

The Effects of Increasing the Costs of Fixed-Term  
Contracts on the Dynamics of Labor Demand: An  
Evaluation of a French Reform

Eric Maurin (CREST and CEPR)  
and Marie-Laure Michaud (Université Paris 1)

Very Preliminary, to be completed.

## Abstract

In France, as in most continental European countries, fixed-term labor contracts (FTC) have a maximum duration. At the end of the contracts, employers must either transform their FTCs into indefinite-term contracts (ITC) or terminate the contracts and pay a termination cost to the workers. In January 2002, the costs of terminating fixed-term contracts increased from 6% to 10% of the total employment value. In this paper, we provide an evaluation of this reform using a panel of about 30,000 establishments followed in 2000, 2001 and 2002 (periods of macro-economic slowdown) with detailed information on their quarterly hiring and firing behaviors. To identify the impact of the reform on employment, we compare the employment dynamics of "dead-end" establishments (i.e., those who hire under FTCs, but do not transform their FTCs) with the employment dynamics of the other establishments. By definition "dead-end" establishments are the most directly impacted by the reform. As a matter of fact, we find that their employment growth rate between 2001 and 2002 is significantly more negative (-1.2%) than those of the other establishments. We do not find such differences in employment dynamics between 2000 and 2001. To identify the effect of the reform on the rates of transformation of FTCs, we compare the changes in these rates between 2000 and 2001 on the one hand, and between 2001 and 2002 on the other hand. Regarding the first sub-period, we find a decline in the transformation rates, which is consistent with the beginning of the economic slowdown observed between 2000 and 2001. In contrast, we find an increase in transformation rates between 2001 and 2002, in spite of the growing deterioration economic climate. Given the evolution of the macro-economic context, we show that the difference between the two evolutions can be interpreted as a lower bound (i.e., about +3 percent points) for the actual positive impact of the reform on the transformation rates. All in all, the reform has increased the incentive to transform FTC into ITC, at the price of diminishing the level of employment. It seems that a significant number of "dead-end" jobs have been destroyed by the reform, but they have not been fully replaced by "stepping stones".

## 1. Introduction

Significant layoff costs are often pointed out as one of the most important source of rigidity in continental European labour markets. The presumed negative effects of layoff costs on firms' hiring behaviour and, consequently, on the rate of exit from unemployment, is no doubt one of the reasons why most European countries have introduced reforms allowing a wide use of fixed term contracts. A lot of countries can now bypass the regulations of layoffs by offering fixed-term instead of indefinite-term contracts. In France, the vast majority (about 80%) of all entries into private sector establishments are now made through fixed-term contracts (FTC). De facto, employers can hire workers on FTC whenever they are faced with seasonal or temporary variations in their economic activity.

Fixed-term contracts do not simply boil down to low-firing costs contracts, however. Another basic feature of most European legislations is that FTCs have a maximum duration as well as limited renewal possibilities. Put differently, FTC workers cannot be retained unless their contracts are converted into permanent, which raises their termination costs. In France, whenever a French firm does not transform an FTC into an indefinite term contracts and terminate the FTC workers, it must pay a termination cost to the FTC worker (in French: *la prime de précarité*).

Given these limitations and costs, FTCs are plausibly less flexible than it is usually assumed in the literature. They correspond as much to stepping-stones as to dead-ends. Very little is known, however, on how these institutions affect the number and nature of FTCs. In particular, it is not clear how FTC termination costs affect the number of temporary jobs within firms and their degree of stability.

The purpose of this paper is to shed some light on these issues through analyzing the increase in FTCs' termination costs that took place in France at the very beginning of 2002. In January 2002, following the *loi de modernisation sociale*, the termination costs have increased from 6% to 10% of the employment contracts' total value. To the best of our knowledge, the impact of this increase on firms' hiring behaviour and on the rates of transformation of FTC into ITC has not yet been analyzed.

The objective of the French government was to increase the incentive to transform temporary contracts into permanent ones. Specially, the purpose was to reduce the permanent component of the share of temporary jobs within firms without diminishing levels of employment. It is plausible that the reform has increased the probability of offering permanent contracts to workers under temporary contracts. But the problem is that the reform is also likely to have diminished the rates of hiring under fixed-term contracts, so that the total impact on employment is a priori ambiguous.

To evaluate this reform, we use French administrative data which provide detailed information on the quarterly hiring and firing behaviors of a large panel of French establishments in 2000, 2001 and 2002.

