Wage Losses of Displaced Workers in France and the US ? Theory and Comparative Evidence

PRELIMINARY

Arnaud LEFRANC*

CREST
and
Thema - University Paris X
email: lefranc@u-paris10.fr

January 31, 2000

Abstract

This paper develops a theoretical search framework to analyse the wage losses experienced by displaced workers. We underline the importance of accounting for two different sources of wage losses whose consequences might differ, namely the loss of rents earned on their predisplacement job and the loss of accumulated firm-specific human capital.

We then turn to the measurement and decomposition of wage losses in France and the US using micro data from labor force surveys. We show that while the order of magnitude of wage losses ar comparable in the two economies (10 to 15%), the sources of wage adjustment differ strongly: all of the wage decline in France seems to be due to the loss of accumulated firm specific earning potential, while in the US case, they only account for half of the total wage adjustment.

** I thank Orley Ashenfelter, Daniel Cohen, Hank Farber, Alan Krueger, Gilles Saint-Paul, as well as labor seminar participants at Princeton University for useful comments and remarks.

1 Introduction

In recent years, various studies (mostly based on US data) have documented the labor market effect of exogenous shocks leading to involuntary job losses. Their main conclusion is that workers affected by these shocks experience limited spells of unemployment but undergo important and long-lasting wage losses (see Farber[8] and Ruhm [19]; also see Fallick[7] for a survey).

The interest of such studies is manyfold. First, they underline the individual welfare costs of labor reallocation (see Howland and Peterson[11]), hence making the case for structural retraining policy intervention. Second, from a more theoretical point of view, these studies suggest that these wage adjustments might play a key role in driving the labor market back to equilibrium after a reallocative shock. As a consequence, it has been assumed that such studies might also shed light on the working of labor markets. For instance, two comparative studies of wage losses of displaced workers (see Leonard and Van Audenrode[17] and Cohen *et al.*[6])argue that the observed wage losses pprovide information on unemployed workers reservation wage strategies and might provide insights on the cause of high european unemployment duration. Studying wage adjustments in Belgium, Leonard and Van Audenrode[17] find that displaced Belgian workers experience long spells of unemployment but no wage losses and show that this could be ascribed to the high level of the minimum wage. Cohen *et al.*[6] study wage adjustments on the French and US labor markets. Contrary to Leonard and Van Audenrode, they find no evidence of higher wage "rigidity" in France, and conclude that the length of French unemployment is most likely to be due to other sources of (non-wage) rigidities (e.g. firing costs).

While the descriptive study of wage effects of job displacement is interesting in its own right, the analysis undertaken in the last two papers is far from being completely satisfactory as no attempt is made neither to explicitly formalize the relationship between unemployment duration and the extent of wage losses, nor to clarify the economic mechanisms that underlie these wage losses. As shown in various studies of job displacement in the US, wage losses may stem from two main sources. The first one relates to the accumulation of firm-specific (not transferable to other jobs) human capital. A negative relationship between wage losses and seniority on the job lost is often seen as evidence of this effect (see ...). The observed downward wage adjustment might also result from the loss of job-specific rents that were

captured on the previous job. For instance, Carrington[5], Carrington and Zaman[**?**] and Krashinsky[12]show that wage losses are correlated to firm size, unionization rate, industry and other job characteristics that explained non-competitive aspects of wages differentials[1]. Furthermore, this latter interpretation is also consistent with the aforementioned finding of a negative relationship between wage losses and seniority on the job lost: As pointed out by the debate on returns to seniority[2], a positive relationship between wages and tenure might arise from the fact that workers tend to stay longer in "better" jobs (defined as paying higher wages).

In this paper, we argue that assessing the relative importance of these two effects is a crucial step in the understanding of the relationship between wage losses and unemployment duration in cross-country comparisons. As the job-search literature underlines, the key determinant of individual duration of unemployment, besides the arrival rate of job offers, is the willingness[3] of workers to accept low-paid jobs, compared to their market productivity. If wages losses of displaced workers mainly reflect the adjustment of wages from the ex ante firm-specific productivity to the lower post-displacement market productivity then they convey little information about the reservation wage strategy of diplaced workers and should be poorly correlated to the length of unemployment. On the contrary, if the extent of wage losses reflects the reservation wage strategy of unemployed workers, a cross-country comparison of unemployment-induced wage adjustments might provide hints on the causes of high unemployment duration in Europe.

These ideas are illustrated in the framework of an equilibrium search model. We develop a search model with on-the-job search and accumulation of firm-specific human capital and study the relationship between unemployment duration and wage losses of displaced workers (where these losses result both from a fall in productivity and a loss of search-rents). We show that the reservation wage strategy of unemployed workers is only unambiguously correlated to the loss of job-search rents, while the loss of firm-specific human capital convey little information on the unemployed workers reservation wage strategy.

[1]See Krueger and Summers[13] for a study of inter-industry wage differentials using job displacement as a natural *experiment to assess the existence of industry rents as a component of earned wages.

[2]See Topel[21] for a presentation.

[3]This paper is about the rigidity of re-entry wage levels. This rigidity can arise from either high unconstrained reservation wages or from high and *binding minimum wages. In the latter case*, the rigidity lies in the ability to accept low wages rather than in * the willingness to do so but this distinction is not tackled here.

This theoretical distinction is then applied to a comparison of the effect of job displacement in France and the US. We first estimate total wage losses of displaced workers. Then we try to decompose these wage losses into two components: losses of rents and losses of firm-specific human capital, by using consistently estimated returns to job seniority.

2 A theoretical model of unemployment induced wage losses

The objective of this section is to develop a theoretical model of wage losses of displaced worker. This model is then used to provide a welfare interpretation of displacement induces wage losses and to illustrate the interplay between unemployment duration and wage losses of displaced workers. The general framework used here is a job-search model. Yet, the typical job-search model does not yield any wage losses for displaced workers, since workers losing their jobs will re-enter the labor market at wage levels drawn from a wage distribution similar to that of incumbent employed workers. In the model we develop, wage losses stem from two key ingredients: the possibility of on-the-job search and on-the-job training. We then study the equilibrium relationship between each of these sources of wage losses and the duration of unemployment.

We consider a discrete-time search model where workers can be either employed or unemployed. For simplicity's sake, job termination is modelled as a deterministic event and we assume that employment spells only last two periods. We allow for on-the-job search. This enables workers to change job at the end of their first period of employment without going through unemployment. Nevertheless, job-to-job movers do not push up their employment horizon by changing jobs[4]. We also allow for job-specific human capital accumulation that brings productivity growth at a rate g[5], so that if the first period wage is given by w, the second period wage will be equal to $w(1+g)$[6].

[4]This strong assumption implies that job switching decision is only governed by wage considerations, as it is the case in an infinite horizon model with Poisson separations.

