2	2,9	0,10	1,2	0,9	0,47
Autres	10,5	9,9	0,63	13,0	15,6	0,08	18,6	19,3	0,64
Historique des périodes de chômage									
Dans les 2 ans précèdant l'inscription	0,8	0,8	0,87	0,8	0,8	0,87	0,8	0,8	1,00
Depuis 1993	1,5	1,5	0,46	1,7	1,7	0,35	1,9	1,9	0,36
Durée (en jours) **des périodes de chômage** antérieur									
Dans les 2 ans précèdant l'inscription	163,2	158,3	0,72	153,7	152,4	0,62	157,9	159,2	0,43
Depuis 1993	844,8	879,3		1013,2	1079,0		1131,3	1101,8	

TABLE 11: **Baseline caracteristics, Filère 7/C**

	Cohorte 01/02 (témoin)			Cohorte 02/03 (traité)			Cohorte 03/04 (témoin)		
	Avant	Après	p-value	Avant	Après	p-value	Avant	Après	p-value
Age	52,1	52,4	**<.0001**	52,2	52,3	**<.0001**	52,3	52,4	**<.0001**
Sexe (ref: Homme)									
Femme	47,8	49,5	**0,05**	46,9	46,3	0,57	48,0	48,4	0,57
Enfants (ref : Sans enfant)									
Moins de trois enfants	32,1	33,1	0,21	31,1	33,5	0,02	33,5	33,8	0,66
Trois enfants et plus	6,5	5,9	0,16	6,8	7,3	0,37	7,1	7,3	0,62
Nationalité (ref : Français)									
Etranger	6,5	6,0	0,16	7,4	7,4	0,94	7,1	7,0	0,69
Statut marital (ref : Célibataire, veuf ou divorcé)									
Marié ou vie maritale	71,3	71,7	0,58	69,9	70,2	0,79	70,7	69,7	0,18
Diplôme (ref : BEPC)									
Niveaux I et II	9,2	9,1	0,88	9,5	9,4	0,89	8,7	9,3	0,27
BAC+2	8,1	7,8	0,50	7,4	7,6	0,66	7,5	7,5	0,88
BAC Généraliste, Techno ou Pro	13,4	12,7	0,24	13,2	12,5	0,33	13,0	13,0	0,96
BEP CAP	33,8	33,2	0,48	32,3	33,0	0,51	35,1	35,3	0,82
Qualification (ref : Manoeuvre et OS)									
Ouvrier qualifié	15,0	15,1	0,87	16,1	15,7	0,64	16,2	15,5	0,23
Employé non qualifié	9,7	9,8	0,82	11,3	11,3	0,96	11,3	11,3	0,99
Employé qualifié	36,8	36,2	0,51	36,5	37,5	0,29	36,8	37,2	0,64
Technicien, agent de maîtrise	11,4	11,7	0,60	10,4	9,8	0,32	10,6	10,6	0,99
Cadre	21,2	21,0	0,85	19,8	19,6	0,77	18,9	19,1	0,75
Motif d'inscription (ref : Licenciement économique)									
Autre licenciement	39,2	40,5	0,13	41,6	46,6	**<,0001**	39,9	38,8	0,21
Démission	2,9	2,7	0,49	3,0	3,2	0,68	2,4	2,5	0,69
Fin de contrat	7,8	7,1	0,12	10,5	9,0	**0,01**	8,0	7,8	0,62
Fin intérim	1,2	1,0	0,35	1,6	1,3	0,25	0,2	0,1	0,81
Autres	17,4	12,9	**<.0001**	10,2	8,3	**0,00**	7,3	7,4	0,82
Récurrence des périodes de chômage									
Oui	13,7	13,0		19,4	20,7		24,6	24,9	
Historique des périodes de chômage									
Dans les 2 ans précèdant l'inscription	0,2	0,2	0,34	0,2	0,1	0,08	0,1	0,1	0,82
Depuis 1993	1,2	1,2	0,20	1,3	1,3	0,18	1,4	1,4	0,81
Durée (en jours) **des périodes de chômage** antérieur									
Dans les 2 ans précèdant l'inscription	55,9	49,9	0,20	45,5	51,4	0,58	54,9	59,4	0,53
Depuis 1993	420,0	431,6		489,5	520,4		628,9	604,7	

