# Job Flows and Worker Flows in France: New Evidence and Micro-Macro Links*

Francesco Avvisati†

Preliminary and incomplete draft
(21st February 2007)

**Abstract**

In dynamic labour markets the yearly employment growth rate conceals massive worker flows in and out of establishments and results from pronounced heterogeneity of behaviour at the establishment-level. We document the magnitude of labour market flows for France, based on an employer-employee data set spanning 10 years from 1996 to 2005. This leads to new results related to the time-series behaviour of our measures. We find that job reallocations are strongly procyclical, and document a marked increase in job instability over the last ten years, related to the rise of employment and instability within the tertiary sector. Finally, we test some hypotheses about how the evolution of aggregate flows over the business cycle results from plant-level behaviour.

JEL Classification: J23, J63; D21; E32.
Keywords: accessions, separations, job creations, job destructions, employment instability.

*This paper is largely based on my Master's thesis. I thank my supervisors, Eric Maurin and Dominique Goux, as well as Richard Duhautois and Claude Picart and seminar participants at DARES (The Research Department of the French Ministry of Employment) for their helpful comments and suggestions. The usual disclaimer applies.

†Paris-Jourdan Sciences Economiques, 48 Bd Jourdan, 75014 Paris – France. Email: francesco.avvisati-at-ens.fr

# 1 Introduction

Aggregate employment growth rates conceal a pronounced heterogeneity of behaviour at the establishment level. Each year, most job destructions are offset by a job creation within the same narrowly defined industry. At the same time, the existence of significant employee turnover given the persistence of their employment positions is a well documented empirical feature of dynamic labour markets.

Abundant research has been done to assess the magnitude of job- and worker flows in national labour markets, including France.

Job flows (job creations and destructions) and worker flows (hires and separations) are related to different types of instability. Job flow measures document the amount of simultaneous creation and destruction and are therefore related to the uncertainty of the business environment. On the other hand, worker flows document instability from the workers' point of view. The probability of separating from the current employer equals the probability of losing a continuing job plus the probability of that job being destroyed. Hence, comparing worker flow measures with job flow measures helps us characterising the levels and trends in job instability.

Unfortunately, long time series that allow the joint study of job flow and worker flow measures are rare. This paper uses a detailed and large administrative data set from a very recent period, spanning ten years from 1996 to 2005, to fill that lack for France. Our source allows our study on French labour market flows to focus on establishments with more than 10 employees belonging to the competitive sector of the economy. This source is in part new to the joint analysis of job flows and worker flows in France, and we review briefly its advantages and disadvantages in section 2.

Nationwide measures of job and worker flows reveal two important facts. First, job turnover is strongly procyclical over the last decade. During expansions, job creations increase by more than job destruction decrease; and after a

downturn, job creation rates decrease faster than job destruction rates increase. Second, worker turnover exhibits an increasing trend and is only mildly related to job turnover. All the evidence suggests that over the last decade, the risk of separating from an employer increased for the average French worker without a corresponding increase in the risk of her position being destroyed. In section 4 we present this evidence along an inspection into its statistical causes.

Linking macro evidence to establishment behaviour still constitutes a challenge for scholars in this field [Davis *et al.* , 2005]. We make some few steps in this direction in section 5.

# 2 Data Set

We make use of establishment-level data including significant information on accessing and separating workers from two related administrative sources, especially well-suited for the study of labour market flows.

The first source are the monthly *Déclarations mensuelles des mouvements de main-d'œuvre* (DMMO). These are mandatory declarations for private sector establishments[1] with over 50 employees that give information, each month, on all worker movements. This administrative report was created in 1975, to monitor job turnover and to support an active labour market policy.

The second source is the *Enquête sur les mouvements de main-d'œuvre* (EMMO). This survey completes the declarations by providing a quarterly record of worker movements for a representative sample of private sector establishments between 10 and 49 employees. The data was first collected in 1988; in 1996 the methodology for the EMMO was changed in order to permit the creation of a merged data set with the DMMOs. The questionnaire is now almost the same for both surveys. The surveyed samples are rotating so that important subsamples can be tracked over time.

The Research Department at the French Ministry of Employment (DARES),

[1] With the notable exception of temporary help agencies, which do not qualify for this survey.

which is responsible for the collection of the data, merges the information from these sources in a collection of quarterly data sets. We further aggregate quarterly information to yearly data sets. Details about the variables and data selection procedures are in a specific data appendix (appendix B).

One of the most interesting features of our data is their coverage of a full economic cycle (1996-2005). Indeed, existing studies on job- and worker flows in France are based on data spanning only half-cycles (phases of expansion or recession) [Duhautois, 2002]. A second virtue is that they are of good quality and allow the precise investigation of both job- and worker flows (as opposed to the employer-level data used in other studies or countries, which only include stock information) along with decompositions of worker flows by contract, age and skill level.

The data also has some limitations. Employee-characteristics are known only for joining or separating workers, not for the whole workforce; in addition, no financial information (value added, profits, sales, wages, ...) is available. Finally, since a not-yet or no-longer existing establishment is not discernable from a non-respondent establishment, the analysis of the consequences for labour market flows of births and deaths of establishments is problematic.

The proportion of establishments included in our yearly data sets among those surveyed in all 4 quarters of a year[2] is reported in table 1. As can be seen from this table, non-response or non-consistency cannot be considered independent from observable dimensions; to ensure the figures are still representative, we therefore compute ex-post weights, which will be used throughout the analysis.

## 2.1 Computation of Ex-post Weights

Ex post weights are computed starting from available establishment information, which includes the ex ante weight, computed as the inverse of the sampling probability (the latter is 1 for DMMO establishments and between 0 and 1 for

[2]In principle, within a year the samples surveyed do not change, but this rule is not always strictly observed.

EMMO establishments).

When the focus is on the distribution of some measure referring to establishments, observations are weighted by the product of the ex-ante weight times the inverse of the response rate in the same region, industry and size category. When we sum establishment flows and stocks, weights are given by the product of the ex-ante weight times the inverse of an employment-weighted response rate. The details of these computations are given in the box below.

**Ex-post Weights**
Our master data set is given by the establishments that are included either in the respondents or in the non-respondents base in all 4 quarters of a year. For all of them, we have information on their region (22 levels), industry (16 levels) and size category (4 levels), as well as on known employment at draw and on their ex ante weight.
For each (region)*(industry)*(size category) combination, we compute:

- The sum of ex-ante weights among respondents, as defined above, and in our master data set; the ratio of the first over the second is the response rate.
- The weighted sum of employment in the same two data sets; this time, the ratio is an employment-weighted response rate.

## 2.2 Data Trimming

Our two data trimming criteria are the following:

- We exclude establishments with 0 employees at the end of the year from our samples on which we compute the measures defined below (section 3). Our data does not allow to distinguish a temporary shutdown clearly from the death of an establishment (both could cause either a 0 declaration, or a non response). We therefore take only establishments which continue to exist into account. For the sake of symmetry, we also exclude establishments with 0 employees at the beginning of the year. This leads us to underestimate worker- and job flows, and should be borne in mind when comparing the figures in the present study with those from other sources.
- Finally, we exclude establishments whose entry or exit movements in a year exceed 25 times their (average) size. These outliers would bias significantly

our means of entry- and exit rates.

Table 2 shows that data trimming reduces our samples by about 5%.

The number of observations included in our final yearly data sets is given in table 3. When not specified, the number of observations used in computations coincides with the figures reported in this table.

The last two columns in table 3 show that EMMO establishments count for approximately 4/5 of all observations.

### 2.3 Data Description

Table 4 shows the distribution of establishments across sector and size categories. The increasing importance of the tertiary sector in the French economy is well documented by our data. Bigger establishments are more frequent in the central years of the sample, which coincide with a peak in the business cycle.

Table 5 completes the former table – concerning establishments – with the distribution of employment across sectors. Between 1996 and 2000, the structure of the French economy stayed broadly constant; after the downturn in 2001, employment growth at industrial firms did not keep pace with other sectors and employment shifted increasingly towards tertiary activities. The comparison of the last two lines reveals that employment in our sample of establishments, which excludes the self-employed, government employees and workers employed in establishments with less than 10 employees, over-represents manufacturing employment in comparison to an exhaustive workforce survey.

## 3 Measuring Job- and Worker Flows

Job- and worker flows are defined following Davis & Haltiwanger [1999] for aggregate flows and Abowd *et al.* [1999] for establishment-level measures. We denote the level of employment in establishment $j$ at the end of calendar year $t$ as $X_{j,t}$; total entry movements during year $t$ as $H_{j,t}$ ("hirings") and total exit movements as $S_{j,t}$ ("separations").

The yearly job creation rate (JCR) and job destruction rate (JDR) in establishment $j$ are defined as:

$$JCR_{j,t} = \max\left(0, \left(\frac{2(X_{j,t} - X_{j,t-1})}{(X_{j,t} + X_{j,t-1})}\right)\right) \quad (1)$$

$$JDR_{j,t} = \max\left(0, -\left(\frac{2(X_{j,t} - X_{j,t-1})}{(X_{j,t} + X_{j,t-1})}\right)\right) \quad (2)$$

Dividing the change in employment by average employment has become usual in this literature; as a result, JCR and JDR both take values in the closed interval $[0, 2]$; for values close to 0, this measure is very similar to a traditional growth rate in terms of initial employment.

Aggregate job flows – gross job creation and gross job destruction within class $C$ (a sector, the economy, ...) – are computed as:

$$JCR_{C,t} = \left(\frac{2\sum_{j\in C^+} |X_{j,t} - X_{j,t-1}|}{\sum_{j\in C}(X_{j,t-1} + X_{j,t})}\right) \quad (3)$$

$$JCR_{C,t} = \left(\frac{2\sum_{j\in C^-} |X_{j,t} - X_{j,,t-1}|}{\sum_{j\in C}(X_{j,t-1} + X_{j,t})}\right) \quad (4)$$

where $C^+$ represents the subset of firms with $JCR > 0$ within class $C$ and $C^-$ the subset with $JDR > 0$. By definition, POS and NEG are employment-weighted means of JCR and JDR respectively. They can be viewed as a lower bound on the number of jobs created and destroyed in a year, because jobs created and destroyed in the same year and job reallocations within a given establishment are excluded; at the same time, since measures based on filled positions ignore the distinction between a destroyed job and a vacant one, they also may overestimate job creations and destructions.