[5]The process of human capital accumulation should actually ben made endogeneous. This would only reinforce the results found below as workers would invest less on low-wage jobs then on high wage jobs.

[6]The process of human capital accumulation should actually ben made endogeneous. This would only reinforce the results found below as workers would invest less on low-wage jobs then on high wage jobs.

The job offer arrival process is assumed to be a Markov process and we call λ (resp. λ') the probability that an unemployed worker (resp. an employed worker) receives a job offer. We further assume that wage offers can only take on two values $\underline{w}$ and $\overline{w}$ ($\underline{w} < \overline{w}$) and let p denote the probability that the offered wage be equal to the higher value.

2.1 Search Strategies

The present discounted value of employed workers's (expected) future incomes is non-stationary, since the remaining duration of employment varies between period one and two. As far as the unemployed workers' search strategies are concerned, the first period value of employment is the only value function that should matter. These value functions are the following:

High wage workers

Obviously, workers who initially draw the high-level entry wage will never switch job in the course of their employment spell. Hence, the value of being employed at $\overline{w}$ is equal to :

$$V_e(\overline{w}) = \overline{w}(1 + \frac{1+g}{1+r}) + \frac{1}{(1+r)^2} V_u \tag{1}$$

where r denotes the interest rate and V_u the value of unemployment.

Low wage workers

The intertemporal value of entering a low-wage job depends on the wage level $\underline{w}$ and on the prospects of future wage rise. In the case of low wage jobs, wage increases can be achieved through either job switching or accumulation of job-specific human capital. We assume that g is small enough so that switching to a high-wage job at the beginning of period 2 is strictly preferred to the alternative of staying on the low-wage job for a second period. The value of being employed at $\underline{w}$ is then :

$$V_e(\underline{w}) = \underline{w}(1 + \frac{1+g}{1+r}) + \frac{\lambda' p}{1+r}(\overline{w} - \underline{w}(1+g)) + \frac{1}{(1+r)^2} V_u \tag{2}$$

where the second term on the right-hand side corresponds to the expected payoff from on-the-job search.

Unemployed workers

When receiving a wage offer, an unemployed worker can always turn it down and keep searching. As in any search model, the key issue is to

determine the range of acceptable offers. The unemployed worker's criterion in determining this optimal range of acceptable offers is to maximize his expected wealth.[7]

In this simplified model, the search strategy amounts to three possibilities: I- accept all offers, II- accept high wage offers only, III- never accept any offer. We rule out this last possibility, assuming for instance that unemployment benefits denoted by b are lower than $\overline{w}$. The choice between the first two strategies depends on the sign of $V_u^I - V_u^{II}$, where V_u^i stands for the intertemporal value of unemployment when choosing strategy i.

We now explicit these value functions.

First strategy: accept high wage offers only:

In this case, the value of unemployment is given by:

$$V_u^I R(\lambda p) = b + \frac{\lambda p}{1+r} p\overline{w}(1 + \frac{1+g}{1+r}) \tag{3}$$

With

$$R(x) = (1 - \frac{1-x}{1+r} - \frac{x}{(1+r)^3})$$

Note that $R(.)$ is an increasing function of its argument.

Second strategy: accept all offers:

The value of unemployment under the secund strategy is given by:

$$\begin{aligned} V_u^{II} R(\lambda) &= b + \frac{\lambda}{1+r} p\overline{w}(1 + \frac{1+g}{1+r}) + \\ &\quad \frac{\lambda}{1+r}\left[(1-p)\underline{w}(1 + \frac{1+g}{1+r}) + \frac{\lambda' p}{1+r}(\overline{w} - \underline{w}(1+g))\right] \end{aligned} \tag{4}$$

2.2 Comparative Statics

The sign $V_u^I - V_u^{II}$ depends on the entire set of parameters $(b, \underline{w}, \overline{w}, p, r, g, \lambda, \lambda')$. The effect of most of these parameters have been studied in the search literature and will not be mentioned here (see Mortensen[18] for a survey). In this section, we focus on the effect of specific human capital accumulation and on-the-job search.

[7] One can further note that since the first-period value of employment is an increasing function of the wage received, this model clearly exhibits the reservation wage property, ie. if it is optimal for the worker to accept a given level of offered wage then all jobs offering a higher wage should be accepted.

Job mobility

It is clear that on-the-job search will only affect the value of low-wage jobs, since high wage workers will never find it profitable to change job. This can be easily seen by comparing equations 1 and 2. On-the-job search actually increases the value of low-wage jobs. Hence it makes it more likely that these will be accepted. This is a standard result when on-the-job search is allowed for (see for instance Burdett and Mortensen [4]).

On the job wage growth

As is obvious from equations 3 and 4, g affects differently the value of each search strategy. More precisely:

$$\begin{aligned} \frac{\partial V_u^I}{\partial g} &= \frac{1}{R(\lambda p)} \frac{\lambda}{(1+r)^2} p\overline{w} \\ \frac{\partial V_u^{II}}{\partial g} &= \frac{1}{R(\lambda)} \frac{\lambda}{(1+r)^2} [p\overline{w} + (1-p)\underline{w} - \lambda' p\underline{w}] \end{aligned}$$

The effect of on-the-job wage growth on the decision to accept an offer depends on the comparison of these two effects. It can be analyzed as follows:

(i) Without on the job search, an increase in g creates more incentives to accept low-wage offers. This is due to the following mechanism: On-the-job wage growth proportionately increases the value of low- and high wage jobs, but leaves the value of unemployment benefits unaffected. Compared to strategy II, strategy I trades a higher expected duration of search against a higher expected capital gain when exiting unemployment $(V_e(w) - V_u)$. Indifference between strategies I and II, is reached when the value of taking low-wage jobs is equal to unemployment compensation plus the expected gain from continued search. A rise in g increases the value of low-wage jobs and the expected capital gain from continued search in the same proportion. But since it leaves the value of unemployment benefits unaffected, the overall effect of g is to stimulate the acceptance of low-wage jobs.

One should still note that this effect is likely to be weak in cross-country comparison, due to the fact that when unemployment benefits are indexed on previous wages, a rise in g also induces a rise in b.

(ii) With on-the-job search, the effect of on-the-job wage growth might be different. In that case, part of the intertemporal value of low-wage job has to do with the possibility of job switching, a component that is not affected by the rate of on-the-job wage growth. Consequently to a rise in g, the value of low wage jobs might then rise by less than the value of high wage

jobs. Hence it might be the case that an rise in g hinders the acceptance of low-wage jobs[8]. Several factors are likely to reinforce this effect, for instance the fact that unemployment benefits might increase with the g, or the fact that g might be lower for low-wage jobs.