Reform cohort 2002-2003

Pre-reform cohort 2001-2002
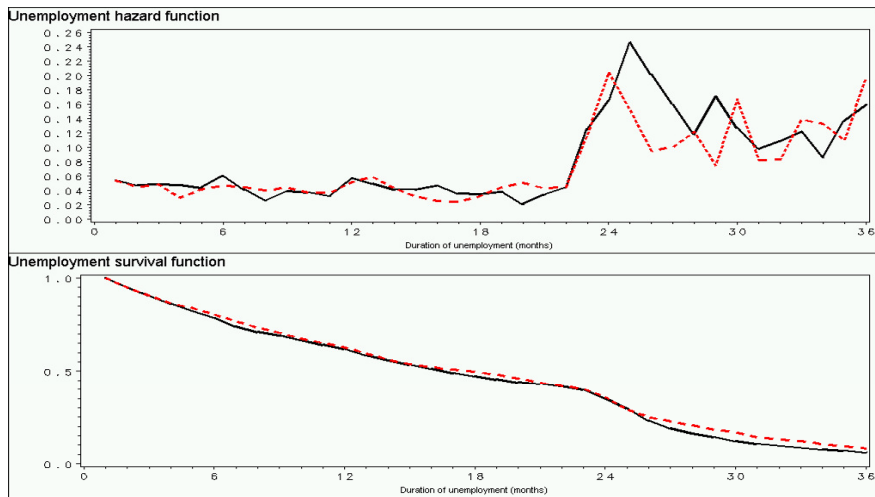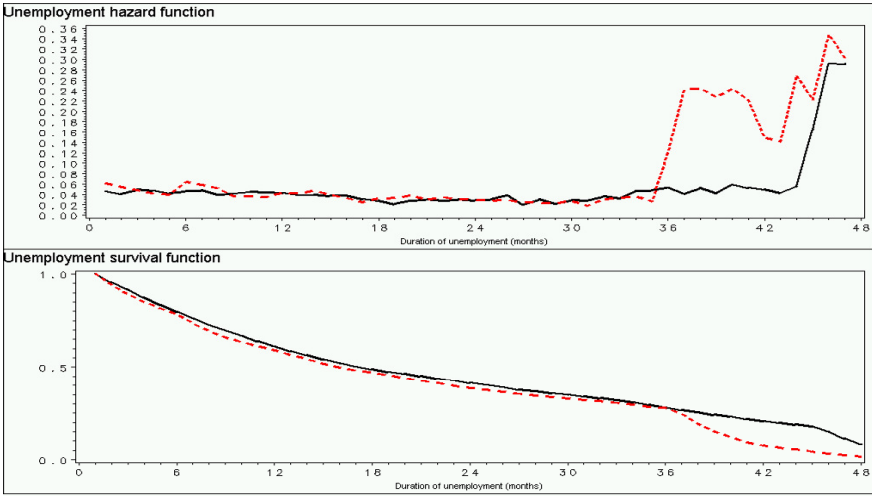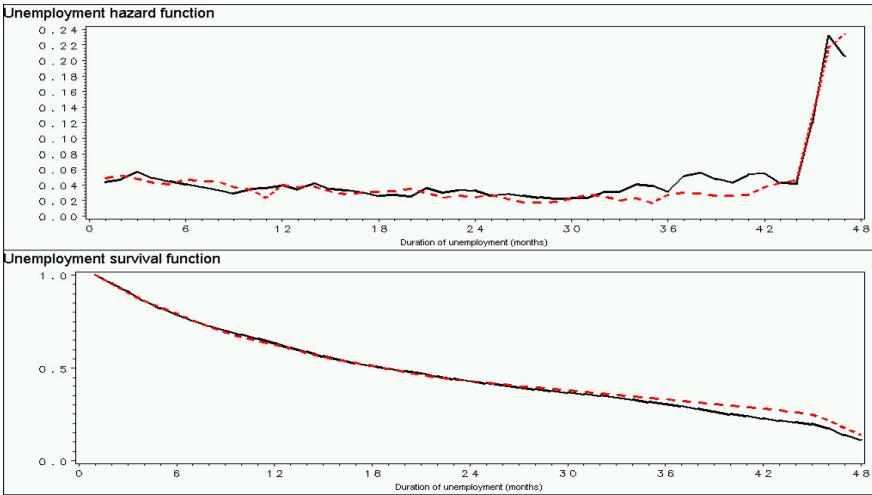