Furthermore, the job turnover rate (JT) is defined as the sum of gross job creations and gross job destructions.

$$JT_{C,t} = POS_{C,t} + NEG_{C,t} \quad (5)$$

The yearly entry rate (IN) at establishment $j$ is given by

$$IN_{j,t} = \left(\frac{2(H_{j,t})}{(X_{j,t-1} + X_{j,t})}\right) \quad (6)$$

In the same way, the yearly exit rate (OUT) is defined as

$$OUT_{j,t} = \left( \frac{2(S_{j,t})}{(X_{j,t-1} + X_{j,t})} \right) \tag{7}$$

The joining and separation of workers may result from different types of movements; the relative contribution of single movements (quits, layoffs, etc.) to job accession and job separation rates is computed by replacing $H_{j,t}$ and $S_{j,t}$ with its single components. Similarly, entry- and exit rates by skill-level or age may be obtained by including only movements implying a particular skill-level or age category in $H_{j,t}$ or $S_{j,t}$.

Aggregate entry- and exit rates are computed as in equations6 and 7 by replacing the numerator and denominator with the sum over establishments belonging to class $C$. Worker turnover (WT) is the sum of entry- and exit rates. This measures the number of job-to-job, employment-to-unemployment and unemployment-to-employment transitions as a proportion of the employed population[3].

$$IN_{C,t} = \left( \frac{2 \sum_{j \in C}(H_{j,t})}{\sum_{j \in C}(X_{j,t-1} + X_{j,t})} \right) \tag{8}$$

$$OUT_{C,t} = \left( \frac{2 \sum_{j \in C}(S_{j,t})}{\sum_{j \in C}(X_{j,t-1} + X_{j,t})} \right) \tag{9}$$

$$WT_{C,t} = IN_{C,t} + OUT_{C,t} \tag{10}$$

We refer to entry- and exit movements generically as "worker flows"; we adopt the convention of calling establishment-level employment variations "gross job flows", while employment variations at higher, aggregate levels are called "net job flows". In doing that, we follow the terminology adopted in the related literature [Hamermesh *et al.* , 1996].

In addition to job- and worker flow measures, we define some measures related to temporary work (see appendix A for the necessary background on French labour market legislation).

The CDD proportion in hiring (PH) for establishment $j$ or class $C$ is given

[3]Job-to-job transitions are double-counted.

by

$$PH_{j,t}^{CDD} = \frac{H_{j,t}^{CDD}}{H_{j,t}^{CDD} + H_{j,t}^{CDI}} \tag{11}$$

The proportion of CDD transformed into permanent contracts (CDD transformation rate, TR) for establishment $j$ or class $C$ is computed as[4]

$$TR_{j,t} = 1 - \frac{S_{j,t}^{CDD}}{H_{j,t}^{CDD}} \tag{12}$$

Temporary help (interim) workers employed at establishment $j$ at the end of quarter $q$ are denoted $I_{j,q,t}$. The average proportion of workers in an establishment $j$ or a class $C$ represented by interim workers is called interim intensity (II). It is computed as

$$II_{j,t} = \frac{\sum_{q=1}^{4}(I_{j,q,t})}{\sum_{q=1}^{4}(X_{j,q,t} + I_{j,q,t})} \tag{13}$$

Note that the denominator is different from that used for job- and worker flow measures (where only direct employees count in average employment). Information on temporary help workers is only available from 1999 on.

# 4 Aggregate Empirical Evidence

## 4.1 Job Flows

Every year between 1996 and 2005, the number of lost employment positions represents about 4% of total employment within our sample of establishments (Table 6). Over the same period, job creations have a markedly procyclical profile, ranging from 3,9% in 1996 to 6,9% in 2000. As a result[5], the job turnover

[4]This way of measuring a pass-through rate was first used in Abowd *et al.* [1999]. This definition rests on two assumptions: that CDD workers do not leave the establishment before their contract comes to end (they never quit, are never fired, nor transferred to another establishment), and that CDD terminations in a year are a non-biased measure of how many CDDs created in the same year will be terminated. For this latter assumption, we believe that establishment-level errors cancel out at the aggregate level. In any case, since the bulk of terminated CDDs is made up of very short contracts (according to evidence from DMMOs on the period 2002-2005, less than 20% of terminated CDDs last more than 3 months), the measurement error is small. When this measure is computed at the establishment level, in an attempt to minimise this error, we characterise its distribution only over establishments that hire more than 5 workers on CDD in a year. Our conjecture is that even if the two assumptions are not met, this measure does well in capturing evolutions of the transformation rate at the aggregate level.

[5]The employment growth rate equals, approximately, (JCR-JDR); job reallocations are defined as (JCR+JDR). Since the covariance between the two is $\sigma^2(JCR) - \sigma^2(JDR)$, it follows that the Pearson correlation coefficient between the two can be positive if and only if the variance of the gross job destruction rate is lower than the variance of the gross job creation rate.

rate at continuing establishments (which we measure between 8% and 10%) exhibits high correlation with the employment growth rate (the Pearson correlation coefficient is 0,9). In France, cyclical highs appear as the most favourable periods to employment reallocations within the economy.

Further evidence on this claim is given by the fact that big adjustments – changes in establishment size in excess of 20% in absolute value – tend to be more frequent during periods of growth. Table 7 presents three series: 1) the proportion, among all establishments, of those experiencing a change in their size exceeding 20%; 2) the proportion, among gross job destructions, of jobs lost at establishments reducing their size by more than 20%; 3) the symmetrical figure, i.e. the proportion of jobs created at establishments growing by more than 20%.

All these figures tend to suggest that booms are characterised not only by a positive shift in the mean employment growth rate, but also by increased heterogeneity; booms favour creative destruction. To exaggerate, jobs lost during slumps are the result of many establishments reducing their workforce only marginally; in contrast, jobs lost during booms are the result of a few establishments reducing their size significantly[6].

#### 4.1.1 Comparison with Previous Studies

Our figures for job flow rates are in line with some previous studies based on different administrative sources (see, for instance, Lagarde *et al.* [1996]), although the range of existing estimations is very broad. Most differences, however, are

[6] Abowd *et al.* [1999] claim, based only on establishments with more than 50 employees (DMMO), that French job destruction rates are more concentrated around 0 than American ones: they find that the proportion of job destructions in establishments which reduce their workforce by over one fifth is only 27,5%. In contrast, Davis & Haltiwanger [1992] find that for manufacturing establishments with more than 5 employees in the US, as much as 77% of all job destructions are accounted for by establishments that shrink by more than 20%; excluding deaths of establishments, as we implicitly do here, this proportion still reaches 59,3%. By extending the analysis to smaller establishments, we provide a more realistic comparison. Based on our evidence, the claim that French job destruction rates are more concentrated around 0 than American ones still holds, but has to be qualified, as the difference appears to be weaker than previously established. Moreover, France appears similar to other European countries: in a study on Norwegian plants in the manufacturing sector with more than 5 employees, Nilsen *et al.* [2003] find that changes in excess of -20% account for almost half (44%) of lost jobs, a figure that compares well to ours.

explained by the different scope of the analysis rather than by inconsistencies between different data sources.

Duhautois [2002] measures job flows on the whole private sector at the firm level. He finds a much higher rate (20,8%) for the 1991-1996 period, but his sample includes newly created or shut down firms (which account, respectively, for 35,9% of creations and 36,7% of destructions) as well as very small firms.

Studies that do not limit themselves to continuing firms/establishments tend to overstate job creations and destructions if they do not control for broken links due to changes in identifier [Davis *et al.* , 2005]. Picart [2006] tackles this problem explicitly, and estimates job turnover rates at about 18% for a yearly period between april 1999 and april 2000 on the whole private sector of the economy. Data reported in his article (p.13) also allow to compute a job turnover rate for continuing establishments with more than 10 employees of 11%, which compares well to ours. In addition, births and deaths of establishments belonging to this size category only add a mere 1% to this figure.

According to Davis & Haltiwanger [1992], the pace of job reallocations in the US exhibits significant countercyclical time variation. The generalisation of this statement to other countries has already been vehemently criticised, and many subsequent studies have shown that, for continental Europe, job reallocations are rather procyclical [Boeri, 1996]. Most of the articles using French data reviewed by Duhautois [2002] have found positive coefficients of correlation.

Our result on the cyclicality of job flows therefore fits in a pattern of similar results, even if the coefficient of 0,9 is extremely high. Two features of our data justify an upward bias. First, we exclude small establishment and establishment openings and closures [Duhautois, 2002]. Second, there may be systematic differences between deep and shallow downturns from the job flow perspective [Davis *et al.* , 2005]: while our period does not encompass a hard recession, data from Duhautois [2002] show that job destruction increased by much during the 1993 recession.

## 4.2 Worker Flows

Our data are best intended to study worker flows. Table 8 presents measures of the entry and exit rate of workers over the course of the decade of interest.

The French labour market has massive worker flows: entries and exits together represent between 60% and 77% of total employment. Since most new employment relationships end within a few months, exits are strongly correlated with entry rates over time. Table 8 reveals that worker turnover rates increased over the last decade; after the peak in economic activity in 2000, worker flows did not recover the lower rates of the late 90's, but stayed high through 2005.

The comparison of worker turnover- with job turnover rates suggests that the component of worker flows which consists of turnover on continuing positions increased in first place. The average French worker faces higher employment instability in 2005 with respect to a decade earlier.

Two hypotheses about the origins of increased instability have retained our attention:

**H1** Average employment instability increased as a result of employment shifting from low-turnover industries to high-turnover industries (in particular, from manufacture to tertiary activities).