2.3 Welfare analysis

In our model, two wage distributions can be observed depending on the equilibrium search strategy. The search strategy also determines the magnitude of wage losses experienced by displaced workers. Equilibrium distribution of wages and wage losses of unemployed re-entrants are given in the following table, where Δ denotes the relative wage losses of re-entering unemployed workers.

Under Strategy *I:*	**Under Strategy** *II:*
- the density of observed wages is	- the density of observed wages is
$\overline{w}$ with proba $1/2$	$\underline{w}$ with proba $1/4$
$\overline{w}(1+g)$ with proba $1/2$	$\underline{w}(1+g)$ with proba $1/4(1-\lambda' p)$
	$\overline{w}$ with proba $1/4(1+\lambda' p)$
	$\overline{w}(1+g)$ with proba $1/4$
- the observed wage losses are	- the observed wage losses are
$\Delta^I = g/2$	$\Delta^{II} = g/2 + \lambda' p[1/2 - g\underline{w}/2(\underline{w}+\overline{w})]$

Under strategy I, the losses are simply the result of firm-specific capital accumulation while under strategy II wage losses stenm from two different sources: loss of rents and loss of human capital.

It can be argued that the welfare interpretation of these wage losses differ depending on the driving source of wage adjustments. Loss of accumulated firm-specific earnings potential come from the interplay of the job destruction and specific capital accumulation processes. Increase in that type of wage losses due to a change in either of these two processes translates (for any worker) into a decrease in the mean expected value of wages earned troughout the entire career and a rise in the variance of these wages. Hence

[8] The condition for this to happen is that : $\lambda' p(1-p)\underline{w} > (1-p)\underline{w} + (1 - \frac{R(\lambda)}{R(\lambda p)})p\overline{w}$

Note that this is condition is always satisfied if for instance $\underline{w} < \overline{w} + (1 - \frac{\frac{(1+r)^2}{2+r}}{\frac{(1+r)^2}{2+r}+\lambda p})$

ie. if unemployed workers prefer to turn down low-wage offers in the case with no unemployment benefits and no possibilities of wage growth.

that type of wage losses can unambiguously be considered as harmful for aggregate welfare. This is not necessarily the case for teh second type of wage adjustments: a rise in λ' rises average wage losses of displaced workers but also increases the expected value of wages of unemployed workers and diminishes the ex-ante future wage inequality among them. Hence to the extent that the driving mechanism is mostly a reshuffling of workers amongst jobs with differents rents that compensate for initial out-of-unemployment inequalities in wages, wage losses can be the apparently harmful consequence of a desirable outcome. This should be kept in mind when analyzing and comparing wage losses of displaced workers.

2.4 Wage losses and unemployment duration

We proceed now to study the equilibrium relationship between unemployment duration and the wage losses of workers experiencing unemployment spells. Search models show that the length of unemployment depends on a) the job offer arrival rate, b) the reservation wage which determines the offer acceptance rate. A crucial issue in the understanding of high unemployment duration is to determine whether it is due to wage or non-wage rigidities or, more precisely, to a low offer arrival rate or to a low offer acceptance rate. The question we raise here is whether it is possible to identify the sources of higher unemployment duration (acceptance or arrival) by looking at the relative wages of re-entering unemployed workers.

In our model, the equilibrium distribution of wages and the wage losses of displaced workers depend on the equilibrium search strategy. As workers increase their reservation wage, the range of accepted wage offers shrinks to the upper part of the offered wage distribution. Consequently, 1) the average duration of unemployment increases (from $1/\lambda$ to $1/\lambda p$), 2) the range of profitable job-to-job switches declines, as does the overall wage dispersion and lastly, 3) the relative wage losses of the average unemployed worker will also fall as the distribution of re-entry wages comes closer to the overall wage distribution.

Nevertheless, one should note that the level of the reservation wage only affects the extent of the loss of on-the-job search rents: Losses of firm-specific human capital will not fall when the reservation wage rises and might even increase. Hence the observed wage losses of displaced workers is ambiguously correlated to the reservation wage strategy of unemployed workers. Still, if it is possible to control for the accumulation of job-specific human capital, the residual wage losses can provide clues about the sources of high duration unemployment. This is due to the fact that as the reservation wage increases,

the scope for on-the-job search gains tends to shrink, as does the scope for search-rents losses. Formally, we can define a relative re-entry wage $\Delta_{\lambda'}$, net of the effect of g. Under strategy I we get $\Delta_{\lambda'} = 0$, under strategy II we get $\Delta_{\lambda'} = \lambda' p[1/2 - g\underline{w}/2(\underline{w} + \overline{w})]$. This relative wage is positively correlated to the reservation wage and could give clues as to the reason behind the differences in the duration of unemployment[9]. Note finally that the latter statement is only true as long as the arrival rate of job offers on the job is hold constant.

The rest of the paper estimates the extent of wage losses in France and the US and tries to identify these different effects.

3 Econometric Model and Data

3.1 Econometric Model

3.1.1 Basic Equations

In order to identify the effect of job displacement on reemployment earnings, it is common to estimate an extended Mincer-type earnings function, including as independent variables the individual characteristics of the workers (sex, education and total labor market experience), the characteristics of the job lost (essentially tenure on the job lost) and a dummy variable (equal to one if displacement occurred) that captures the effect of job displacement.

Formally, we have:

$$\ln(w_{i,j(t)}) = X_i\beta_1 + \beta_2 Tenure_{i,j(t-1)} + \gamma D_i + u_{i,j(t)} \tag{5}$$

where index i represents the worker, index t denotes time and index $j(t)$ represents the job held at time t; $w_{i,j}$ denotes the wage of individual i on job j; X_i includes individual education, labor market experience and its square; $Tenure_{i,j(t-1)}$ denotes individual tenure on the job held at time $t-1$; D_i is a dummy variable equal to one if individual i has been displaced between $t-1$ and t.

As is clear from equation 5, the implicit approach is to compare post-displacement wages of displaced workers to those of *ex-ante* (i.e. before displacement) identical but non-displaced workers. The sub-sample of non-displaced workers is then treated as a control group to predict the would-be wages of displaced workers had the job loss shock not happened.

[9] Yet $\Delta_{\lambda'}$ also depends on other parameters of the model. This makes estimates of $\Delta_{\lambda'}$ harder to interpret. Still if we expect the high duration economy to have a higher and a lower , a value of $\Delta_{\lambda'}$ no smaller than in the low duration economy would constitute evidence against the low acceptance explanation.