To identify the effect of the reform on employment, we compare the employment growth rates of "dead-end" establishments (i.e., those who hire under FTCs, but do not transform their FTCs) with the employment growth rates of the other establishments. "Dead-end" establishments are the most directly impacted by the reform. To

anticipate, we find that their employment is significantly less dynamic between 2001 and 2002 (-1.2%) than the employment of the other establishments. We do not find such differences in employment dynamics between 2000 and 2001.

To evaluate the impact of the reform on the rates of transformation of FTCs, we compare the changes in these rates between 2000 and 2001 on the one hand, and between 2001 and 2002 on the other hand. To begin with, our data show a decline in the transformation rates between 2000 and 2001. This result is consistent with the fact that the macroeconomic slowdown began during this first sub-period. In contrast, our data show an increase in the transformation rates during between 2001 and 2002, in spite of the persisting deterioration of the economic climate. As discussed below, the difference between these two evolutions can be interpreted as a lower bound (i.e., about +3 percent point) for the actual positive impact of the reform on the transformation rates. All in all, the reform has increased the incentive to transform FTC into ITC, at the price of diminishing the level of employment. A significant number of "dead-end" jobs have been destroyed by the reform, but they have not been fully replaced by "stepping-stone" jobs.

## 2. Overlook of the literature

There exists a growing literature on how reforms of the employment protection rules affect labor market outcomes. In a recent contribution, Autor, Donohue and Schwab (2003) analyse the effects of the reform of the "employment at will" doctrine which took place in various US states in various time over the last decades<sup>1</sup>. The United-States has long had a legal presumption that workers can be fired for any time and any reason (i.e., "at will"). During the last decades, however, most state courts have adopted one or more common law wrongful-discharge protections, that weaken the employment-at-will presumption. Using the cross-state variation with a difference-in-difference framework, the authors find that most of the new doctrines have no robust effects on wages or on employment-to-population rates. One new doctrine (the implied-contract exception) has a modest negative impact on employment rates however. Also it has marginally significant positive impact on wages. Their interpretation for these effects is that rising lay-off costs increases the bargaining power of workers, which affects positively wages and negatively employment. Another interpretation is that the effect of the reform is to favour the substitution of highly-skilled workers to low-skilled workers, since the former are those whose employment is the most stable and the least affected by layoff costs.

In a related contribution, Autor (2003) shows that employers increased demand for temporary help agency when states adopted common law exceptions to employment at will. Analyzing the same reform, Kugler and Sain-Paul (2003) find that a state's adoption of wrongful-discharge doctrines slows the job-to-job mobility of unemployed workers relative to employed workers.

Kugler (2000) analyses the effect of the reduction of layoff costs in Colombia in 1990. Using individual level data, she compares workers' turnover in the formal

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<sup>1</sup>See also the previous studies on this issue by Dertouzos and Karoly (1993) and Miles (2000).

and the informal sectors of Columbian economy before and after the reform. She assumes that the reform affects mostly formal firms and interprets the variation in the differences between the formal and informal sectors as reflecting the true impact of the reform. Within this framework, she finds that the reduction of layoff costs increases the rates of entry into and exit from unemployment.

Kugler, Jimeno and Hernanz (2002) analyse the reduction of payroll taxes and dismissal costs in Spain in 1997. Given that workers aged 30 to 40 were not directly concerned by this reform, they identify the impact of this reform by analysing the variation in the differences between this group of workers and the other groups. They find that the reform increased employment of young male workers on permanent contracts. Also the reform increased the rates of entry into employment and the rates of transition from fixed-term contracts to indefinite-term contracts, the effects being significant mostly for young workers. The reform also increased the transitions from permanent employment to non-employment for older workers.

In other recent contributions, DeLaire (2000) and Acemoglu and Angrist (2001) analyse the implementation of the recent American with disabilities act, which has increased the employment protection of workers with disabilities in the US. They find that the reform has no impact on wages, but a negative impact on the employment of disabled workers, especially the young ones.

Lastly, Borgarello, Garibaldi and Pacelli (2002) provides an analysis of the Italian case where layoff restrictions are stronger for firms with more than 15 employees. Using a firm database, they reveal some small, but significant asymmetries in the behavior of firms. In particular, firms just below the 15 employees' threshold are more likely to keep their number of worker constant than firms just above the threshold.