**H2** Employment instability grew as firms increasingly rely on fixed-term contracts.

We examine them in the next paragraphs. The first hypothesis has some explanatory power, but available evidence suggests that changes in workforce management practices within industries do have a role. The second hypothesis claims something about this change, but it is not backed by empirical evidence.

### 4.2.1 Worker Turnover by Industry and Size

In table 9 we report average job turnover and worker turnover rates by industry and size over the decade of interest.

Worker turnover is highest in some tertiary activities, and lowest in manufacture (see table 9); within manufacture, turnover decreases with establishment size (maybe as a result of the correlation of size with age, which is not measured here), while the same is not always true within tertiary industries.

Given the change in the structure of employment observed in table 5 and further documented here by the differential growth rate of each sector, H1 is a natural explanation for growing figures of worker turnover. In order to test for its explanatory power, we perform a counterfactual analysis.

Overall worker turnover can be expressed as a weighted mean of industry contributions, with weights given by the proportion of workers employed in each industry. For worker turnover in year $t$, for instance, we have equation 14, where $s$ indexes industries (NAF85), $S$ continues to stand for exit movements, $H$ for entry movements and $\overline{Emp}$ is average employment.

$$\frac{H_t + S_t}{\overline{Emp_t}} = \sum_{s=1}^{85} \frac{\overline{Emp_{st}}}{\overline{Emp_t}} * \frac{H_{st} + S_{st}}{\overline{Emp_{st}}} \tag{14}$$

We can cancel out the contribution of sectoral transformation of the economy to the growth of turnover rates by keeping a constant distribution of workers across sectors (the first factor on the right hand side of eq. 14); in table 10, we choose to keep the sectoral employment rates fixed at their 1996 level.

According to table 10, approximately half of the trend in worker turnover may be attributed to within-industry trends with the rest being accounted for by structural change. Absent changes in the employment distribution across industries, the 1996-2005 increase in worker turnover reduces from 13.6 to 8.6. As expected, the distance between the two series (the actual and the counterfactual) really increases only after 2000.

It has been argued [Givord & Maurin, 2004] that over the nineties the diffusion of information and communication technologies has reduced job security in France: "New information technologies seem to modify the degree of substitutability between low and high-seniority workers and firms have less incentive to keep their workers for long periods of time". In that context, the present

result that gives an important role to structural change could be interpreted as evidence that both the restructuring of traditional industries and the emergence of new industries has played a role.

In order to identify the industries that are in first place responsible for increased job instability we built a pseudo-panel using repeated cross-sections of industry-level (85 industry classification) job and worker flows. We then regressed the exit rate[7] on industry-level fixed effects, the employment growth rate in the industry (which captures cyclical effects) and the interaction of industry dummies with a trend indicator. We list here the sectors for which the industry-level trend turns out to be positive and significant at the 1% level:

| | |
|---|---|
| | **Services to businesses** |
| 74B | Sélection et fourniture de personnel |
| | **Transports** |
| 61Z | Transports par eau |
| | **Personal and domestic services** |
| 55Z | Hôtels et restaurants |
| 92A | Activités audio-visuelles |
| | **Education, health and social work** |
| 85A | Santé |
| 85B | Action sociale |
| | **Trade** |
| 52A | Commerce de détail en magasin non spécialisé |
| 52B | Réparation d'articles personnels et domestiques |
| | **Energy** |
| 40B | Production et distribution de combustibles gazeux |

Some patterns emerge. With the exception of the last, all belong to the tertiary sector. Many do enjoy special conditions as to the resort to short-term contracts (55Z,92A). In the case of Health services and social work, youth employment programmes and the working time reduction may have encouraged reliance on short-term hirings. Finally, harder working conditions in the detail trade (supermarkets) ... [DEVELOP]

The only industry to experience a decrease in job instability as witnessed by a significant negative trend are postal services and telecommunications.

The available evidence therefore points towards changes in workforce man-

[7] Results are only marginally modified if the entry rate is chosen instead of the exit rate

agement practices that happened within the tertiary sector as an explanation for increased instability. The fact that the tertiary sector increasingly relies on instable relationships is further documented by an increase in temporary help work employed.

So-called interim workers, formally employed by a temporary help agency and lent to user firms, do not enter our statistics on worker- and job flows for user establishments. Nevertheless, we know the intensity with which establishment resort to that source of flexible workforce from our data by comparing the number of interim workers that operate within an establishment to the total workforce of that establishment[8].

On average, almost 4% of the workforce is employed on interim contracts. The manufacturing and construction sectors make large use of temporary help workers; on the opposite, service establishments have little resort to interim workers.

Despite these differences, the interim intensity in service establishments grows at a steady pace between 1999 and 2005; temporary help work in the tertiary sector is growing faster than direct employment.

Temporary help jobs by definition are instable jobs. The gap in employment instability between manufacturing and service establishments, as measured by flows of (directly) employed workers (table 9), is thus overstated. On the other hand, the increasing trend in job instability among service workers would even be amplified if we included temporary help workers in our flow rates.

### 4.2.2 Worker Flows by Contract and Type

A popular explanation for increased instability blames the substitution of short-term contracts for long-term hiring. This idea is summarised in our second hypothesis; despite its appealing nature, no evidence supporting it can be found in our data.

Table 12 shows that the increase in job instability, as documented by higher

[8]Stock data on interim workers were first collected in the DMMO and EMMO declarations in 1999; missing declarations reduce our samples by about 5% of establishments

exit probabilities, concerns all workers independent of their type of contract. In particular, quit rates increased over the period, suggesting higher exit of CDI workers; and at the same time, transformation of short-term contracts (CDD) into long-term attachments slightly diminished (Table 13).

Furthermore, table 13 also shows that resort to CDDs did not increase relative to direct hire on indefinite-term contracts. On the contrary, the proportion of short-term hiring in total hiring decreased, and, among establishments with positive hiring rates, the fraction of those hiring exclusively on CDD diminished.

All these trends do not just reflect compositional changes, as they remain valid even within the tertiary sector, which is were we expect changes in workforce management practices to occur.

The available evidence goes against institutional determinants in the rise of employee turnover and mildly supports explanations in terms of a fall in the value of specific human capital [Behaghel, 2003].

# 5 Linking Labour Market Flows to Firm Behaviour

The building of micro-macro links is maybe the most important field in which empirical research on labour market flows has still to make important progress. How does the time-series behaviour of job and worker flows result from individual decisions by establishments?

The answer to this question is, at first sight, most difficult for job flows.

In any given year, establishments do either create or destroy jobs, but never do the two at the same time, according to the definition of what constitutes a job that underlies job flow measures. If the unit of decision is the establishment, there is therefore no simultaneous decision about how many jobs to create and to destroy. We should therefore be very cautious in linking the cyclical pattern of employment reallocation to individual decisions. The statement that employment adjustments occur through varying job creations rather than job destructions has some descriptive power, but little economic content: what it

reveals is that individual decisions to increase establishment size tend to concentrate in some years, while individual decisions to reduce establishment size are more uniformly distributed over the cycle.

The theoretical literature summarised by Davis & Haltiwanger [1999, section 9] provides two classes of models that can explain this finding [9]. In the first case, adjustment costs cause employment reductions by establishments to be more diluted over time than employment increases. In the second case, job creation concentrates during expansions because of cross-firm externalities (real or informational, as in the herding literature[10]). We test the first explanation on French data through the following hypothesis:

**H3** Downsizing decisions are more diluted over time than upsizing decisions.

If by definition aggregate job flows do not reflect any establishment's behaviour, different is the case with entry and exit flows, since they take place at the same time in most establishments. Therefore, if total job accession- and job separation movements vary asymmetrically over the business cycle as is the case in France, with the latter varying less than the former, a natural step to undertake is to link this finding to individual decision rules, at least hypothetically. We therefore test the following hypothesis:

**H4** Establishments adjust to the business cycle by varying the entry rate of new workers in first place, rather than by varying the retention or firing rate.

## 5.1 Why is Job Reallocation Procyclical?

Growth decisions by establishments are more concentrated during some years than the reverse decisions in our sample of big private-sector establishments.

[9] Most models where built to explain the opposite finding, established for the US. Some of them, through changing parameters, can be adapted to explain the "European" pattern.

[10] Schivardi [1997] built on a model of information revelation triggering crashes [Caplin & Leahy, 1994] to explain the pattern of employment reductions in the US. Our intuition is that the model by Chamley & Gale [1994] can be adapted to explain the pattern of employment expansions in France.

Does this pattern emerge from aggregation, or is it characteristic of the way the average establishment adapts to idiosyncratic shocks?

To test for H3, which reflects the idea of a parallel between the macro and micro levels, we compare the probability for establishments of reducing employment in year $t$ given that employment already sank in year $t-1$ with the probability of increasing employment in $t$ given that the establishment grew in $t-1$. This requires us to use the panel component of our samples[11].

As can be seen from table 14, the probability of two consecutive "ups" is lower, in almost all 2-year periods, than the probability of two consecutive "downs". This runs counter to the prediction of H3. Our data therefore support the idea that the aggregate picture results from a particular distribution of idiosyncratic allocative shocks over the macroeconomic cycle rather than from the way establishments handle them.

## 5.2 How Do Establishments Adjust to the Business Cycle?

Establishments can increase their employment level to adapt to better business conditions both by increasing entry rates and lowering exit rates; which channel proves more important in practice?

Ideally to answer that question we would need to follow a representative sample of establishments over a sufficiently large length of time.

Some insight can be gained even if we do not dispose of such a panel. Indeed, with our data we can follow group of establishments over time, and construct what has become known as a pseudo-panel. We test H4 on the entry and exit rates defined over groups of establishments with similar characteristics. In our pseudo-panel, groups of establishements are defined by the intersection of 14 industry categories with 4 size categories; the survey design ensures that flow rates for each group are representative[12].