Post-reform cohort 2003-2004

FIGURE 6: Empirical hazard and survivor functions, unemployment, Filière 7/C

Reform cohort 2002-2003

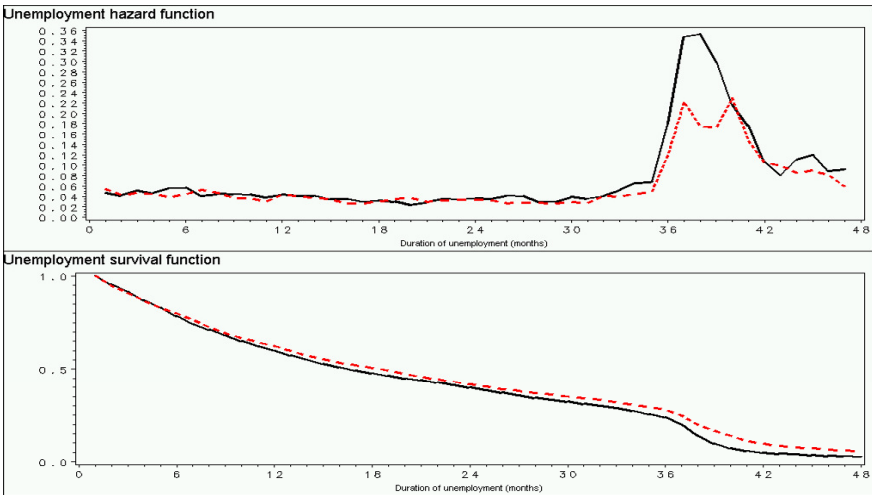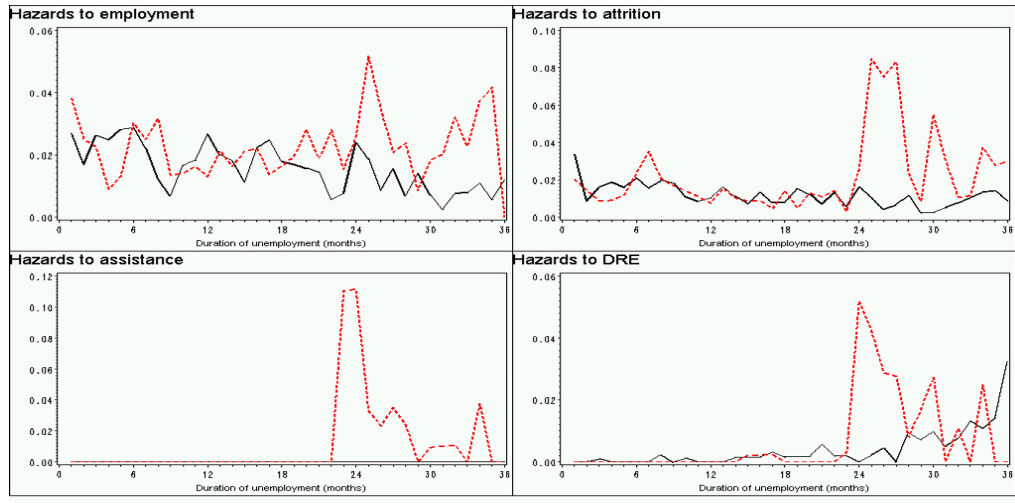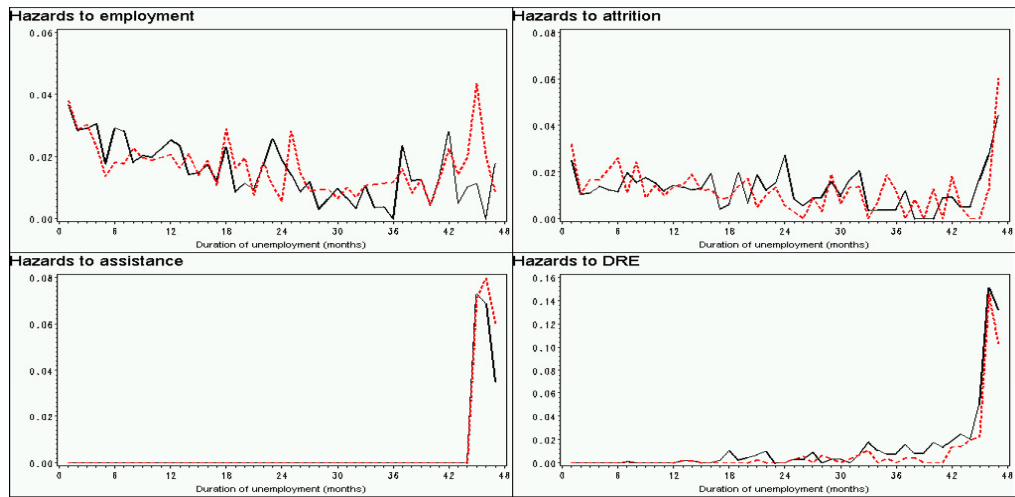Pre-reform cohort 2001-2002