The validity of this procedure relies on the assumption that the included independent variables control for all the individual heterogeneity that could be correlated with the displacement variable. The fact that job displacement comes for exogenous reasons makes this assumption reasonable. When defining the scope of the Displaced Worker Supplement, the CPS excludes individuals who have been "*fired for poor work performance, disciplinary problems or any other problem that is specific to that individual alone*". Still, if there exists some unobserved permanent individual heterogeneity correlated to the displacement dummy, then ordinary least squares estimates of equation 5, will be biased. This will happen if, for instance, the less able workers are more likely to be displaced, as suggested in Gibbons and Katz[9].

More formally, if the error term $u_{i,j(t)}$ can be decomposed into a permanent individual η_i component and a stochastic term $\varepsilon_{i,j(t)}$, then one needs to implement an estimation procedure that accounts for these individual fixed effects. We do so by estimating equation 5 in first-differences. More precisely, we implement the following model:

$$\Delta \ln(w_{i,j(t)}) = X_i\beta_1 + \beta_2 Tenure_{i,j(t-1)} + \gamma D_i + \varepsilon_{i,t} \tag{6}$$

Other sources of bias might arise from the fact that part of the sample of displaced workers will not be reemployed at the ending period of our survey. If wage losses are correlated to the probability of reemployment, then we are in presence of a standard sample selectivity bias. This issue is tackled using the Heckman two-step correction procedure as will be explained later. Lastly we explore the relationship between unemployment duration and the magnitude of post-unemployment wage losses by adding different functions of unemployment duration to the regressors of equation 6. The estimated function becomes

$$\Delta \ln(w_{i,j(t)}) = X_i\beta_1 + \beta_2 Tenure_{i,j(t-1)} + f(Dur_i)\gamma' + \varepsilon_{i,t} \tag{7}$$

where Dur_i stands for the duration of unemployment between pre- and post-displacement jobs for individual i. We try different values of the f function (squared, cubic and logarithmic).

3.1.2 Identification of the causes of wage losses

It might be worth noting that the above specifications of the wage-loss equations are compatible with the various economic mechanisms that are likely to account for these losses. The inclusion of the tenure-on-the-job-lost variable in the set of independent variables is meant to allow for the fact that individuals with higher pre-displacement tenure should also have (other things equal

and apart from the displacement shock) higher post-displacement earnings. Controlling for previous job tenure actually increases the measured wage losses of displaced workers as these individual tend to have a fairly high measured tenure on their pre-displacement jobs.

Yet this is still compatible with the two main opposing views on returns to seniority. The first is the standard human capital interpretation, according to which workers tend to accumulate some job-specific human capital. Under this interpretation, worker's wages are expected to fall after job-displacement since part of their skills are not valued outside their pre-displacement job. This first view has been challenged by a search-oriented interpretation (see for instance Jovanovic) according to which workers over the course of their career tend to screen among heterogenous jobs and are more likely to stay in the better ones. As the opportunities to locate the best job offers increase with time spent on the labor market, then we should observe a positive correlation between wages and both seniority and total labor market experience. But this correlation should be seen as the result of a time-consuming rent-seeking process rather than as a change in the individual (or match) productivity. Furthermore, wage increases are supposed to be gained through a process of direct (job-to-job) mobility between jobs. On the contrary, when going through unemployment, workers re-enter the labor market at the bottom of the wage ladder, i.e. in jobs whose average quality is lower than the one of jobs held by incumbent workers. This mechanism explains why wages should fall after displacement.

Consequently the above specification leaves the question of the sources of wage losses open. But, as noted in the first part of this paper, it is crucial to disentangle these two potential sources of unemployment-induced wage losses if one wants to draw any conclusion from 2×2 cross-country comparisons of wage losses and unemployment duration. The empirical strategy that we adopt here to tackle this problem is to use consistent estimates of the returns to seniority to predict the productivity fall of displaced workers. This enables us to compute the change in individual wages net of the fall in productivity. This residual wage change variable is interpreted as the change in search rents. By construction, this last variable should be zero on average for job "stayers" but this might not be the case for job losers and especially for displaced workers, as suggested above. We then reestimate equation 5 using this wage change net of productivity fall as a dependent variable to assess the extent of rent losses following job displacement.

More formally, assume that wage determinants can be summarized by

the following equation:

$$\ln(w_{i,j,t}) = X\beta + F(Tenure_{i,j(t),t}) + \eta_i + \nu_{j(t)} + \varepsilon_{i,j(t),t}$$

where F is a continuous function, η_i (resp. ν_j) is an individual- (resp. job-) specific component and $\varepsilon_{i,j,t}$ is an error term. The change in wage is then equal to:

$$\Delta \ln(w_{i,j,t}) = \Big[F(Tenure_{i,j(t)}) - F(Tenure_{i,j(t-1)})\Big] + \Big[\nu_{j(t)} - v_{j(t-1)}\Big] + \Delta\varepsilon_{i,j(t),t}$$

The first bracketed term on the RHS corresponds to changes in individual productivity and the second term corresponds to what we called "loss of rents".

To measure the extent of the loss of rents, we then implement the following equation:

$$\Delta \ln(\omega_{i,j(t)}) = X_i\beta_1 + \gamma D_i + \varepsilon_{i,t} \tag{8}$$

with $\ln(\omega_{i,j(t)}) = \ln(w_{i,j(t)}) - \widehat{F}(Tenure_{i,j(t-1)})$, where $\widehat{F}$ is a consistent estimate of returns to seniority.

3.2 Data

We use two different panel data sets, the French Panel of Employment surveys (enquêtes Emploi) and the Panel Study of Income Dynamics (PSID).

The enquête Emploi is a labor force survey conducted by INSEE (the French National Statistics Institute) over a representative sample of approximately 60 000 French households. It is similar in many respects (focus, size, sample structure) to the US Current Population Survey. But contrary to the CPS, it has a lower frequency and is surveyed annually. The sample has a rotating panel structure. Merging consecutive waves of the survey, it is possible to follow individuals over three consecutive years. Furthermore, individual labor market history is available through a retrospective report of monthly labor force status.

We use the 1990 through 1997 waves of the survey which gives us 6 panel waves. The sample is restricted to prime-age (25 to 55 years old) males. This restriction is justified by previous works (see Lefranc [15][14]) showing that within this segment the French and US labor markets exhibit many similarities (notably in terms of unemployment rates) but also notable differences in the duration of unemployment. Imposing these restrictions, we end up with a total of approximately 25 000 individuals.

Compared to the enquête Emploi, the PSID has a smaller sample but a longer panel structure. It was started in 1968, on the basis of 3 500 households and has been going on ever since. For reasons of comparability of the different questions surveyed we restrict ourselves to the 1981 through 1992 surveys[10]. To get data similar to the French sample, we split the total sample into subwaves of 3 consecutive years and pile up these subsamples. Restricting the sample to prime age males, we get a sample of 14 000 individuals

Both data sets include detailed information on socio-demographic individual characteristics. Information on job characteristics are also available (industry, occupation, tenure, wages, hours of work). As already noted in the literature (see Topel[21]), reported job tenure is particularly noisy in the PSID. Declared tenure very often jumps inconsistently over a given job spell. Some individuals suddenly report a rise in tenure of several years or even a fall, while no job change is elsewhere reported. Since the tenure data is of important matter to the analysis undertaken here, we smooth out inconsistent reports of tenure using connected and consistently reported series of seniority. French data are corrected in the same way.