[11] Due to the different origin of our data, attrition is not uniform across data sources. For this section, we therefore compute new ex-post weight to correct for attrition, using response rates defined in terms of establishment surveyed in the first of two years. Those are reported at the top of table 14

[12] With respect to the previous sections, we exclude establishments belonging to particular sectors (Agriculture, forestry, fishing; Administration; establishments with missing industry)

We adapt a regression framework inspired by Gielen & van Ours [2005] in order to identify the effect of the cycle on flows. The variation of job flow rates and worker flow rates within sector and size categories is regressed on the sectoral employment growth rate, including year dummies.

Technically, we include 60 (sector*size) fixed effects and 10 time fixed effects in different panel regressions which share the same basic pattern: the baseline model is indeed

$$y_{s,g,t} = f^y_{s,g} + f^y_t + \beta^y \Delta e_{s,t} + \epsilon_{s,g,t} \tag{15}$$

where the dependent variables are different flow measures, and $\Delta e_{s,t}$ is the employment growth rate at the sectoral level. Time dummies capture aggregate evolutions (the effect of the aggregate business cycle, overall trends, and the effect of year-specific policies), so that we effectively regress a time-normalised within-(sector*size) variation in the dependent variable on the sectoral employment growth rate[13] in order to identify the elasticity of job or worker flows to the business cycle[14].

The parameter estimates for our baseline model for job flow rates and worker flow rates are displayed in table 15.

If the sectoral employment growth rate increases by 1% (eg, from 1% to 2%), the job accession rate increases by 1,3% and the job separation rate by 0,4%. We therefore find strong evidence supporting the fact that firms adjust to the cycle through varying the hiring rate rather than the exit rate. These coefficients not only indicate that hires vary more over the business cycle than separations, but

from the samples. We only keep industries EB to EQ, in the NES16 classification. There is a tradeoff regarding the number of groups that are defined. To use fixed effects, we want to ensure representativeness in each year, and therefore we do not want to define too narrow groups. On the other side, we want group figures to reflect establishment-level behaviour; we therefore do not want to define groups that are too broad. Our 560 group-year observations result from a minimum of 40 establishments (automobile industry) to a maximum of 8000 establishment records (trade), with the median at 540.

[13]By definition, there is measurement error both in the dependent and independent variable. Serious biases arise if measurement error in the cyclical indicator is correlated with measurement error in the flow rates. To limit this risk, we define the cycle at a broader level than flows. We could also imagine using other sources of information to measure the cycle at the industry-level. Measurement error in the dependent variable leads us to compute heteroscedasticity-robust asymptotic standard errors for all coefficients.

[14]It is possible to interpret the $\beta$ coefficients as elasticities since both the dependent and the independent variables are percentage rates.

also suggest – since both vary in the same direction – that instable jobs are created at the margin: to reach the desired employment target, hires vary by a factor of more than one, so that actually separations too vary in the same direction as hires. This finding points towards unperfect matching and the widespread use of screening procedures.

We also perform two robustness checks on our estimates at the bottom of table 15. Our first check leaves year dummies out, and introduces aggregate employment growth. Our second check adds also industry-level trends. As can be seen, the coefficient before the sectoral employment growth does not vary significantly. Aggregate cyclical effects enter our regression significantly, especially once trends are controlled for, and have the same sign and approximately the same magnitude for entry and exit flows.

#### 5.2.1 Age-specific Cyclical Effects

We suspect screening to be an important determinant of workforce management especially for young workers. Therefore, we think that cyclical patterns differ significantly by age group and submit the following hypothesis to testing:

**H5** Establishments adapt to better business conditions by hiring and screening young workers, and by reducing the separation from older workers.

In order to perform a test on this hypothesis, we separate accessing and exiting workers into three age groups based on their year of birth (15-29, 30-49, 50 and more) and compute flow rates for each group[15]. We then perform the same fixed-effect regression for these flow measures.

Our results, listed in tables 16 and 17, indicate that an employment expansion of 1% results in increased hiring of young workers (+0,7%) and adult workers (+0,41%), increased separation from young workers (+0,32%), and reduced separation from old workers (-0,07%).

[15]The denominator of these rates is still total employment, so that the sum of entry rates by age group equals the total entry rate; in practice, since we do not know year of birth for some workers, the sum is always slightly below the total entry or exit rate.

An employment expansion therefore results in increasing the number of workers over the entire age ladder; however, this happens through different channels for each age group.

For young workers, the job accession rate increases by more than the job separation rate: they are screened, and some fail to pass the screening. The hiring of adult workers also increases, while the separation rate stays constant. For both these age groups, employment increases occur in first place trough varying hiring rates. Finally, the exit of old age workers is reduced during cyclical upturns, while entry stays constant. Old workers display therefore an opposite pattern, and their employment increases through variations in the retention rate.

Interesting to comment are also the time dummies from these regressions, especially for old workers. The increase in exit movements and, less importantly, in entry movements for senior workers in 2004 and 2005 is the product of the pension reform of 2003, which allowed employees to qualify for retirement before they were 60 if they had started working very young.

There is another way to show that the exit of old workers plays a role in adjusting to business conditions. In an influential article, Abowd *et al.* [1999] showed that to create 1 new job, establishments with more than 50 employees hire on average 5 workers and separate from 4; while 1 job is destroyed as the result of 4 workers exiting and 3 workers entering the establishment. While the number of exits is constant in this stylised account, our finding suggests that characteristics of exiting workers aren't constant. There are, proportionally, more old workers exiting when the establishment is shrinking.

As table 18 shows, in 1998, within the consumer goods manufacturing industry (NES16=C), growing establishments hired on average 29 people every 10 jobs created, and separated from 20 people[16]. Shrinking establishments separated from 23 workers every 10 jobs destroyed and hired 13. However, when it comes to old workers, the number of old workers exiting at shrinking estab-

[16]This mild inconsistency results from inconsistencies between flow and stock declarations at the establishment level.

lishments per 10 jobs destroyed is double as high as the number of old workers exiting at growing establishments per 10 jobs created. This same pattern of lower exit of senior workers at growing establishments is true for almost all sectors, confirming our basic finding.

# 6 Conclusion

Sum up and conclude.

## References


Abowd, John M., Corbel, Patrick, & Kramarz, Francis. 1999. The Entry and Exit of Workers and the Growth of Employment: an Analysis of French Establishments. *The Review of Economics and Statistics*, **81**, 170–187.

Behaghel, Luc. 2003. Insécurité de l'emploi: le rôle protecteur de l'ancienneté a-t-il baissé en France? *Économie et Statistique*, **366**, 3–23.

Boeri, Tito. 1996. Is Job Turnover Countercyclical? *Journal of Labor Economics*, **14**, 603–625.

Caplin, Andrew, & Leahy, John. 1994. Business as Usual, Market Crashes and Wisdom after the Fact. *American Economic Review*, **84**(3), 548–565.

CERC. 2005. *La sécurité de l'emploi face aux défis des transformations économiques*. Paris: La Documentation Française. Disponible en ligne à l'adresse http://www.cerc.gouv.fr/rapports/rapport5cerc.pdf.

Chamley, Christophe, & Gale, Douglas. 1994. Information Revelation and Strategic Delay in a Model of Investment. *Econometrica*, **62**, 1065–85.

Davis, Steven J., & Haltiwanger, John. 1992. Gross Job Creation, Gross Job Destruction, and Employment Reallocation. *Quarterly Journal of Economics*, **107**, 819–863.

Davis, Steven J., & Haltiwanger, John. 1999. *Handbook of Labor Economics*. Vol. 3. Amsterdam: Elsevier Science. Chap. Gross Job Flows, pages 2711–2805.

Davis, Steven J., Faberman, R. Jason, & Haltiwanger, John. 2005. The Flow Approach to Labor Markets: New Data Sources, Micro-Macro Links and the Recent Downturn. *IZA DP 1639*.

Duhautois, Richard. 2002. Les réallocations d'emplois en France sont-elles en phase avec le cycle? *Économie et Statistique*, **351**, 87–103.

Gielen, Anne, & van Ours, Jan C. 2005. Age-Specific Cyclical Effects in Job Reallocation and Labour Mobility. *CEPR DP No 5161.*

Givord, Pauline, & Maurin, Éric. 2004. Changes in Job Security and Their Causes: an Empirical Analysis for France, 1982-2002. *European Economic Revue*, **48**, 595–615.

Hamermesh, Daniel S., Hassink, Wolter H.J., & van Ours, Jan C. 1996. Job Turnover and Labor Turnover: A Taxonomy of Employment Dynamics. *Annales d'Économie et de Statistique*, **41-42**, 21–39.

Lagarde, Sylvie, Maurin, Éric, & Torelli, Constance. 1996. Flux d'emplois et flux de main-d'œuvre en France. Une étude de la période 1987-1992. *Révue économique*, **47**, 633–642.

Liaisons Sociales. 2002-2003. *Liaisons Sociales Quotidien, Main d'œuvre / Contrôle de l'emploi.* n° 8249, 8254, 8288, 8291, 8350.

Nilsen, Øivind A., Salvanes, Kjell G., & Schiantarelli, Fabio. 2003. Employment Changes, the Structure of Adjustment Costs, and Plant Size. *IZA DP No 920.*

OECD. 2004. *Employment Outlook.*

Picart, Claude. 2006. Flux d'emploi et de main-d'œuvre en France: un réexamen. *unpublished.*

Schivardi, Fabiano. 1997. Reallocation and learning over the business cycle. *Stanford University Working Paper.*

# A The Evolution of French Labour Market Regulations over the Last Decade

In this section we provide the necessary background information on French labour laws and we describe the innovations introduced during the period of interest. For more details and the larger historical background, an excellent summary (in French) can be found on pp. 101-108 in the CERC [2005] policy report.