Post-reform cohort 2003-2004

FIGURE 7: Empirical hazard functions, exits from unemployment, Filière 6/B

Reform cohort 2002-2003

Pre-reform cohort 2001-2002
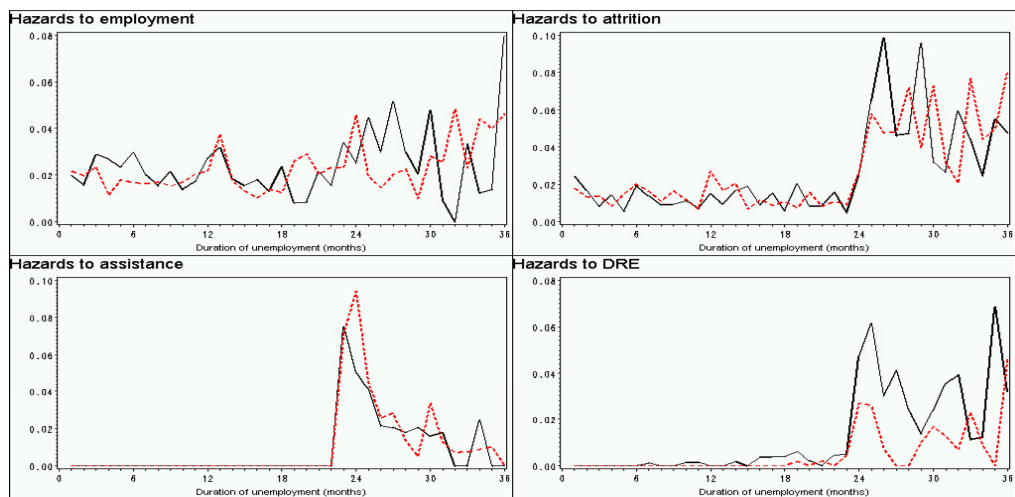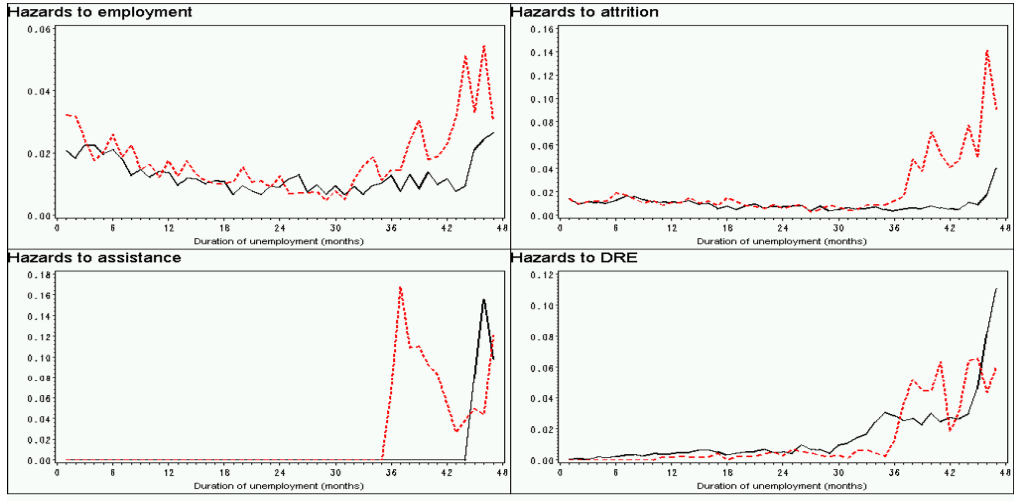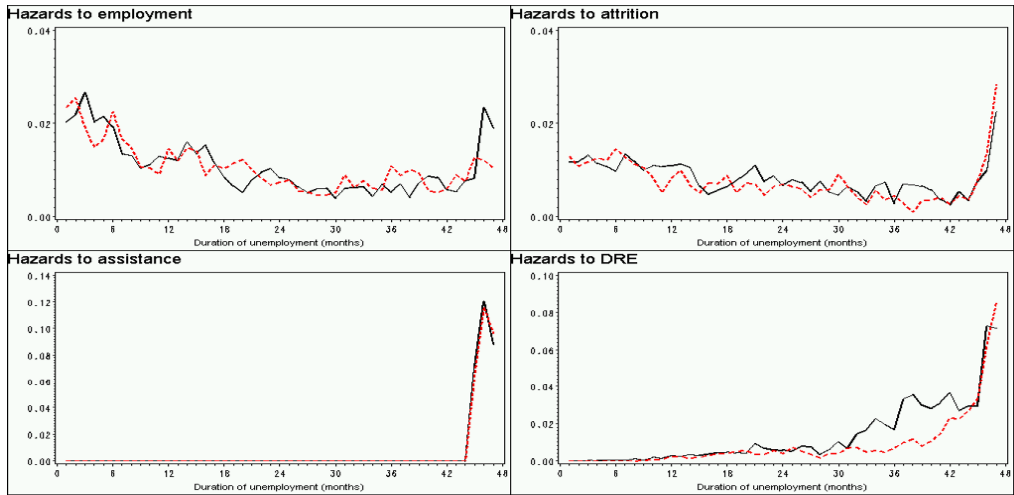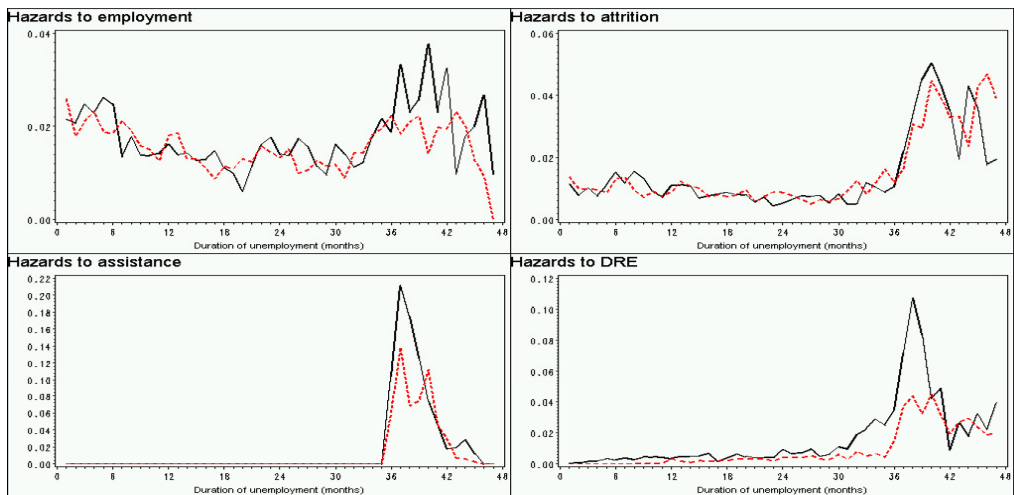