In the attempt to replicate previous studies of the effect of job displacement, it is crucial to clearly identify the reason for observed job losses. Contrary to other data sets, the PSID and enquete Emploi only provide incomplete information on the reasons of job ending.

Among others, the PSID distinguishes between workers who have been either laid-off or fired, and workers who lost their job due to the fact that "their company folded, changed hands, moved out of town, their employer died or went out of business". While the latter typically fit the definition of displaced workers, we should also probably include non-recalled laid-off workers in our sample. A further argument in favor of that view is the small number of individuals in the category of 'truly' displaced workers.

As for the French data, they draw a distinction between workers who lost their job in a mass job-ending (more than 10 separations from a single firm) and workers being individually separated from their firm. Again, this doesn't coincide with the legal distinction between firings and layoffs and there are good reasons to consider that part of the individuals classified in the second group also fit the definition of displaced workers.

In the rest of the paper, we present two series of estimates of the impact

[10]The final release of the 1993 wave only occured recently and the subsequent waves only gave place to a preliminary release. For these reasons, these waves were not included in our sample.

of job displacement. In the first one, we distinguish between the two types of job termination ("strong" and "weak" displacement). In the second one, we pool the two reported reasons of job termination in a single group.

4 Basic results

4.1 Basic estimations

Table 1 and 2 present the basic estimates of the wage losses of displaced workers. We study the change in both hourly and weekly wage, following job displacement. Both variables are of potential interest but not for the same reason. The hourly wage rate defines the unit price of labor and influences the re-employment probability, since it is a crucial determinant of labor demand. On the other hand, the change in weekly wages is a closer approximation to the change in individual take-home pay and associated welfare. All equations are estimated on the full sample of prime age males and on three sub-samples defined in terms of educational attainment (the education classification is given in appendix). The main reason behind this decomposition is to check whether wage adjustments exhibit a particular behavior for low-skilled individuals that are more likely to be bounded by minimum wage regulations, especially in France.

The estimates found for the US labor market are close to those reported in other studies, most notably the study of Ruhm[19] who uses data similar to mine. They show that displaced US workers experience large wage losses in an order of magnitude of 13 to 20% of their previous wage[11]. Wage losses are also larger when wage are measured on a weekly basis. This is consistent with the fact mentioned in Farber[8] that an important fraction of previously full-time displaced workers return to a part-time job. With respect to the identification of the causes of job ending, one can see that estimated wage losses are larger for 'weakly' defined displaced workers, which is consistent with the fact that this group includes individuals who lost their job due to a dismissal. In that case, the wage earned on the previous job might over-estimate these individuals unobserved quality. Furthermore, these individuals might be stigmatized by the circumstances of their job ending and be forced to accept lower wage losses to find another job.

Estimated wage losses for France are lower than those found on US data: they are on average equal to 10% of the previous wage, roughly two

[11] Since the independant variable is the change in log wages, the coefficient on the displacement dummy has the natural interpretation of relative fall in wages.

thirds of the comparable US figure. Nonetheless, this figure represents a non-negligible and (statistically) significant part of previously earned wages. Once again, we find that wage losses are higher when measured on a monthly basis and that 'weakly' displaced individuals (*licenciements individuels*) experience larger wage adjustments.

These overall differences still hold when we split the total sample according to the individual level of education. Measured wage losses are always higher in the US than in France. One can also note that wage losses of French displaced workers are an increasing function of the level of education ranging from 7.7% of previous wages for low-skilled individuals to 17.4% for high-skilled (or from 10.7 to 19.6% in terms of weekly wage). This does not seem to be the case on the US labor market: if we look at the coefficient on D', table 2 shows that wage losses are roughly constant across skill groups. If we restrict ourselves to the coefficient on D_1 wage losses even appear to be decreasing with skill in the US. These findings are compatible with the idea that the lower end of the French wage distribution is constrained by a level of the minimum wage that would limit the scope for wage losses. Yet, comparing hourly and weekly wage losses in the US, one can see that the higher losses for low-skilled are due to a larger fall in hours per week, rather than to a higher fall in the hourly wage rate. Looking at table 2-a, we see that in France as in the US, low-skilled workers experience a lower fall in hourly wage.

Comparing the wage adjustments of our two displaced groups, D_1 and D_2, one can see that high skilled individuals who report having lost their job due to a plant closing or "*licenciement collectif*" (D_1) experience lower and weakly significant wage losses than other groups. On the contrary, other involuntary job losses (PSID's laid off and fired individuals and enquête Emploi's "*licenciement individuels*") experience high and significant wage losses. Keeping in mind the results found in other studies of a higher wage fall for high-killed displaced workers (see Carrington[5]), we see these surprising estimates as a result of the fact that the D_1 category fails to include all high skilled displaced workers[12]. Furthermore, this bias might be more pronounced for high skilled individuals.

4.2 Duration of unemployment and sample selectivity bias

Before proceeding to the explanation of the above mentioned wage adjustments, one has to question the representativeness of the estimated coeffi-

[12]Note sur ambiguite de report

cients. Since all of the displaced workers observed in our sample have not returned to employment by the last observation of our panel, the sub-sample of re-employed displaced worker might not be representative of the total displaced population. Actually, this is most likely to happen if, as predicted by search models, the probability of re-employment depends on the wage adjustment accepted by the job losers. In that case, as in our theoretical model, there can be a negative relationship between the duration of unemployment and the extent of wage losses, because of a productive search mechanism. If so, the estimated wage losses of re-employed individuals might overestimate the average losses of the representative displaced worker.

We first estimate a generalized Tobit model, to account for this potential sample selectivity bias. The estimated model is a two step Heckman model. In the first step, we estimate a reemployment probability equation using a Probit model. This enables us to compute the Mills ratio associated to each individual characteristics. This inverse of this ratio is then used as a regressor in the estimation of wage change equation on the sub-sample of reemployed displaced workers.

We do not estimate this equation on our US sample. Reasons for this are threefold. First, while the sample selectivity bias might be an important issue in our French data set, where roughly one half of the displaced population did not return to employment by the period of our panel, it is seems to be fairly less relevant to our US estimates where only one out of ten displaced workers had not found a job by the same time. Furthermore, we rely on previous US estimates showing a negative relationship between the duration of unemployment and post displacement wages (see Addison and Portugal[2]). Lastly, attempts to formally control for sample selectivity bias have cast doubt on the relevance of this effect (see Swaim and Pogdursky[20] and Houle and Van Audenrode[10]).