The French law allows firms to hire workers on two types of regular employment contracts: Indefinite-Term Contracts (*Contrats à Durée Indéterminée*, CDI) and Fixed-Term Contracts (*Contrats à Durée Déterminée*, CDD). This policy design dates back to 1979, when CDDs were first introduced, but has undergone many reforms. Labour laws stipulate that CDIs must constitute the normal and general form of an employment contract. Although the use of CDDs is legally restricted – CDDs cannot be used to fill a job that would exist under normal and permanent business conditions for a given firm – CDDs are the most common method of hiring (see chapter 4).

CDDs are subject to a very short trial period; they have a fixed duration, can be renewed only once, and their length, including renewal, may not exceed 18 months (or 24 months for workers hired under youth employment programs).

In a handful of industries (hotels & restaurants, entertainment, ...) labour regulations allow CDDs to represent the customary form of a contract, and the usual legal restrictions do not apply.

Next to CDDs, temporary help agencies are a second source of flexibility. So-called *interim* workers are employed by a temporary help agency on a special contract (*Contrat de Travail Temporaire*). Workers are then placed at the disposal of firms who demand their services. If user firms resort to temporary help work, they are subject to the same legal conditions they face for CDD workers (including the requirements concerning the maximum length and mandatory vacancy between two contracts for the same position).

In August 2005, a new labour contract was introduced, called the "Contract concerning New Hiring" (*Contrat Nouvelles Embauches*). It is basically a CDI with an extended trial period of 24 months[17]. Only firms with less than 20 employees can resort to this contract.

Apart from this latest change, two major reforms modified the French Labour Laws during the period of interest. The "Aubry Laws" (June 1998 and January 2000), named after the minister Martine Aubry, modified working time regulations by introducing the 35h week (formerly, the legal norm was 39h). As a result, hours worked in a week by full-time employees, and especially by those

[17]Usual trial periods for CDIs depend on the skill-level required for a job and last a few weeks, with the maximum duration fixed by collective agreements between employer organisations and unions.

employed in bigger firms, declined progressively over the 1998-2002 period[18].

The *Loi de modernisation sociale*, one of the last laws passed by an outgoing socialist-led government, became effective in January 2002 and modified many of the rules concerning separations; we review them by contract type.

### CDI

Employer-initiated separation from a CDI employee can take three forms: firing for a cause (individual), firing for economic reasons (both individual or collective) and early or normal retirement.

The *Loi de modernisation sociale* introduced longer procedures for economic layoffs, and increased the severance payment to be paid to CDI workers in case of a (collective or individual) layoff (article L122-9, R122-2 of the *Code du Travail*[19] as modified by the *Décret* n 2002-785): the minimum amount was set to 1,67% of the salary of the last year per year of service, plus an additional 1,11% for each year of service after the tenth. It is not clear whether these minimum amounts are actually binding constraints, since firms seem to pay out more.

Most of the debate preceding the passing of the law, in Parliament and in the French press, focused on these measures against layoffs. Initially, they also included a restriction on possible causes for economic layoffs; this latter part was, however, vetoed by the *Conseil Constitutionnel* shortly after the Parliament passed the law.

The reform intended to increase the protection of employees against layoffs for economic reasons by granting more voice to union representatives and local administrations in the negotiations that precede such layoffs. In a policy note, an employers' association[20] estimated that the introduced changes doubled the time needed by a firm with more than 1000 employees to carry out a project of 250 layoffs from 100 to 200 days.

The enforcement of the new procedures for economic layoffs was suspended one year after they became effective, as a consequence of law 2003-6 (3/1/2003). In the mean time, the conservative UMP had won the elections.

Especially in case of forward-looking decisions such as that of hiring permanent workers, what arguably counts most are the firms' anticipations of future costs. Therefore the consequences of the reform of economic layoffs are very difficult to discern; the most controversial part of the reform, the exclusion of certain causes of separation from a worker, never actually became effective, and most of the new procedures were only in effect during 2002. The only part of the legislation that has never been challenged are the minimal severance payments.

[18] In 2004, a special issue of *Economie et Statistique* (n. 376-377) was devoted to the 35 hours reform.

[19] The *Code du Travail* is the main law regulating labour relations; as for any law, the web site www.legifrance.gouv.org provides full access to the text.

[20] *Association française des entreprises privées* (Afep), cited in Liaisons Sociales [2002-2003, n° 8249].

### CDD and interim

The separation from interim and CDD workers at the expiration date of their contracts requires no special procedures. Before this date, it is virtually impossible to terminate such contracts, except for cases of serious misconduct: the employer must pay out wages until the end of the contract, or provide the worker with an equivalent contract in another position.

Before 2002, and since 1990, when a CDD came to its (regular) end, the employer had to pay out (at least) 6% of the contract's total value to the worker if he couldn't offer him a permanent position. The *Loi de modernisation sociale* increased this severance payment (*Prime de précarité*) to 10%. The severance payment temporary help agencies are required to pay to *interim* workers at the end of each employment spell was already at 10%, and remained unchanged.

Other articles in the law were intended to actively prevent the precariousness of jobs by making short-term contracts less attractive to firms. The main dispositions in the section titled"*Lutte contre la précarité des emplois*" included:

- The right for the employee with a CDD to leave the firm upon finding a permanent position with another employer, without being liable for damages incurred to the first employer.

- The introduction of criminal liability of the firm for a violation of the "equal pay principle": workers on temporary contracts – both CDD and *interim* – are entitled to the same wage as permanent workers in a same position.

- More importantly, an extension of the mandatory vacancy period between two consecutive CDDs or *interim* missions on a same position. This was achieved in two ways: first, for contracts of a length of up to two weeks, the new rules increased the prescribed vacancy period to half the length of the employment, as opposed to one-third previously. Second, the law stated explicitly that only the working days of the employing establishment count for the vacancy period, while the contract length is computed in calendar days. Previous to the reform, it was theoretically possible for firms to hire workers on CDDs for consecutive 5 day periods, by observing a vacancy of 2 days during the weekend. The new disposition rules out such behaviour, and results in an increase of the mandatory vacancy period of 1/7 for 6-day-week establishments or of 2/7 for 5-day-week establishments.

All these measures apply to contracts signed after January 20th, 2002, and remained almost unmodified after that date; the only change introduced by the 2003-6 law passed by the new majority was a somewhat easier way of negotiating a reduction in the severance payment with unions if on-the-job training was provided. While this may have favoured training, it hardly reduced the cost of temporary contracts.

The OECD ranks France's labour market regulations amongst the most restrictive in the world; in 2004, of the surveyed countries, only Mexico, Portugal, Spain and Turkey (all countries with significant underground economies, in contrast to France) had more restrictive labour laws [OECD, 2004, table 2.A2.4]. Looking at the three subindexes (permanent contracts, temporary contracts, collective layoffs), France performs quite differently: while the index on restrictions concerning temporary contracts is one of the highest, one may be surprised to learn that collective layoffs are less strongly regulated in France than in countries like the US, UK, Denmark or Germany. However, there are several shortcomings of these indexes[21], which fail to integrate law enforcement aspects.

### A.1 Loi Fillon

## B Data Appendix

The EMMO/DMMO data come in quarterly data sets. In particular, for each quarter, there are two tables with establishment characteristics (the respondents base and the non-respondents base); the respondents base can be matched with worker and job information on moving employees of the same quarter (the movements base). The two establishment bases contain information on the respective activity, geographic location, and size; respondents also report worker stocks (total employment on the last date of the previous and current quarter and, starting from 1999, temporary help workers on the last day of the current quarter) and total entry- and exit movements. The movements base supplies information on the type of movement, the skill-level, and the age and sex of the worker implied in a given movement. Information on the length of the employment spell matches, in principle, exit movements, but this "firm seniority at exit" variable is badly coded for the whole EMMO sample and for the DMMOs until 2001.

We aggregate quarterly information to yearly data sets. In practice, time-invariant characteristics are read from the first quarter, flow measures are summed up and all stock declarations are kept.

We consider an establishment to be responding if a) it is included by the survey administration in the respondents base in all 4 quarters and b) its declarations are broadly consistent. For our purposes, consistency requires passing two tests: firstly, establishment for which no corresponding observation in the movements base of a given quarter is available are only included if they declare 0 total movements for that quarter (recall that each responding establishment with positive movements must be present in 2 data sets - one with firm-level

[21] The *loi de modernisation sociale*, for instance, led to an increase in the index on permanent contracts (motivated by higher severance payments in case of layoff), but left the two other subindexes unchanged – a somewhat puzzling outcome given the previous discussion.

information, including total movements, and a second with details on all movements). Secondly, because the same information on employment on the last day of a given quarter is asked in two consecutive questionnaires, we require the difference between the two declarations not to exceed 3 workers.