All in all, the existing literature suggests that layoff restrictions reduce turnover and impact negatively the employment share of the most protected workers.

As far as we know, most existing studies focus on the legislation on permanent contracts and very little is known about the effects of the institutions that determine hiring and firing on temporary contracts. In France, one such institutions is the costs of not transforming FTCs (*prime de précarité*) and the purpose of this paper is to provide an evaluation of the recent increase from 6% to 10% of this termination costs.

### **3. The French context and the Reform**

In France, as in most continental European countries, firms are allowed to hire workers under two types of contracts, indefinite-term contracts (ITC) and fixed-term contracts (FTC). For each hiring, the employer has to fill out an administrative form for the new employee and send it to the necessary government organisations. The French labor laws stipulate that ITC must represent the normal and general form for an employment contract. De facto, there are significant legal constraints which make it difficult for French employers to justify a large number of workers under FTC. The employer has to prove that its FTCs correspond to seasonal activities or temporary activity variations. Otherwise the employer must prove that its FTCs replace workers who are only temporarily absent from the work-place. FTC are also characterized by limited duration as well as limited renewal possibilities. They have a maximum duration

of 18 months, including renewals.

Until January 2002, employers who did not transform an FTC into an ITC had to pay a 6% termination cost of the employment contract's total value. The main feature of the *loi de modernisation sociale* (which became effective on January 2002) was to increase this termination cost from 6% to 10% of the employment contracts' total value. The basic purpose was to increase the incentive to transform FTCs into ITCs, i.e. to reduce the proportion of firms that do not transform FTCs, and to increase overall job stability.

#### 4. Data and Basic Facts

The data used in this paper come from two surveys conducted by the French ministry of Labor. The first of these surveys is the *Déclaration Mensuelles des mouvements de main-d'œuvres* (hereafter, DMMO), which is an administrative record of all worker movements in all private-sector establishments with at least 50 employees. Each year, about 38,000 establishments are present in the DMMO database. Our second source is the *Enquête sur les Mouvements de Main-d'œuvre*, which provides a quarterly record of all workers movements for a representative sample of the private sector establishments with 10 to 49 employees (EMMO). The EMMO was created in the early nineties in order to supplement the information on large establishments provided by the DMMO. The sample of this survey is rotating, so that important subsamples can be tracked over time.

The panel used in this paper corresponds to the establishments present in the DMMO and the EMMO during the first two quarters of 2000, 2001 and 2002. The resulting file contains 27,463 establishments with quarterly information on the number :

- (a) employees,
- (b) hiring under indefinite-term contracts,
- (c) hiring under fixed-term contracts,
- (d) end of fixed-term contracts,
- (e) layoff for economic reasons
- (f) other terminations.

Table 1 provides a description of the distribution of our establishments across industries and size groups. Table 2 shows the average rates of hiring, termination and quits in 2000, 2001 and 2002. Generally speaking, we observe a decline in the hiring rates and a rise in the termination rates over the period. This evolution begins before the reform, between 2000 and 2001, but persists and becomes even stronger between 2001 and 2002, especially in the manufacturing sector. It is consistent with the evolution of the French GDP growth rates over the period and the significant downturn experienced by French manufacturing industries in 2002. The average quit rate slightly declined between 2001 and 2002.

## 5. A Theoretical framework

Before moving on to the statistical analysis of our panel, we are going to develop a simple labor demand model with two types of labor contracts and termination costs. The purpose is to discuss the potential effects of an increase in the cost of terminating fixed-term labor contracts and the assumptions under which these effects are identifiable.

For each firm  $i$  and each date  $t$ , we denote  $n_{it}$  the number of workers under temporary contracts and  $x_{it}$  the number of workers under permanent contracts. The output of firm  $i$  at date  $t$  is denoted  $y_{it} \equiv F(x_{it}, n_{it}, \epsilon_{it})$  where  $F$  is production function and  $\epsilon_{it}$  represents random productivity shocks affecting the productivity of labor inputs at the beginning of each  $[t, t + 1]$  period.