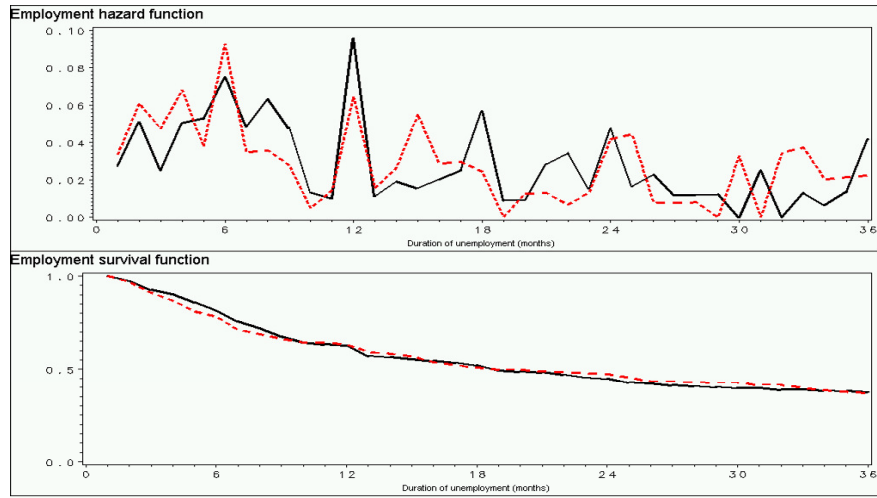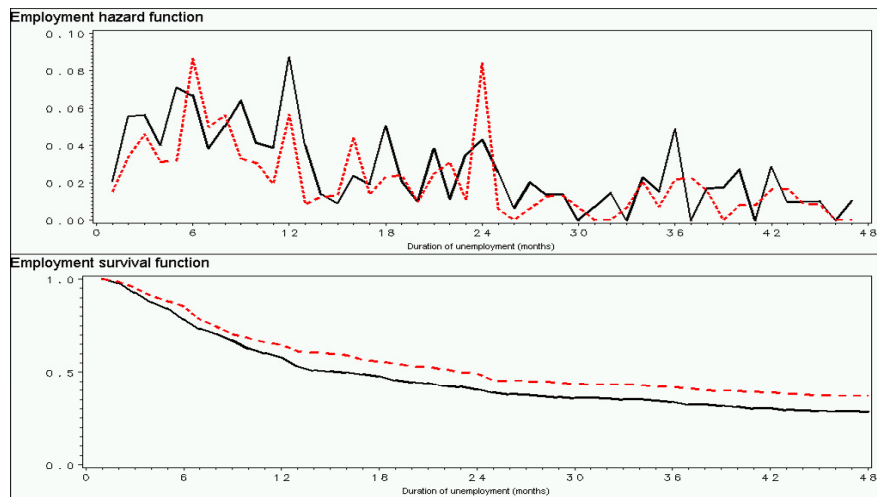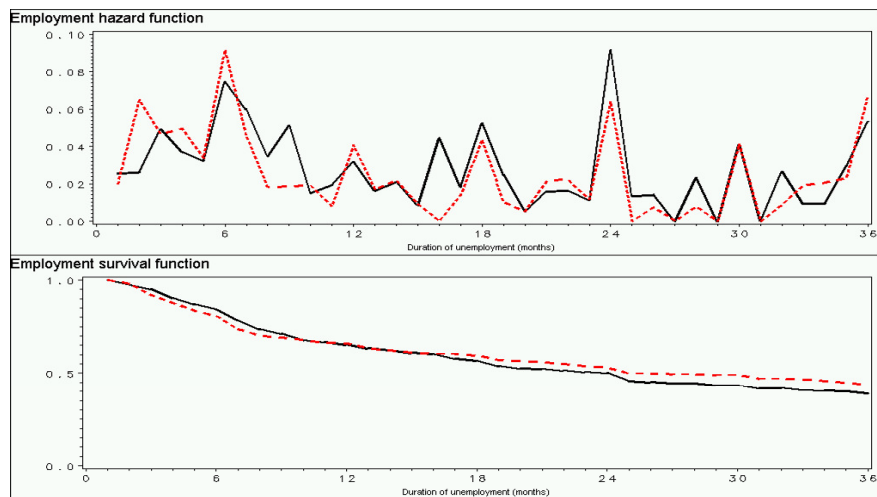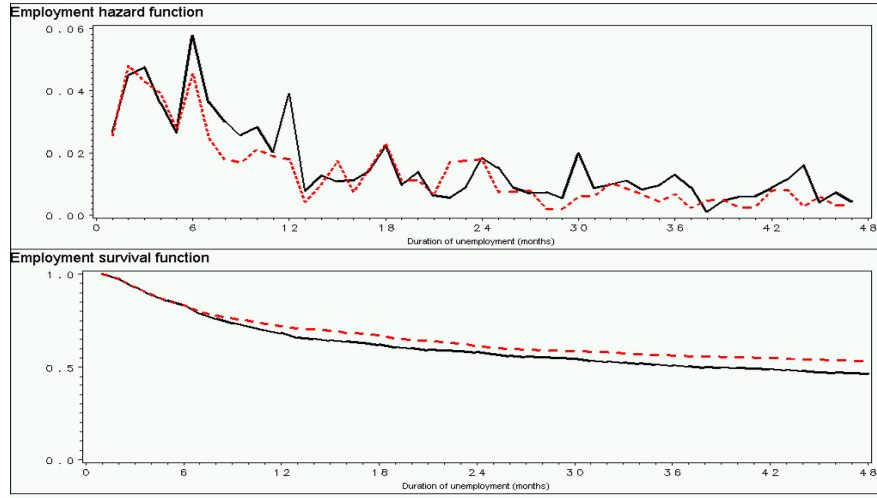