# Tables

Table 1: Response rate

| | | Size category | | | |
|---|---|---|---|---|---|
| year | all | 10-49 | 50-99 | 100-199 | 200- |
| 1996 | 54.7 | 54.4 | 52.6 | 60.6 | 58.6 |
| 1997 | 55.2 | 54.4 | 56.4 | 64.2 | 59.4 |
| 1998 | 62.6 | 63.3 | 58.0 | 63.0 | 57.3 |
| 1999 | 63.0 | 62.5 | 65.7 | 68.4 | 62.9 |
| 2000 | 62.9 | 60.9 | 71.0 | 76.6 | 71.3 |
| 2001 | 56.3 | 54.5 | 62.3 | 68.5 | 64.2 |
| 2002 | 60.2 | 59.2 | 61.4 | 71.5 | 67.8 |
| 2003 | 62.4 | 61.3 | 63.9 | 74.1 | 70.5 |
| 2004 | 62.8 | 61.9 | 64.0 | 72.9 | 68.9 |
| 2005 | 61.0 | 60.2 | 63.3 | 69.7 | 63.0 |

**Note**: Size categories are defined by the survey administration based on data from other sources.

Table 2: Non-trimmed observations

| | | Size category | | | |
|---|---|---|---|---|---|
| year | all | 10-49 | 50-99 | 100-199 | 200- |
| 1996 | 96.0 | 95.1 | 99.9 | 99.8 | 99.9 |
| 1997 | 96.5 | 95.9 | 99.4 | 99.8 | 99.9 |
| 1998 | 96.4 | 95.8 | 99.8 | 99.8 | 99.8 |
| 1999 | 95.0 | 94.1 | 99.5 | 99.8 | 99.8 |
| 2000 | 94.4 | 93.3 | 98.2 | 98.7 | 98.9 |
| 2001 | 93.5 | 92.1 | 98.4 | 98.9 | 99.1 |
| 2002 | 93.0 | 91.8 | 97.8 | 99.0 | 99.0 |
| 2003 | 92.8 | 91.6 | 98.4 | 98.8 | 99.0 |
| 2004 | 93.4 | 92.4 | 98.0 | 98.6 | 98.2 |
| 2005 | 94.1 | 93.2 | 98.2 | 98.7 | 98.3 |

Table 3: Sample size and source of observations

| | Number of observations | | | Weighted frequency | |
|---|---|---|---|---|---|
| year | total | DMMO | EMMO | DMMO | EMMO |
| 1996 | 55163 | 23602 | 31561 | 18.6 | 81.4 |
| 1997 | 56072 | 23898 | 32174 | 17.2 | 82.8 |
| 1998 | 59091 | 22951 | 36140 | 16.8 | 83.2 |
| 1999 | 61326 | 24658 | 36668 | 16.2 | 83.8 |
| 2000 | 61175 | 28292 | 32883 | 17.9 | 82.1 |
| 2001 | 50902 | 26609 | 24293 | 18.8 | 81.2 |
| 2002 | 56926 | 28913 | 28013 | 17.9 | 82.1 |
| 2003 | 59865 | 30861 | 29004 | 17.3 | 82.7 |
| 2004 | 60838 | 31120 | 29718 | 16.9 | 83.1 |
| 2005 | 57422 | 29721 | 27701 | 17.6 | 82.4 |

Table 4: The distribution of establishments by sector and size

| | Sector | | | | | Size category | | | |
|---|---|---|---|---|---|---|---|---|---|
| year | agr | man | con | ser | miss | (A) | (B) | (C) | (D) |
| 1996 | 1.0 | 23.9 | 10.5 | 64.6 | 0.0 | 81.7 | 10.0 | 5.0 | 3.4 |
| 1997 | 1.0 | 23.5 | 10.4 | 65.1 | 0.0 | 82.5 | 9.5 | 4.7 | 3.3 |
| 1998 | 0.6 | 23.7 | 10.4 | 65.2 | 0.1 | 83.5 | 8.6 | 4.6 | 3.2 |
| 1999 | 0.7 | 23.2 | 10.5 | 65.6 | 0.0 | 83.5 | 8.5 | 4.6 | 3.4 |
| 2000 | 0.7 | 23.5 | 11.0 | 64.7 | 0.1 | 81.9 | 9.4 | 5.1 | 3.7 |
| 2001 | 0.7 | 21.6 | 10.5 | 67.1 | 0.1 | 80.7 | 10.2 | 5.3 | 3.8 |
| 2002 | 0.6 | 20.2 | 10.9 | 68.2 | 0.1 | 82.0 | 9.7 | 4.8 | 3.4 |
| 2003 | 0.6 | 19.7 | 10.9 | 68.6 | 0.2 | 82.5 | 9.6 | 4.6 | 3.3 |
| 2004 | 0.6 | 19.5 | 10.7 | 66.2 | 2.9 | 82.8 | 9.4 | 4.6 | 3.2 |
| 2005 | 0.8 | 19.8 | 10.8 | 65.9 | 2.8 | 82.1 | 9.8 | 4.8 | 3.3 |

**Legend**: agr: agriculture; man: manufacture; con: construction; ser: services; miss: missing
(A) up to 49 employees; (B) 50-99 employees (C) 100-199 employees (D) over 200 employees;

Table 5: The distribution of employment by sector in the retained samples

| | Sector | | | | |
|---|---|---|---|---|---|
| year | agr | man | con | ser | miss |
| 1996 | 0.6 | 34.2 | 7.1 | 58.2 | 0.0 |
| 1997 | 0.6 | 34.6 | 6.8 | 58.0 | 0.0 |
| 1998 | 0.5 | 34.0 | 6.7 | 58.8 | 0.0 |
| 1999 | 0.5 | 33.4 | 6.9 | 59.2 | 0.0 |
| 2000 | 0.5 | 33.4 | 6.8 | 58.6 | 0.6 |
| 2001 | 0.5 | 31.6 | 6.5 | 61.1 | 0.2 |
| 2002 | 0.5 | 30.2 | 6.9 | 62.2 | 0.2 |
| 2003 | 0.5 | 29.3 | 6.8 | 62.9 | 0.5 |
| 2004 | 0.5 | 28.8 | 6.7 | 62.6 | 1.5 |
| 2005 | 0.5 | 28.0 | 6.8 | 63.1 | 1.6 |
| 2005[a] | 3.8 | 16.6 | 6.4 | 72.8 | 0.3 |

[a] Employment by sector in the French economy. Source: INSEE, Enquête Emploi.

Table 6: Gross job flows and the job reallocation rate

| France | | | | |
|---|---|---|---|---|
| | POS | NEG | EGR | SUM |
| 1996 | 3.9 | 3.8 | 0.0 | 7.7 |
| 1997 | 4.4 | 3.7 | 0.7 | 8.1 |
| 1998 | 5.1 | 3.5 | 1.6 | 8.6 |
| 1999 | 5.4 | 3.6 | 1.8 | 9.0 |
| 2000 | 6.9 | 3.3 | 3.7 | 10.1 |
| 2001 | 5.7 | 3.5 | 2.2 | 9.1 |
| 2002 | 4.7 | 4.0 | 0.6 | 8.7 |
| 2003 | 4.3 | 4.3 | 0.0 | 8.5 |
| 2004 | 4.2 | 4.2 | 0.0 | 8.4 |
| 2005 | 4.4 | 3.9 | 0.4 | 8.3 |
| Pearson correlations: $\rho(POS_t, NEG_t) = -0.805$ (0.005) $\rho(SUM_t, EGR_t) = 0.897$ (0.000) | | | | |

**Legend**: POS: Gross job creation rate; NEG: Gross job destruction rate; EGR: Employment Growth rate; SUM: Job reallocation rate.
P-values under the null hypothesis $\rho = 0$ are in parentheses.

Table 7: Expansions as periods of creative destruction

| year | (1) | (2) | (3) |
|---|---|---|---|
| 1996 | 14,31 | 39,05 | 35,56 |
| 1997 | 14,44 | 40,21 | 37,28 |
| 1998 | 15,11 | 41,16 | 42,08 |
| 1999 | 15,67 | 42,89 | 40,98 |
| 2000 | 17,05 | 48,87 | 42,99 |
| 2001 | 15,05 | 44,20 | 38,20 |
| 2002 | 15,58 | 43,58 | 37,70 |
| 2003 | 14,51 | 42,00 | 39,36 |
| 2004 | 15,35 | 38,19 | 39,45 |
| 2005 | 13,73 | 39,57 | 38,83 |

(1) Proportion of establishment with employment growth rates exceeding 20% in absolute value; (2) Proportion, among jobs lost each year, of jobs destroyed at establishments reducing their employment by more than 20%; (3) Proportion, among jobs created each year, of jobs created at establishments increasing their employment by over 20%. Employment growth rates are defined in terms of average employment.

Table 8: Worker flows and worker turnover in France

| | IN | OUT | EGR | WT |
|---|---|---|---|---|
| 1996 | 30.4 | 30.3 | 0.0 | 60.7 |
| 1997 | 31.4 | 30.6 | 0.7 | 62.0 |
| 1998 | 33.7 | 32.1 | 1.6 | 65.8 |
| 1999 | 35.9 | 34.0 | 1.8 | 69.9 |
| 2000 | 40.4 | 36.7 | 3.7 | 77.1 |
| 2001 | 39.0 | 36.7 | 2.2 | 75.6 |
| 2002 | 37.1 | 36.5 | 0.6 | 73.6 |
| 2003 | 35.3 | 35.3 | 0.0 | 70.5 |
| 2004 | 36.4 | 36.4 | 0.0 | 72.8 |
| 2005 | 37.4 | 36.9 | 0.4 | 74.3 |
| Pearson correlations: $\rho(IN, OUT)$=0.931 (0.000) $\rho(EGR, WT)$=0.455 (0.187) | | | | |

**Legend**: IN: Entry rate; OUT: Exit rate; EGR: Employment growth rate; WT: Worker turnover rate (Entries + exits).
P-values under the null hypothesis $\rho = 0$ are in parentheses.

Table 9: Mean job- and worker turnover rates by sector and size (1996-2005)

| | Job Turnover Rates size category | | | | Worker Turnover Rates size category | | | | Employment |
|---|---|---|---|---|---|---|---|---|---|
| NAF16 | A | B | C | D | A | B | C | D | growth |
| B | 10,6 | 9,0 | 8,3 | 6,5 | 79,0 | 82,6 | 81,2 | 76,6 | 0,92 |
| C | 10,8 | 8,5 | 7,9 | 6,1 | 50,8 | 49,3 | 45,6 | 40,9 | -0,83 |
| D | 10,9 | 10,0 | 8,7 | 5,2 | 45,0 | 40,5 | 32,8 | 20,1 | 0,31 |
| E | 10,3 | 8,7 | 7,6 | 6,8 | 44,2 | 38,8 | 34,5 | 23,6 | -0,29 |
| F | 9,7 | 7,7 | 7,0 | 5,5 | 42,4 | 37,6 | 32,2 | 24,7 | -0,80 |
| G | 10,3 | 9,3 | 8,9 | 6,7 | 28,7 | 33,7 | 31,5 | 23,6 | -1,99 |
| H | 10,5 | 8,2 | 7,6 | 7,5 | 45,9 | 35,9 | 33,6 | 33,7 | 0,47 |
| J | 10,2 | 7,9 | 7,1 | 6,3 | 70,0 | 89,0 | 102,4 | 101,4 | 1,44 |
| K | 11,9 | 9,8 | 8,7 | 6,9 | 69,2 | 72,6 | 65,7 | 51,6 | 2,31 |
| L | 10,4 | 8,5 | 8,1 | 5,9 | 44,4 | 46,3 | 48,4 | 40,8 | 0,32 |
| M | 11,0 | 6,9 | 6,2 | 3,5 | 63,0 | 67,3 | 61,3 | 55,2 | 1,47 |
| N | 13,9 | 12,7 | 11,9 | 9,6 | 72,9 | 98,6 | 118,8 | 93,3 | 3,16 |
| P | 12,7 | 10,0 | 8,8 | 6,2 | 170,4 | 209,8 | 200,7 | 111,8 | 1,86 |
| Q | 9,7 | 6,2 | 5,7 | 4,4 | 89,1 | 127,0 | 129,3 | 115,7 | 2,63 |

Job Turnover and Worker Turnover rates are computed as the average of 10 yearly rates. Sectoral Employment Growth is computed as a geometric mean of 10 yearly employment growth rates.