Workers entries and exits are assumed to take place at the beginning of the different periods after the realization of  $\eta_{it}$ . We denote  $h_{it}$  the number of workers hired under permanent contracts and  $f_{it}$  the number of permanent workers who are laid off at the beginning of  $[t, t + 1]$ . Temporary contracts last only one period, at the end of which they are either terminated or transformed into indefinite-term contracts. We denote  $t_{it}$  ( $s_{it}$ ) the number of temporary contracts that are transformed (not transformed) into permanent contracts during  $[t, t + 1]$ . With these notations we have,

$$n_{it-1} \equiv s_{it} + t_{it} \quad (5.1)$$

Furthermore, if  $x_{it}$  represent the number of workers under permanent contracts, we have,

$$x_{it} \equiv \theta x_{it-1} + h_{it} + t_{it} - f_{it} \quad (5.2)$$

where  $\theta$  represents the retention rate.

With these notation, the one period return to labour inputs is,

$$Z_{it} = y_{it} - w_n n_{it} - w_x x_{it}, \quad (5.3)$$

where  $w_n$  ( $w_x$ ) denotes the wages paid to temporary (permanent) workers in firm  $i$ .

In the remainder we denote  $z_{ixt} = \frac{\partial Z_{it}}{\partial x_{it}}$  and  $z_{int} = \frac{\partial Z_{it}}{\partial n_{it}}$  the marginal returns to labor inputs. The firm's objective function can be written,

$$V_{it} = E_t \sum_{k=t}^{\infty} \delta^{k-t} (Z_{ik} - C_H(h_{ik}) - C_N(n_{ik}) - C_F(f_{ik}) - C_S(s_{ik})) \quad (5.4)$$

subject to  $h_{ik} \geq 0$ ,  $f_{ik} \geq 0$ ,  $n_{ik} \geq 0$ ,  $0 \leq s_{ik} \leq n_{ik-1}$ ,

and  $x_{it} = \theta x_{it-1} + h_{it} + n_{it-1} - s_{it} - f_{it}$ ,

where the  $\delta$  parameter represents the real discount rate while  $C_H(h_{ik})$  ( $C_N(n_{ik})$ ) represents the costs of hiring  $h_{ik}$  ( $n_{ik}$ ) permanent (temporary) workers and  $C_F(f_{ik})$  ( $C_S(s_{ik})$ ) represents the costs of terminating  $f_{ik}$  ( $s_{ik}$ ) permanent (temporary) contracts.

In the remainder, the hiring technologies  $C_H$  and  $C_N$  are assumed differentiable, increasing and strictly convex. Regarding lay off costs, we also assume that  $C_F$  is differentiable and strictly convex in order to capture the fact that - in the French institutional context- the cost of one additional lay off increases with the number of lay offs. In contrast, given that the prime de précarité is the only termination costs for temporary workers, we assume that  $C_S$  is linear, i.e.,  $C_S(n_{ik}) = c_S n_{ik}$ . In the remainder, we will denote  $c = c_S w_n$ . Roughly speaking, the reform under consideration consists in an increase of  $c$  from 0.06 to 0.1.

### 5.1. The dynamics of hiring and transformations

The problem of the firm is to maximize  $V_{it}$ . We are not going to go into the details of the resolution of this problem, but present the basic Euler conditions and discuss their empirical implications.

First, let us consider a firm which has hired workers under FTC at  $t - 1$  (i.e.,  $n_{it-1} > 0$ ) and let us denote  $\lambda_{it} \equiv E_t (\delta\theta)^k z_{ixt+k}$  the expected discounted marginal impact of one additional permanent worker. This firm will transform its FTCs into permanent contracts if and only if they have a positive impact on the expected value of the firm. The impact of one additional transformation on  $V_t$  is the combination of  $\lambda_{it}$  and of the benefit of not terminating an additional temporary contracts (i.e.  $c$ ). Hence, once  $n_{t-1}$  is positive, we have ( $t_{it} > 0$ ) if and only if,

$$c + \lambda_{it} > 0 \quad (5.5)$$

In this very simple model, the firm either terminates or transforms all the FTCs or no FTCs, so that the number of FTC transformations is  $t_{it} = n_{it-1} 1(c + \lambda_{it} > 0)$  and the number of FTC terminations is:

$$s_{it} = n_{it-1} (1 - 1(c + \lambda_{it} > 0)) \quad (5.6)$$

where  $1(A > 0)$  denotes a dummy which value is 1 when  $A$  is positive. Conditional on the FTC hiring rate, the FTC termination rate is clearly decreasing with  $c$  and  $\lambda_{it}$ .