Post-reform cohort 2003-2004

Reform cohort 2002-2003

Pre-reform cohort 2001-2002

Post-reform cohort 2003-2004

FIGURE 9: Empirical hazard and survivor functions, employment, Filière 6/B

Reform cohort 2002-2003

Pre-reform cohort 2001-2002
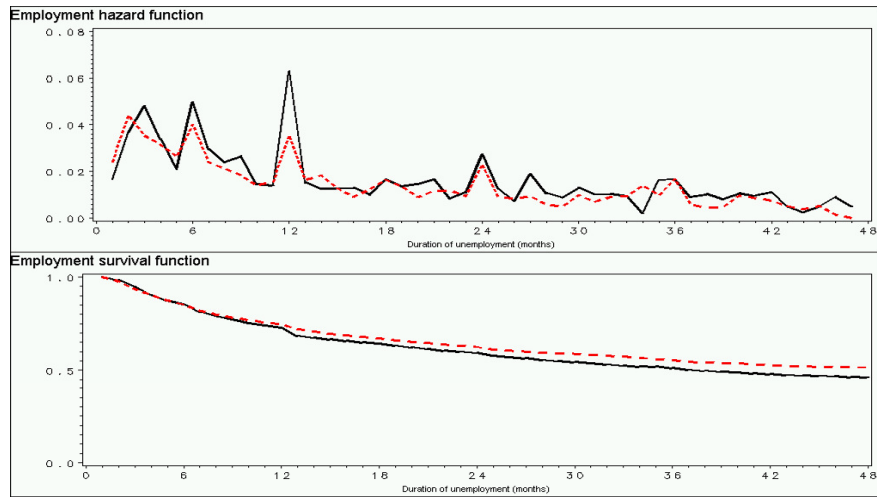

Post-reform cohort 2003-2004

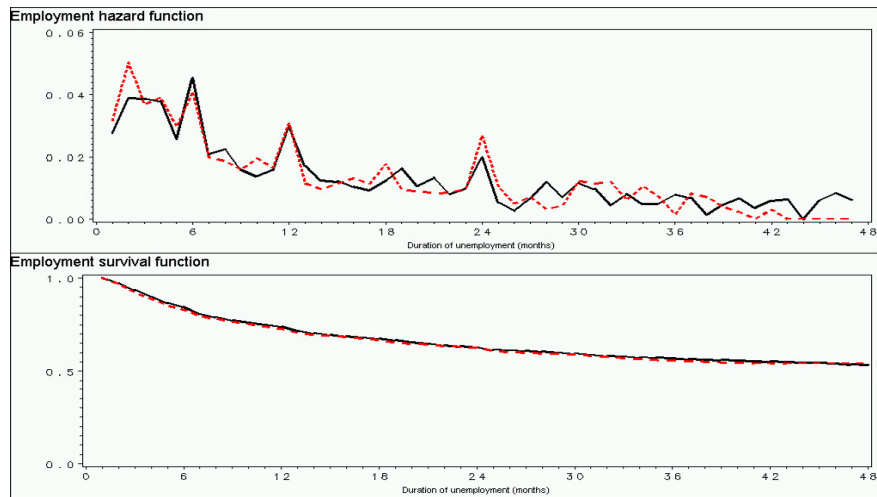FIGURE 10: Empirical hazard and survivor functions, employment, Filière 7/C

Reform cohort 2002-2003

Employment hazard function

Employment survival function

Pre-reform cohort 2001-2002

Employment hazard function

Employment survival function

Post-reform cohort 2003-2004

Employment hazard function

Employment survival function

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