Table 10: Counterfactual analysis: worker turnover keeping the structure of the French economy constant

| | a | $c^{85}$ | $x_t - x_0$ | |
|---|---|---|---|---|
| 1996 | 60.7 | 60.7 | . | . |
| 1997 | 62.0 | 61.9 | 1.3 | 1.2 |
| 1998 | 65.8 | 65.9 | 5.1 | 5.2 |
| 1999 | 69.9 | 69.2 | 9.2 | 8.5 |
| 2000 | 77.1 | 75.8 | 16.4 | 15.1 |
| 2001 | 75.6 | 72.9 | 14.9 | 12.2 |
| 2002 | 73.6 | 70.1 | 12.9 | 9.4 |
| 2003 | 70.5 | 66.8 | 9.8 | 6.1 |
| 2004 | 72.8 | 68.1 | 12.1 | 7.4 |
| 2005 | 74.3 | 69.3 | 13.6 | 8.6 |

**Legend**: a: actual; $c^{85}$: counterfactual (85 industries)

Table 11: Proportion of temporary help workers in France

| year | ALL | MAN | CON | SER |
|---|---|---|---|---|
| 1999 | 3.8 | 5.5 | 6.4 | 1.5 |
| 2000 | 4.6 | 6.8 | 7.5 | 1.7 |
| 2001 | 4.0 | 6.2 | 7.0 | 1.7 |
| 2002 | 3.7 | 5.8 | 6.7 | 1.8 |
| 2003 | 3.8 | 6.0 | 7.0 | 1.8 |
| 2004 | 3.8 | 6.0 | 7.4 | 1.9 |
| 2005 | 3.8 | 5.9 | 8.6 | 1.9 |

Table 12: Worker flows by type of movements

All sectors

| | Entries | | | Exits | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| year | CDI | CDD | TX | quit | TP | CDD | RT | LIC | TX |
| 1996 | 6.7 | 21.6 | 1.1 | 5.0 | 1.0 | 17.5 | 1.2 | 2.8 | 1.4 |
| 1997 | 6.9 | 22.0 | 1.2 | 5.1 | 1.0 | 17.7 | 1.0 | 2.7 | 1.6 |
| 1998 | 8.0 | 23.2 | 1.2 | 6.0 | 1.1 | 18.3 | 1.0 | 2.4 | 1.7 |
| 1999 | 9.4 | 23.8 | 1.3 | 7.0 | 1.3 | 18.7 | 1.1 | 2.5 | 1.8 |
| 2000 | 12.3 | 25.5 | 1.5 | 9.2 | 1.7 | 19.0 | 0.9 | 2.4 | 2.0 |
| 2001 | 11.8 | 24.4 | 1.5 | 9.0 | 1.7 | 19.1 | 0.7 | 2.5 | 2.0 |
| 2002 | 10.5 | 23.9 | 1.4 | 7.8 | 1.7 | 19.5 | 0.7 | 2.9 | 1.9 |
| 2003 | 9.3 | 22.9 | 1.6 | 6.8 | 1.6 | 19.0 | 0.8 | 3.0 | 1.8 |
| 2004 | 9.7 | 24.0 | 1.6 | 6.6 | 1.7 | 20.1 | 1.3 | 3.0 | 1.9 |
| 2005 | 9.8 | 24.8 | 1.6 | 6.5 | 1.6 | 20.9 | 1.3 | 3.0 | 2.0 |

Tertiary sector

| | Entries | | | Exits | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| year | CDI | CDD | TX | quit | TP | CDD | RT | LIC | TX |
| 1996 | 8.5 | 27.7 | 1.2 | 6.5 | 1.3 | 22.7 | 1.1 | 2.7 | 1.7 |
| 1997 | 8.9 | 27.9 | 1.3 | 6.7 | 1.4 | 22.8 | 0.9 | 2.8 | 1.9 |
| 1998 | 10.1 | 29.7 | 1.4 | 7.7 | 1.5 | 24.0 | 0.9 | 2.4 | 1.9 |
| 1999 | 11.7 | 30.8 | 1.6 | 8.9 | 1.8 | 24.8 | 0.9 | 2.5 | 2.1 |
| 2000 | 15.1 | 32.6 | 1.6 | 11.5 | 2.3 | 25.3 | 0.8 | 2.5 | 2.1 |
| 2001 | 14.4 | 31.7 | 1.7 | 11.0 | 2.4 | 25.2 | 0.6 | 2.6 | 2.3 |
| 2002 | 13.1 | 31.4 | 1.7 | 9.7 | 2.4 | 26.1 | 0.6 | 2.9 | 2.2 |
| 2003 | 11.5 | 29.9 | 1.8 | 8.4 | 2.2 | 25.3 | 0.7 | 3.2 | 2.1 |
| 2004 | 11.7 | 31.6 | 1.9 | 8.1 | 2.2 | 27.2 | 1.0 | 3.1 | 2.2 |
| 2005 | 11.9 | 32.6 | 1.9 | 8.0 | 2.2 | 28.1 | 1.0 | 3.1 | 2.2 |

**Legend**: Entries: CDI = hiring on CDI, CDD = hiring on CDD, TX = transfer in;
Exits: quit = employer-initiated quit, TP = firing during trial period, CDD = end of CDD, RT = retirement, LIC = firing (both individual and collective), TX = transfer out

Table 13: The evolution of Short-term hiring

| | All sectors | | | Tertiary sector | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) |
| 1996 | 76.4 | 19.0 | 32.6 | 76.5 | 18.0 | 31.3 |
| 1997 | 76.0 | 19.8 | 33.6 | 75.7 | 18.1 | 32.4 |
| 1998 | 74.3 | 21.1 | 30.6 | 74.7 | 19.1 | 29.7 |
| 1999 | 71.7 | 21.4 | 27.6 | 72.5 | 19.6 | 26.8 |
| 2000 | 67.4 | 25.2 | 21.3 | 68.4 | 22.3 | 20.6 |
| 2001 | 67.5 | 21.8 | 20.7 | 68.8 | 20.6 | 20.4 |
| 2002 | 69.5 | 18.5 | 22.4 | 70.5 | 17.1 | 20.9 |
| 2003 | 71.1 | 16.9 | 24.6 | 72.2 | 15.3 | 23.8 |
| 2004 | 71.3 | 16.2 | 23.7 | 73.0 | 13.9 | 23.1 |
| 2005 | 71.6 | 15.7 | 22.8 | 73.2 | 14.0 | 22.4 |

**Legend**: (1) Proportion of CDD contracts in total hires; (2) Approximate CDD transformation rate; (3) Proportion of establishments hiring only on CDD among hiring establishments.
P-values under the null hypothesis $\rho = 0$ are in parentheses.

Table 14: Persistency of job creations and destructions

| year | N | Response rate by size | | | |
|---|---|---|---|---|---|
| | | 10-49 | 50-99 | 100-199 | 200- |
| 1996-1997 | 36220 | 29.8 | 39.6 | 46.4 | 43.1 |
| 1997-1998 | 37049 | 33.6 | 38.0 | 44.4 | 39.3 |
| 1998-1999 | 40783 | 39.8 | 44.0 | 48.1 | 42.3 |
| 1999-2000 | 40885 | 34.7 | 50.3 | 54.4 | 47.6 |
| 2000-2001 | 32012 | 23.0 | 48.9 | 53.8 | 47.7 |
| 2001-2002 | 33393 | 31.1 | 45.0 | 51.6 | 44.9 |
| 2002-2003 | 37855 | 32.8 | 45.0 | 54.9 | 50.2 |
| 2003-2004 | 40131 | 34.8 | 46.6 | 55.5 | 50.5 |
| 2004-2005 | 33891 | 26.4 | 44.8 | 53.2 | 45.5 |

| year | FPOS | FNEG | UPUP | DWDW |
|---|---|---|---|---|
| 1996-1997 | 76.6 | 77.8 | 44.5 | 38.9 |
| 1997-1998 | 78.1 | 76.8 | 45.6 | 36.8 |
| 1998-1999 | 79.4 | 75.6 | 47.8 | 36.3 |
| 1999-2000 | 83.4 | 70.4 | 52.7 | 32.7 |
| 2000-2001 | 80.5 | 74.2 | 49.1 | 33.9 |
| 2001-2002 | 77.9 | 75.3 | 45.3 | 37.9 |
| 2002-2003 | 76.7 | 79.3 | 40.3 | 41.8 |
| 2003-2004 | 75.9 | 79.6 | 40.9 | 41.8 |
| 2004-2005 | 76.7 | 77.5 | 42.5 | 41.9 |

**Legend**: FPOS: Percentage of jobs created in a year that still exist one year later; FNEG: Percentage of jobs destroyed in a year that have not yet been recreated one year later.
UPUP: Proportion, among establishments growing in the first year, of establishments growing in the second year; DWDW: Proportion, among establishments shrinking in the first year, of establishments shrinking in the second year.