Regarding FTC hiring, the current marginal return to one additional temporary hiring is  $z_{int} - C'_N(n_{it})$ . The expected marginal benefit for this adjustment is  $-c$  if this additional temporary contract is terminated at  $t + 1$  and  $\lambda_{it+1}$  if this additional contract is transformed into a permanent one. Thus, whenever  $n_t$  is positive it satisfies the following Euler condition,

$$C'_N(n_{it}) = z_{int} + \delta\theta E_t((\lambda_{it+1} + c)1(c + \lambda_{it+1} > 0) - \delta\theta c, \quad (5.7)$$

Holding the expected distribution of  $\lambda_{it+1}$  constant, one can check that - once  $\delta \neq 0$  - the rate of entry under FTC is decreasing with  $c$ . Once firms take into account their future flows of profit to make their current decisions, any increase in  $c$  translates into a decrease in  $n_{it}$ .

Lastly, regarding permanent adjustments, since the  $C_F$  function is strictly increasing with  $f_{it}$  and  $C_H$  strictly increasing with  $h_{it}$ , the firm never choses both  $f_{it}$  and  $h_{it}$



positive. There is no hiring (layoffs) when layoffs (hiring) occur. Given this fact, the current marginal costs of adjusting the number of permanent worker can be written  $C'_H(h_{it}) - C'_F(f_{it})$ . The optimal adjustment is such that the cost of such a marginal adjustment is equal to its discounted marginal return,

$$C'_H(h_{it}) - C'_F(f_{it}) = \lambda_{it} \quad (5.8)$$

Assuming that variations in  $c$  have no significant effects<sup>2</sup> on  $\lambda_{it}$ ,  $f_{it}$  and  $h_{it}$  do not vary with  $c$ . Under this assumption, the reform affects employment dynamics mostly through its affecting  $n_{it}$ .

In the next section, we propose a very simple set of specifications which allows the identification of the impact of the reform

## 5.2. The Effects of the Reform: Identification Issues

Consider a sample of establishments followed three consecutive years,  $T_0 = 2000$ ,  $T_1 = 2001$  and  $T_2 = 2002$ . The FTCs' termination cost is the same during  $T_0$  as during  $T_1$ , but increases significantly from  $c$  to  $c' > c$  between  $T_1$  and  $T_2$ . Suppose that each establishment  $i$  is characterized by  $\lambda_{it} = \lambda_{i0}$  and  $z_{int} = z_{i0}$  during period  $T_0$  and by  $\lambda_{i1}$  and  $z_{i1}$  ( $\lambda_{i2}$  and  $z_{i2}$ ) during  $T_1$  ( $T_2$ ). Assume also that the three consecutive periods correspond to a macroeconomic slowdown. Specifically, there exist  $\delta_1 > \delta_0 > 0$  such that  $\lambda_{i2} = \lambda_{i1} - \delta_1 = \lambda_{i0} - \delta_1 - \delta_0$  and  $\gamma_1 > \gamma_0 > 0$  such that  $z_{i2} = z_{i1} - \gamma_1 = z_{i0} - \gamma_1 - \gamma_0$ .

Within this framework, Equation (6) implies that the FTC transformation rate - as measured by the ratio between the rate of entries under fixed-term contracts and the rate of fixed-term contracts' terminations - increases between  $T_0$  and  $T_1$  due to the overall decline in  $\lambda_{it}$ . Regarding the following period, the prediction is ambiguous. The increase in  $c$  drives a decline in the FTC's exit/entry ratio while the persisting decline in  $\lambda_{it}$  continues to drive a rise in this rate. Given that the deterioration of the  $\lambda_{it}$  is sharper between  $T_1$  and  $T_2$  than between  $T_0$  and  $T_1$ , the difference between the changes in the exit/entry ratio observed between  $T_1$  and  $T_2$  and the changes observed between  $T_0$  and  $T_1$  provides a downward bound for the net impact of the reform, however. In particular, if we find a decline in exit/entry ratios between  $T_1$  and  $T_2$  and a rise between  $T_0$  and  $T_1$ , we can conclude that the reform has driven a significant positive shift in transformation rates.