Estimates of the Heckman two-step reemployment equation are reported in the appendix. The inverse of the Mills ratio is negative (as predicted by the productive search model) but never close to significance in the wage change equation estimated on the sole sample of displaced and re-employed workers. This finding is confirmed by the estimates of the wage losses equation where include the duration of unemployment instead of the displacement dummy. These estimates indicate a negative and convex relationship. Together these findings seem to indicate that the estimated wage losses of displaced workers in France do not overestimate the true wage adjustments at work.

5 Returns to seniority and the wage losses of displaced workers

We now try to identify the sources of wage adjustments, following the methodology outlined in section 3. This identification procedure relies on the availability of a consistent estimate of returns to seniority in both countries. By consistent, we mean an estimate able to separate the true returns to seniority from the spurious correlation between wages and tenure attributable to the screening behavior of the workers. There has been an important debate surrounding this issue, where different methods and estimates have been put forward by different authors[13]. Here we replicate Topel's 1991 estimation procedure using US and French data. These estimates of the returns to seniority are then used to decompose the wage losses estimated in the previous section into two possible components, namely the loss of rents and the loss of returns to seniority.

5.1 Returns to seniority

The basic idea Topel's two stage estimation procedure is the following. First one must consider that true returns to seniority cannot be estimated using OLS regression, since seniority on a job is endogeneous as soon as jobs differ in their quality. Unfortunately,estimating a wage equation in first difference does not allow to distinguish between returns to esniority and returns to experience. The two-stage procedure amounts to first estimate the joint returns to experience and seniority in a first stage and then to regress entry-level wage on entry-level experience to obtain an upward biased estimate of returns to experience. Substracting this estimate from the estimated joint returns to experience and seniority yelds a downward biased estimate of returns to tenure.

The results presented in table 4 estimate the returns to seniority using Topel's two-stage. The replication of Topel[21]'s estimates yelds interesting results. As is further documented in a companion note to this paper (see Lefranc[16]) the estimate of returns to seniority based on the PSID are highly dependent upon the choice of the wage variable used on the left end side. In the latest waves of the PSID (from the end of the 70's on), two different wage variables are available: one is the average hourly wage rate computed from the total wage income earned on all jobs over the year preceding the interview, the other is the (declared) current hourly wage rate on main job.

[13] See Abraham-Farber[1], Altonji-Shakotko[3] and Topel [21] for the main contributions to this debate.

Since the tenure variable used as the regressor refers to the current main job, the second wage measure seems the natural one to use. unfortunately, this variable is not available in the first 9 waves of the panel.

Topel's results are based on the first wage variable. Replicating his study on a different time-period (81-92 vs. 68-83), we are able to closely match his results based on the yearly average hourly wage (see table 4). Yet estimating the same regression using the more appropriate wage variable decreases significantly the estimated results to seniority. Topel concludes to a significant impact of seniority on wages : according to his estimates wages increase by 5.5% a year during the first years on a job. Our preferred estimate are significantly smaller, showing that the early career returns to a year of seniority are around 2%. This value is quite similar to what we find for France. These results are used in the remaining part of this paper.

5.2 Loss of rents or loss of human capital ?

Table 5 provides preliminary evidence on the relationship between seniority on the job lost and wage losses of displaced workers. It shows that a higher seniority is on average correlated to a higher wage loss. Nevertheless, this correlation cannot be interpreted in a clear causal way. It might well be the case that high-seniority workers forgo a greater amount of firm specific human capital when being displaced. But it can also stem from the fact that they were in a better paying-job to start with, which can explain both why they stayed longer on that job and why they lose more by quitting this job.Using estimated returns to seniority to estimate equation 8.

The results in table 6 show the extent of residual wage losses, once the value of pre-displacement seniority have been substracted from the pre-displacement wage.This table shows important differeces between the two country. In France, most of the measured wage losses following displacement are likely to be due to the loss of returns to seniority accumulated on the previous job. Once we account for these forgone returns, the displacement dummy variables appears to be non significantly different from zero. This is not true though for workers being on licenciement individuel (fired) but in this case, the neagative value of that coefficient might stem from an heterogeneity bias. Contrary to what we find for France, displaced workers on the US labor market seem to experience wage losses beyond the mere loss of firm specific earnings potential. As a matter of fact this loss of specific capital accounts for not more than one-half of the total wage losses[14].

[14]One might nevertheless question at that point the value of returns to esniority used in this regression. Table 7 provides complementary evidence on the validity of our cho-

Differents factors seem to influence these diverging results. First, while the returns to seniority seem to be similar between the two countries, it has to be noted that the average seniority of displaced workers is markedly higher in France than in the US. This can explain why the loss of returns to seniority is higher in France. To the extent that contrary to the US case we do not observe any significant loss of rents in France, our results also seem to indicate that the dynamic of job changing also differs between the two economies. As a whole, there seems to be less job changing in France and smaller possibility to upgrade from the out of unemployment-entry job to a better paying employment. These differences maight stem either from a lower arrival rate of job offers while employed or from a lower dispersion of potential wages which makes job changing less likely for any given level of (non-zero) productivity. Note finally that this is also consistent with a higher reservation wage that diminishes the scope for further wage improvements. Unfortunately these two different interpretation cannot be disentangled without further evidence.

6 Conclusion

Comparing the extent of unemployment-induced wage losses in France and in the US, this paper first shows that French workers experience slightly smaller wage decline than their US counterparts. The observed wage changes are still significant and of important magnitude. Furthermore, the results we find for France provide counter-evidence against the often mentioned wage rigidity of European labor markets.

Turning to the question of the sources of these wage adjustment, we also show that they stem from different sources in the two economies. French workers mainly experience wage decline due to the loss of firm specific human capital, while displaced US workers have lower average seniority and experience wage declines that seem to come evenly from a loss of human capital and a loss of rents. One potential explanation of this difference in results could be that French workers encounter less opportunities to accumulate such rents over the course of their career. In the terns of the theoretical model developed in section 2, this in turn might be due to a lower job offer arrival rate while employed but is also consistent with a potentially higher reservation wage that diminishes the scope for further wage improvements.

sen estimates: the residual wage losses computed from our estimated coefficients of ther returns to seniority doesn't not show any further correlation with seniority.

References

[1] K. G. Abraham and H. S. Farber. Job Duration, Seniority and Earnings. *American Economic Review*, 77(3):278–297, 1987.

[2] J. T. Addison and P. Portugal. Job Displacement, Relative Wage Changes and the Duration of Unemployment. *Journal of Labor Economics*, 7(3):281–302, 1989.