Table 15: Regression results

| dep. var. | JCR | | JDR | | IN | | OUT | |
|---|---|---|---|---|---|---|---|---|
| sect*size FE | *yes* | | *yes* | | *yes* | | *yes* | |
| 1996 | 0,0004 | 0,0016 | -0,0012 | 0,0015 | -0,0187* | 0,0088 | -0,0202* | 0,0086 |
| 1997 | 0,0016 | 0,0012 | -0,0007 | 0,0013 | -0,0246** | 0,0083 | -0,0267** | 0,0082 |
| 1998 | 0,0057** | 0,0022 | 0,0019 | 0,0016 | -0,0062 | 0,0082 | -0,0095 | 0,0078 |
| 1999 | 0,0057** | 0,0013 | 0,0036* | 0,0016 | -0,0018 | 0,0077 | -0,0036 | 0,0075 |
| 2000 | 0,0130** | 0,0020 | 0,0079** | 0,0026 | 0,0126 | 0,0083 | 0,0080 | 0,0083 |
| 2001 | 0,0050** | 0,0016 | 0,0040* | 0,0016 | 0,0097 | 0,0071 | 0,0089 | 0,0069 |
| 2002 | 0,0040** | 0,0015 | 0,0043** | 0,0016 | 0,0116 | 0,0078 | 0,0118 | 0,0076 |
| 2003 | 0,0038** | 0,0014 | 0,0043** | 0,0013 | -0,0035 | 0,0079 | -0,0025 | 0,0075 |
| 2004 | 0,0008 | 0,0012 | 0,0018 | 0,0012 | 0,0015 | 0,0089 | 0,0022 | 0,0086 |
| 2005 | *ref.* | | *ref.* | | *ref.* | | *ref.* | |
| seg | 0,5315** | 0,0503 | -0,3960** | 0,0509 | 1,3516** | 0,1410 | 0,4019** | 0,1377 |
| R-Square | 0,8116 | | 0,6655 | | 0,9663 | | 0,9657 | |
| *Robustness check: no time dummies, aggregate employment growth* | | | | | | | | |
| sect*size FE | *yes* | | *yes* | | *yes* | | *yes* | |
| eg | 0,2923** | 0,0516 | 0,1603* | 0,0671 | 0,4718* | 0,1952 | 0,3529 | 0,1942 |
| seg | 0,5302** | 0,0517 | -0,3920** | 0,0517 | 1,4024** | 0,1365 | 0,4568** | 0,1316 |
| R-square | 0,8057 | | 0,6448 | | 0,9641 | | 0,9629 | |
| *Robustness check: no time dummies, aggregate employment growth, sectoral trends* | | | | | | | | |
| sect*size FE | *yes* | | *yes* | | *yes* | | *yes* | |
| sect. trend | *yes* | | *yes* | | *yes* | | *yes* | |
| eg | 0,3351** | 0,0682 | 0,1633* | 0,0821 | 0,7866** | 0,1989 | 0,6203** | 0,1923 |
| seg | 0,4861** | 0,0746 | -0,3731** | 0,0671 | 1,2326** | 0,1662 | 0,3562* | 0,1546 |
| R-square | 0,8180 | | 0,6801 | | 0,9771 | | 0,9772 | |

All results are based on 560 observations; fixed effects for 56 sector (14 levels) and size (4 levels) combinations are included. Asymptotic heteroscedasticity-robust standard errors follow each coefficient.
*: significant at 5% level; **: significant at 1% level.

Table 16: Regression results: Entry movements by age

| ENTRY: | YOUNG | | ADULT | | OLD | |
|---|---|---|---|---|---|---|
| 1996 | 0,0054 | 0,0053 | -0,0171** | 0,0036 | -0,0101** | 0,0014 |
| 1997 | 0,0017 | 0,0048 | -0,0188** | 0,0034 | -0,0103** | 0,0013 |
| 1998 | 0,0112* | 0,0048 | -0,0103** | 0,0035 | -0,0085** | 0,0013 |
| 1999 | 0,0088* | 0,0040 | -0,0070 | 0,0036 | -0,0059** | 0,0013 |
| 2000 | 0,0160** | 0,0045 | 0,0053 | 0,0038 | -0,0047** | 0,0014 |
| 2001 | 0,0088* | 0,0041 | 0,0044 | 0,0031 | -0,0034** | 0,0013 |
| 2002 | 0,0086* | 0,0043 | 0,0048 | 0,0034 | -0,0022 | 0,0012 |
| 2003 | 0,0009 | 0,0042 | -0,0009 | 0,0037 | -0,0029* | 0,0013 |
| 2004 | -0,0018 | 0,0045 | 0,0030 | 0,0042 | -0,0012 | 0,0014 |
| 2005 | *ref.* | | *ref.* | | *ref.* | |
| seg | 0,8011** | 0,0819 | 0,4140** | 0,0593 | 0,0351 | 0,0202 |
| R-square | 0,9726 | | 0,9413 | | 0,8506 | |

All results are based on 560 observations; fixed effects for 56 sector (14 levels) and size (4 levels) combinations are included. Asymptotic heteroscedasticity-robust standard errors follow each coefficient.
*: significant at 5% level; **: significant at 1% level.

Table 17: Regression results: Exit movements by age

| EXIT: | YOUNG | | ADULT | | OLD | |
|---|---|---|---|---|---|---|
| 1996 | 0,0044 | 0,0052 | -0,0170** | 0,0036 | -0,0110** | 0,0014 |
| 1997 | 0,0005 | 0,0048 | -0,0175** | 0,0035 | -0,0126** | 0,0014 |
| 1998 | 0,0071 | 0,0044 | -0,0088** | 0,0034 | -0,0097** | 0,0014 |
| 1999 | 0,0060 | 0,0038 | -0,0049 | 0,0037 | -0,0071** | 0,0015 |
| 2000 | 0,0118** | 0,0042 | 0,0067 | 0,0039 | -0,0071** | 0,0017 |
| 2001 | 0,0114** | 0,0039 | 0,0058 | 0,0030 | -0,0084** | 0,0015 |
| 2002 | 0,0123** | 0,0041 | 0,0059 | 0,0034 | -0,0064** | 0,0014 |
| 2003 | 0,0043 | 0,0040 | 0,0003 | 0,0037 | -0,0065** | 0,0014 |
| 2004 | -0,0008 | 0,0042 | 0,0019 | 0,0041 | 0,0000 | 0,0015 |
| 2005 | *ref.* | | *ref.* | | *ref.* | |
| seg | 0,3522** | 0,0735 | 0,0522 | 0,0595 | -0,0702* | 0,0276 |
| R-square | 0,9742 | | 0,9373 | | 0,7838 | |

All results are based on 560 observations; fixed effects for 56 sector (14 levels) and size (4 levels) combinations are included. Asymptotic heteroscedasticity-robust standard errors follow each coefficient.
*: significant at 5% level; **: significant at 1% level.

Table 18: Average number of entering and exiting workers per 10 jobs created and 10 jobs destroyed, by sector (1998)

| egc | NAF16 | nobs | | entry | | exit | | |
|---|---|---|---|---|---|---|---|---|
| | | | | all | old | old | all | |
| up | B | 1018 | 10 | 38 | 1,8 | 1,9 | 28 | |
| dw | | 945 | | 25 | 1,4 | 3,5 | 34 | -10 |
| up | C | 1366 | 10 | 29 | 1,6 | 1,8 | 20 | |
| dw | | 1481 | | 13 | 1,1 | 3,6 | 23 | -10 |
| up | D | 243 | 10 | 23 | 0,6 | 1,2 | 13 | |
| dw | | 153 | | 14 | 0,4 | 3,9 | 25 | -10 |
| up | E | 1655 | 10 | 24 | 1,3 | 1,4 | 14 | |
| dw | | 1295 | | 11 | 0,7 | 3,1 | 21 | -10 |
| up | F | 3464 | 10 | 26 | 1,2 | 1,4 | 16 | |
| dw | | 3086 | | 12 | 0,7 | 3,7 | 21 | -10 |
| up | G | 106 | 10 | 21 | 1,8 | 2 | 11 | |
| dw | | 206 | | 6 | 0,3 | 4,1 | 16 | -10 |
| up | H | 2510 | 10 | 23 | 1,7 | 1,5 | 14 | |
| dw | | 2356 | | 11 | 0,8 | 3,4 | 20 | -10 |
| up | J | 5254 | 10 | 34 | 1,4 | 1,5 | 25 | |
| dw | | 4034 | | 19 | 0,8 | 2,8 | 28 | -10 |
| up | K | 1389 | 10 | 32 | 2,4 | 2,2 | 22 | |
| dw | | 822 | | 17 | 1,1 | 3,3 | 26 | -10 |
| up | L | 922 | 10 | 23 | 1,4 | 1,4 | 13 | |
| dw | | 921 | | 11 | 0,5 | 3,3 | 20 | -10 |
| up | M | 282 | 10 | 34 | 2,4 | 2,6 | 24 | |
| dw | | 221 | | 15 | 1,2 | 5 | 24 | -10 |
| up | N | 3067 | 10 | 32 | 1,8 | 1,6 | 22 | |
| dw | | 2237 | | 16 | 0,9 | 2,7 | 26 | -10 |
| up | P | 1407 | 10 | 57 | 2,1 | 2 | 48 | |
| dw | | 1032 | | 48 | 2,4 | 3,6 | 56 | -10 |
| up | Q | 3200 | 10 | 47 | 3,2 | 3,3 | 38 | |
| dw | | 2065 | | 41 | 2,6 | 5,3 | 50 | -10 |

Within sectors, growing and shrinking establishment are selected; for growing establishment, the mean job creation rate is computed along with the mean entry and exit rate; for shrinking establishment, the mean job destruction rate is computed along with the mean entry and exit rate. Establishment weights are used, so that figures are representative of the average growing or shrinking establishment within each sector. Each line is then multiplied by a particular factor in order to normalise mean job creation or job destruction rates to 10.