Regarding the number of FTCs and the level of employment, Equation (7) shows that the macroeconomic slowdown and the insitutional reform have both a negative impact, so that the comparison of the changes that took place between  $T_0 - T_1$  and  $T_1 - T_2$  does not provide a means for identifying the ceteris paribus effect of the reform. But, given the negative shifts which affect both  $z_{in1}$  and  $\lambda_{i1}$ , Equation (7) implies that the establishments that are most directly affected by the reform are those such that  $n_{i1} > 0$  and  $\lambda_{i1} + c < 0$ , i.e. those who hire under FTCs but do not transform their FTCs into ITCs (the "dead-end" establishments). One of the main purpose of the reform was precisely to destroy these dead-end temporary jobs. To test for the impact

<sup>2</sup>For instance, this is the case when the production function is linear and  $z_{ixt}$  does not vary with  $x_{it}$ . In such a case,  $\lambda_{it} = \frac{z_{ixt}}{1-\delta\theta}$  does not vary with  $c$ .

of the reform on hiring behaviour and employment, our strategy will be to compare the employment dynamics of these "dead-end" establishments with the employment dynamics of the other establishment. Within our very simple theoretical framework, the difference between the two dynamics provide an evaluation of the effect of the reform.

## 6. Results

To test for the impact of the reform on FTCs' transformation rates, table 2 shows regressions of the FTCs' exit rates on the FTCs' hiring rates allowing the regression coefficients to vary from one sub-period to the next. The measurement of the entry and exit rates correspond to the first two quarters of the year under consideration. Also the models control for establishment fixed-effects and for industry specific shifts.

The first regression of the table shows an increase in the regression coefficient between 2000 and 2001, which means that a given level of entry under FTCs is associated with a higher level of FTC exits in 2001 than in 2000. This result is consistent with the fact that the activity began to slow down between 2000 and 2000, which plausibly drove a decline in the transformation rates within the different establishments of the panel. In contrast, the second regression shows a small, but significant decline in the regression coefficient between 2001 and 2002, meaning that a given level of entries under FTCs is associated with a less important level of exits in 2002 than in 2001, in spite of the continuing deterioration of the macroeconomic climate. As discussed in the previous section, such a decline in the exit/entry ratio plausibly reflects the impact of the reform on transformation rates. Specifically, the comparison of the two regressions suggest an increase of at least 2.9 percent point in the transformation rates (i.e.,  $2.4-0.5$ ). The reform seems to have significantly increased the incentive to transform FTCs into ITCs.

To test for the impact of the reform on FTCs' hiring rates and employment level, Table 3 shows regression of the (log) employment on a variable interacting a beginning-of-the-period dummy and a dummy indicating that the establishment is a "dead-end" (controlling again for establishment fixed effects and for industry specific shifts). "Dead-end" establishments are defined as having a high level of FTC terminations relative to their level of FTC hiring. Specifically, the rate of FTC terminations during the second quarter is greater than  $3/4$  the rate of FTC hiring during the first quarter. As discussed above, this population is the most directly impacted by the reform and the model tests whether it has experienced more negative employment growth rates than other establishments. Interestingly enough, the regression for the 2001-2002 period shows that the employment growth rate is significantly less important (-1.2%) in "dead-end" establishments than in the other establishments. We do not find such a difference when we focus on the 2000-2001 period. An increase in the cost of FTC termination seems to have a ceteris paribus significant negative impact on the level of employment.

All in all, our results suggest that the reform has doubtless succeeded in destroying dead-end jobs, but at the price of diminishing the total number of jobs. In short, some "dead-end" jobs have disappeared, but they have not been fully replaced by "stepping

stones” ones.

Within our theoretical framework, the negative impact of the reform on FTC hiring rate and employment comes from the fact that establishments do take into account the expected termination costs when making their hiring decisions. Table 4 provides a simple test for this aspect of the model. Specifically, it proposes an analysis of the impact of the expected rates of indirect hiring under FTC (i.e. through transformations) on the current rate of hiring under FTC.

In our model, quit rate affects the expected return to permanent jobs and, as such, represent a direct determinant of the expected rate of indirect hiring under ITC. In contrast the effect of the quit rate on the FTC hiring rate is only indirect. The quit rate affects the FTC hiring rate only insofar as it modifies the expected transformation and termination rates in the next period. Table 4 tests this idea and shows the IV regression of the FTC hiring rates at Q1 (first quarter) on the difference between the FTC termination rate at Q2 and the FTC hiring rate at Q1, using the quit rate at Q1 as an instrumental variable. All the variables are take in first difference to purge out possible fixed-effects.