[3] J. G. Altonji and R. A. Shakotko. Do Wages Rise with Job Seniority? *The Review of Economic Studies*, 54:437–459, 1987.

[4] K. J. Burdett and D. Mortensen. Equilibrium Wage Differentials and Employer Size. *International Economic Review*, 39:257–73, 1998.

[5] W. Carrington. Wage Losses for Displaced Workers: Is It Really the Firm That Matters? *Journal of Human Ressources*, 28(3):435–62, 1993.

[6] D. Cohen, A. Lefranc, and G. Saint-Paul. French Unemployment : A Transatlantic Perspective. *Economic Policy*, (25):265–285, october 1997.

[7] B. C. Fallick. A Review of the Recent Litterature on Displaced Workers. *Industrial and Labor Relations Review*, 50(1):5–16, october 1996.

[8] H. S. Farber. The Incidence and Costs of Job Losses. *Brookings Paper on Economic Activity : Microeconomics*, pages 73–132, 1993.

[9] R. Gibbons and L. F. Katz. Layoffs and Lemons. *Journal of Labor Economics*, 9(4):351–80, october 1991.

[10] M. Houle and M. Van Audenrode. Job Displacement, Wages and Unemployment Duration in Canada. *Labour Economics*, 2(1):77–91, march 1995.

[11] M. Howland and G. E. Petersen. Labor Market Conditions and the Reemployment of Displaced Workers. *Industrial and Labor Relations Review*, 42(1):109–22, october 1988.

[12] H. Krashinsky. Establishment Size in the Adverse Selection Model: Layoffs and Lemons Revisited. *mimeo Princeton University*, february 1999.

[13] A. B. Krueger and L. Summers. Efficiency Wages and the Inter-Industry Wage Structure. *Econometrica*, 56(2):259–293, 1988.

[14] A. Lefranc. Evolutions des marchés du travail français et américains: quelques éléments d'analyse comparative. *Revue Economique*, 48(5):1041–1060, septembre 1997.

[15] A. Lefranc. Quelques éléments de comparaison des taux de chômage français et américains. *Economie et Statistique*, (301-302):61–72, 1997.

[16] A. Lefranc. New Evidences on Returns to Seniority: Some Replication Results. *mimeo Industrial Relations Section - Princeton University*, 1999.

[17] J. Leonard and M. Van Audenrode. The Duration of Unemployment and the Persistence of Wages. *CEPR Discussion Paper*, (1227), august 1995.

[18] D. T. Mortensen. Job Search and Labor Market Analysis. In O. Ashenfelter and R. Layard, editors, *Handbook of Labor Economics*, volume 2, chapter 15, pages 849–919. North-Holland, Amsterdam, 1986.

[19] C. J. Ruhm. Are Workers Permanently Scared by Job Displacement. *American Economic Review*, 81(1):319–24, 1991.

[20] P. Swaim and M. Podgursky. Job Displacement and Earning Losses: Evidence from the Displaced Worker Survey. *Industrial and Labor Relations Review*, 41(1):17–29, 1987.

[21] R. Topel. Specific Capital, Mobility and Wages : Wages Rise With Seniority. *Journal of Political Economy*, 99(1):145–176, February 1991.

Table 1: Wage losses of Displaced workers

Dependent Variable	Change in hourly wage rate		Change in weekly wage rate	
	France	*United-States*	*France*	*United-States*
Specification 1				
D_1	-0.087	-0.134	-0.112	-0.158
	7.06	6.36	9.12	5.93
D_2	-0.118	-0.156	-0.145	-0.201
	6.26	11.3	7.79	11.51
Specification 1				
D'	-0.096	-0.150	-0.122	-.188
	9.29	12.82	11.89	12.77

Notes: - D_1 equals one for unemployment spells due to "displacement" (respectively "licenciement collectif"); - D_2 equals one for unemployment spells due to "lay-off or firing" (respectively "licenciement individuel"); - $D' = D_1 + D_2$; - all regressions include control for labor market experience, tenure on the job lost, level of education, marital status, state of residence and year dummies; Numbers in parentheses are t statistics

Table 2-a: Wage losses by level of education

Dependent Variable:	Change in hourly wage rate					
Level of education:	High		Medium		Low	
	France	*US*	*France*	*US*	*France*	*US*
Specification 1						
D_1	-0.075	-0.096	-0.108	-0.152	-0.065	-0.133
	(1.78)	(2.04)	(6.99)	(5.76)	(2.80)	(2.82)
D_2	-0.29	-0.124	-0.088	-0.183	-0.124	-0.096
	(6.35)	(3.36)	(3.68)	(11.06)	(2.72)	(3.40)
Specification 1						
D'	-0.174	-0.113	-0.102	-0.175	-0.077	-0.106
	(5.60)	(3.87)	(7.84)	(12.32)	(3.70)	(4.30)

Notes: - D_1 equals one for unemployment spells due to "displacement" (respectively "licenciement collectif"); - D_2 equals one for unemployment spells due to "lay-off or firing" (respectively "licenciement individuel"); - $D' = D_1 + D_2$; - all regressions include control for labor market experience, tenure on the job lost, level of education, marital status, state of residence and year dummies; Numbers in parentheses are t statistics

Table 2-b : Wage losses by level of education

Dependent Variable:	Change in weekly wage rate					
Level of education:	High		Medium		Low	
	France	*US*	*France*	*US*	*France*	*US*
Specification 1						
D_1	-0.093	-0.042	-0.140	-0.190	-0.101	-0.230
	(2.43)	(0.80)	(8.55)	(5.43)	(2.79)	(3.43)
D_2	-0.317	-0.240	-0.102	-0.198	-0.127	-0.175
	(7.66)	(5.79)	(4.04)	(9.02)	(2.79)	(4.36)
Specification 1						
D'	-0.196	-0.168	-0.129	-0.196	-0.107	-0.190
	(6.96)	(5.01)	(9.34)	(10.43)	(5.16)	(5.43)

Notes: - D_1 equals one for unemployment spells due to "displacement" (respectively "licenciement collectif"); - D_2 equals one for unemployment spells due to "lay-off or firing" (respectively "licenciement individuel"); - $D' = D_1 + D_2$; - all regressions include control for labor market experience, tenure on the job lost, level of education, marital status, state of residence and year dummies; Numbers in parentheses are t statistics