When we focus on the 2001-2002 period, this regression shows that any increase in the expected rate of indirect hiring under ITC (as measured by the difference between hiring at Q1 and termination at Q2) is associated with an increase in the contemporary FTC hiring rate which is 30% more significant than the expected increase in the indirect hiring rate. In contrast, when we focus on the 2000-2001 period, the same regression shows that an increase in the expected rate of indirect hiring under ITC is associated with an increase in the contemporary FTC hiring rate which is only 10% more significant. Comparing 2000-2001 and 2001-2002, we find an increase in the impact of the expected rate of hiring under ITC on the FTC hiring rate. These results confirm the role of expectation in the hiring decision making. Also they confirm that the reform actually modified the role of FTCs: they are more often used as a means for (expected) permanent adjustments.

## **7. Conclusion and Bibliography (to be completed)**

Table 1: Distribution of establishments across industries and size groups in 2002

	2002	%
<b>Industries</b>		
Agriculture	0.8	
Manufacturing	33.7	
Construction	8.3	
Service	57.1	
<b>Size groups</b>		
10-20	14.7	
20-50	13.4	
50-100	31.3	
100-200	23.0	
>200	16.0	

Table 2 : Hiring, termination and quit rates in 2000, 2001 and 2002.

Hiring and termination rates	2000		2001		2002		%
	Q-1	Q-2	Q-1	Q-2	Q-1	Q-2	
ITC hiring	3.27	2.74	3.32	2.54	2.44	2.04	
Layoff	0.14	0.11	0.10	0.13	0.21	0.23	
FTC hiring	6.11	6.77	5.77	6.20	5.29	5.70	
FTC termination	3.75	3.74	3.77	3.83	3.89	3.88	
Quit	1.91	2.21	2.18	2.21	1.76	1.82	

Table 3 : Changes in the FTC transformation rates.

Independent variables	Dependent variable: FTC termination rates	
	2000-2001	2001-2002
FTC hiring rate	0.80 (0.01)	0.84 (0.01)
FTC hiring rate and [t=2001]	+0.024* (0.002)	-
FTC hiring rate and [t=2002]	-	-0.005* (0.002)
Estab. Fixed effects	yes	yes
[Industry and size-class fixed effects] and [t=2000]	yes	-
[Industry and size-class fixed effects] and [t=2001]	-	Yes
Nb observations	56198	56198
Rsquare	0.98	0.97

Note: The hiring and termination rates correspond to the first two quarters of the year.

Reading: Within industry (85 items) and size-class (5 items) and holding the FTC hiring rates constant, we observe a significant decline in FTC termination rates between 2001 and 2002. In contrast, we find a significant increase between 2000 and 2001.

Table 4 : Changes in employment dynamics.: “dead-end” versus “stepping stone” establishments.

Independent variables	Dependent variable: (log) total employment second quarter	
	2000-2001	2001-2002
[Dead-End=1] and [t=2000]	0.0021 (0.0034)	
[Dead-End=1] and [t=2001]	-	0.012* (0.005)
Estab. Fixed effects	yes	yes
[Industry and size-class fixed effects] and [t=2000]	yes	-
[Industry and size-class fixed effects] and [t=2001]	-	yes
Nb observations	56198	56198
Rsquare	0.98	0.97

Note: The (log) employment correspond to the second quarter of the year. Dead-end establishments are such that the FTCs termination rate during the second quarter of the year is greater than 4/3 the FTC hiring rate during the first quarter, which correspond to a FTC transformation smaller than 0.25.

Reading: Controlling for industry (85 items) and size-class (5 items) effects, the employment growth rate between the second quarter of 2001 and the second quarter of 2002 is significantly less important in establishments which are dead-ends in the second quarter of 2001 than in the other establishments. There exist no such difference in 2000-2001.

Table 5: The impact of expected FTCs' transformation rates on FTCs hiring rates.

Independent variables	Dependent variable: Annual variation in FTC hiring rates (measured at Q1)	
	2000-2001 IV regression	2001-2002 IV regression
Intercept	0.002 (0.01)	0.002 (0.001)
Annual variations of [FTC termination rate (Q2)-ITC hiring rate (Q1)]	-1.09 (0.06)	-1.31 (0.17)
Nb observations	56198	56198
Rsquare	0.02	0.02
Instrument=		

Note: The instrumental variables correspond to the annual variation in the quit rates measured at Q1.

Reading: In 2001-2002, any increase in the expected rates of indirect ITC hiring (as measured by the difference between the rates of FTC exits at Q2 and FTC entries at Q1 predicted by the rate of quits at Q1) is associated with an increase in the actual rate of entry at Q1 which is 1,31 larger.