Table 4 : returns to seniority

	US (PSID)			France (enquete Emploi)	
dependant variable	hourly wage (yearly av.)	hourly wage (current)	Topel	hourly wage (inc. bonus)	hourly wage (∅ bonus)
OLS estimates					
Experience	0.0451	0.03929		0.0403	0.040
	(0.0115)	(0.0110)		(0.0102)	(0.0098)
Experience^2/100	-0.1198	-0.0753		-0.1810	-0.1812
	(0.0915)	(0.0872)		(0.0669)	(0.0645)
Experience^3/1000	-0.0008	-0.0136		0.0465	0.0465
	(0.0286)	(0.0272)		(0.0180)	(0.0174)
Experience^4/10000	0.0022	0.0033		-0.005	-0.0050
	(0.0030)	(0.0029)		(0.0017)	(0.0016)
Tenure	0.0747	0.043		0.0131	0.0105
	(0.0069)	(0.0066)		(0.0042)	(0.0040)
Tenure^2/100	-0.5672	-0.2983		-0.0636	-0.0515
	(0.0827)	(0.0792)		(0.0431)	(0.0416)
Tenure^3/1000	0.2092	0.113		0.024	0.0216
	(0.0354)	(0.0337)		(0.0166)	(0.0160)
Tenure^4/10000	-0.0261	-0.014		-0.0029	-0.0026
	(0.0049)	(0.0046)		(0.0021)	(0.0020)
First diff. estimates					
Experience+Tenure	0.1357	0.0464	0.1258	0.0553	0.0464
	(0.0161)	(0.0107)	(0.0162)	(0.0082)	(0.0078)
Experience^2/100	-0.3809	-0.1435	-0.4067	-0.1909	-0.1533
	(0.1423)	(0.0942)	(0.1546)	(0.0551)	(0.0527)
Experience^3/1000	0.07473	0.0280	0.0989	0.0303	0.0225
	(0.0466)	(0.0308)	(0.0517)	(0.0107)	(0.0102)
Experience^4/10000	-0.0058	-0.002	0.0089	-0.00018	-0.0001
	(0.0050)	(0.0033)	(0.0058)	(0.00006)	(0.00006)
Tenure^2/100	-0.5357	-0.1007	-0.4592	-0.038	0.0068
	(0.0996)	(0.0661)	(0.108)	(0.0376)	(0.0360)
Tenure^3/1000	0.2339	0.046465	0.1846	0.0063	-0.006
	(0.0504)	(0.0331)	(0.0526)	(0.0164)	(0.0157)
Tenure^4/10000	-0.0316	-0.007737	-0.0245	-0.0001	0.0012
	(0.0076)	(0.0049)	(0.0079)	(0.0022)	(0.0021)
Two stage estimates					
Initial experience	0.0805	0.029297	0.0713	0.0375	0.0357
	(0.0005)	(0.0005)		(0.0002)	(0.0002)
Tenure	0.0551	0.017159	0.0545	0.0178	0.0106

Notes: - all regressions include control for labor market experience, tenure on the job lost, level of education, marital status, state of residence , union status and industry; Numbers in parentheses are standard errors

Table 5 : Wage losses and seniority

US (PSID)		France (enquete Emploi)
Hourly wage rate		
D_1	-0.053058	-0.019903
	(0.0311)	(0.0175)
D_1*Tenure	-0.010495	-0.009176
	(0.0030)	(0.0016)
D_2	-0.172585	-0.128082
	(0.0201)	(0.0245)
D_2*Tenure	0.005951	0.002601
	(0.0031)	(0.0038)
D'	-0.130128	-0.055063
	(0.0167)	(0.0142)
D'*Tenure	-0.002174	-0.006493
	(0.0021)	(0.0015)
Weekly/Monthly wage rate		
D_1	-0.102115	-0.002207
	(0.0387)	(0.0174)
D_1*Tenure	-0.010987	-0.014955
	(0.0037)	(0.0016)
D_2	-0.195403	-0.144579
	(0.0251)	(0.0243)
D_2*Tenure	0.002575	-0.000122
	(0.0039)	(0.0038)
D'	-0.161445	-0.048901
	(0.0208)	(0.0141)
D'*Tenure	-0.004233	-0.011485
	(0.0026)	(0.0015)

Notes: - D_1 equals one for unemployment spells due to "displacement" (respectively "licenciement collectif"); - D_2 equals one for unemployment spells due to "lay-off or firing" (respectively "licenciement individuel"); - $D' = D_1 + D_2$; - all regressions include control for labor market experience, tenure on the job lost, level of education, marital status, state of residence and year dummies; Numbers in parentheses are standard errors

Table 6: Residual Wage losses

US (PSID)		France (enquete Emploi)
Hourly wage rate		
$D1$	-0.0802	0.0154
	(0.0194)	(0.0134)
D_2	-0.0993	-0.0658
	(0.0131)	(0.0203)
D'	-0.0934	-0.0091
	(0.011)	(0.0112)
Weekly/Monthly wage rate		
D_1	-0.1278	-0.0164
	(0.0244)	(0.0133)
D_2	-0.1397	-0.0859
	(0.0165)	(0.0202)
D'	-0.1361	-0.0374
	(0.0138)	(0.0112)

Notes: - D_1 equals one for unemployment spells due to "displacement" (respectively "licenciement collectif"); - D_2 equals one for unemployment spells due to "lay-off or firing" (respectively "licenciement individuel"); - $D' = D_1 + D_2$; - all regressions include control for labor market experience, tenure on the job lost, level of education, marital status, state of residence and year dummies; Numbers in parentheses are standard errors

Table 7: Residual wage losses and seniority

US (PSID)		France (enquete Emploi)
Hourly wage rate		
Plant closing	-0.057241	0.00209
	(0.02625773)	(0.01770673)
Plant closing*Tenure	-0.003947	0.002028
	(0.00302468)	(0.00176733)
Layoff/Fired	-0.137346	-0.112381
	(0.01701616)	(0.02526443)
Layoff/Fired*Tenure	0.01162	0.018713
	(0.00324395)	(0.00604888)
Displaced	-0.107505	-0.033455
	(0.01418047)	(0.01423235)
Displaced*Tenure	0.003518	0.004563
	(0.00216318)	(0.00163546)
Weekly/Monthly wage rate		
Plant closing	-0.09768	0.007509
	(0.03297264)	(0.01765556)
Plant closing*Tenure	-0.005173	-0.003693
	(0.00379818)	(0.00176222)
Layoff/Fired	-0.169573	-0.136216
	(0.02136772)	(0.02519142)
Layoff/Fired*Tenure	0.009191	0.020334
	(0.00407353)	(0.00603139)
Displaced	-0.142485	-0.035264
	(0.0178038)	(0.01419414)
Displaced*Tenure	0.001671	-0.000426
	(0.00271591)	(0.00163107)

Notes: - D_1 equals one for unemployment spells due to "displacement" (respectively "licenciement collectif"); - D_2 equals one for unemployment spells due to "lay-off or firing" (respectively "licenciement individuel"); - $D' = D_1 + D_2$; - all regressions include control for labor market experience, tenure on the job lost, level of education, marital status, state of residence and year dummies; Numbers in parentheses are standard errors