

Hiring contracts, Wage, and Job Satisfaction :

Theory and evidence on French low qualified youths

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Abstract:

This paper examines the impact of the type of hiring contract on the possibilities for co-operation between employee and employer. We consider two types of hiring contracts: fixed-term contracts (FTCs) and open-ended contracts (OECs). Co-operation is defined in terms of contribution of effort and investment and is assumed to take the form of an implicit self-enforcing contract. In a game theoretic framework, we demonstrate that co-operation is extremely sensitive to the type of hiring contract: the employer must be more co-operative under an OEC than under a FTC and pay a higher salary to compensate for the forgone effectiveness of retaliation, owing to the higher costs of layoffs and the difficulty of breaking OECs' contracts without due cause. The lessened co-operation under FTCs should, moreover, lead to a lower level of satisfaction among employees. We test these propositions using panel data from a French sample of young school leavers with low qualifications.

Key words: Repeated games, Hiring contract, Job satisfaction.
JEL : J31, J41, J65.

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1 Introduction

This paper evaluates the implications of fixed-term contracts (FTCs), in comparison to open-ended contracts (OECs), on the quality of the employer-employee relationship. This is a critical question in all the countries where these two types of contracts coexist, especially in France where, in the last ten years, FTCs have become increasingly common, with their number nearly doubling over the past four years [from 600,000 FTCs in 1994 to 906,000 in 1998 (Source: *Enquête Emploi INSEE*)]. This increased reliance by firms on FTCs may be seen as a particular form of labour market flexibility in a country that tends to regulate layoffs and wage compensations rather strictly. Using contracts of fixed and short term, instead of contracts of open and indefinite duration, is a mean, for an employer, to ease the firing regulations legally imposed. FTCs' cost of termination is indeed rather low in comparison to OECs' one, this latest type of contract being characterised by high severance pays in case of layoff. Furthermore, FTCs afford a longer period in which to test the employee's abilities than is provided for in OECs.

In France, as in other European countries like Spain, FTCs are used particularly for young employees, holding low levels of schooling. The development of FTCs may be seen from two perspectives in matters of youth's integration into the labour market. The job security provided by the high cost of layoffs under OECs may curb young people's integration, while FTCs create incentives to hiring them. However, excessive reliance on FTCs may consign young people to a rotation of short-term jobs and periods of unemployment and arouse a sense of insecurity among them.

In addition to examining the impact of FTCs on the level of youth employment, there is some interest in investigating their effect on the quality of the employment relationship. We shall look at this issue from a theoretical and an empirical perspective. First, we develop a game-theoretic framework for analysing the employment relationship. We examine the impact of the type of contract (FTC or OEC) on the possibilities for co-operation between employee and employer. Co-operation is defined in terms of the contribution of effort and investment exceeding that required by the contract, and is

assumed to take the form of an implicit self-enforcing contract, as in recent models of efficiency wages [MacLeod and Malcomson (1989, 1993), Crémer (1986)]. We demonstrate that this co-operation is extremely sensitive to the terms under which the contract may be terminated. Thus, an employer with a worker under a FTC may threaten to not offer an OEC when the contract expires if the employee is not sufficiently co-operative. The FTC can thus be used to spur workers to increase their efforts. Under an OEC, owing to the higher costs of layoffs and the difficulty of breaking the contract without due cause, this threat is less credible. Consequently, the employer must be more co-operative and pay a higher salary to compensate for the forgone effectiveness of retaliation. The lessened co-operation under the FTC should, moreover, lead to a lower level of satisfaction among employees. We test these propositions using panel data from a sample of young school leavers with low qualifications.

Our study is original in the following three ways. First, we are interested in the quality of the employment relationship, which is rarely considered in theoretical economics. Classical production theory does not assign any explicit role to this factor and according to the theory of human capital, workers invest in human capital just to increase their productivity and making them more attractive to firms. Except Jovanovic (1979) who examines the impact of the match between workers and employers on the duration of the employment relationship, the human capital approach has paid little attention to this issue. However, as emphasised by Lazear (1996), human resources directors perceive workers' commitment and the quality of the employment relationship as a fundamental aspect of firm organisation and performance. Second, we contribute to the literature on the integration of young people into the labour market with an alternative perspective on FTCs. Beyond conventional arguments of flexibility and selection, we show that the FTC may be used by employers to *motivate* their employees. Third, measuring the quality of the employment relationship in terms of the job satisfaction expressed by youths, we offer an original measure of the success of their integration.

Econometric results reveal that, all other things being equal, youths working under OECs, and who were hired directly into those contracts, earn higher wages than those having

progressed from a FTC to an OEC. Satisfaction levels are also functions of the type of contract, even if the effect is essentially indirect, operating over the wage. These results support the notion that FTCs tend to create employment relationships under which employees and employers have less incentive to realise investments and efforts than under OECs.

In section 2, we develop a model of repeated game to analyse the employee and employer efforts. The theoretical predictions are tested in section 3, where we measure the impact of the nature of the hiring contract on the wage and on the level of satisfaction expressed by the young worker. We conclude in section 4.

2 The Theoretical Approach

The characteristics of fixed-term contracts (FTCs) and open-ended contracts (OEC) affect both the duration of the relationship between the employer and the worker and the quality of that relationship. First, we justify our decision to model the employment relationship as a repeated game (2.1). Then we provide conditions favourable to the emergence of a co-operative relationship between employer and worker, emphasising the costs of terminating the labour contract (2.2). Third, we apply the model to the French labour market, where employers may hire under either OEC- or FTC-type employment contracts (2.3).

2.1 The Employment Relationship as a Repeated Game

In any employment relationship the employer and the worker need to make decisions concerning their level of effort, their commitment to the relationship, and their investment in training. These repeated decisions, which impact on the conditions and the quality of the work, cannot be fully delineated *ex ante* in the labour contract. Only commitments which can be verified by a third party and which are enforceable in a court of law can be formalised in a contract and establish each party's due, covering things like minimal

levels of effort, working conditions, and training. These minima are generally defined with respect to collective agreements and labour law (for example, work schedules, holidays, wages, safety provisions,...). Either party can have recourse to the courts of law to enforce these minimal expectations. However, the intensity of effort or the quality of the training cannot be fixed in a contract. For this reason there is some interest in modelling the employment relationship as a repeated, non-cooperative game in which, for each period, the worker chooses his or her level of effort and the employer sets the working conditions and the level of training, under constraint of respecting the minima set out in the legal contract. The question which immediately arises is: can the employer and the employee use the repeated nature of their relationship to obtain commitments to a greater level and quality of effort and investment?

Clearly, when there is no repetition, co-operation is impossible. This situation is captured in the classical prisoner's dilemma: the employer and the worker have a shared interest in creating a quality relationship, but each individually has an incentive to let the other contribute the co-operative efforts alone. If each expects that the other will supply no effort, then mistrust will prevail and any hope for co-operation disappears. If the relationship is repeated, however, opportunistic behaviour can be deterred by the threat of retaliation in subsequent periods. The theory of repeated games establishes two fundamental results⁴. If the employment relationship is of a limited duration and known to all, then no co-operation is possible. Specifically, during the last period there is no incentive to co-operate since the relationship is about to end. During the penultimate period, neither party will want to co-operate, since the last-period behaviour has already been determined. Following this logic, we see that a relationship of limited duration cannot create any incentive to co-operate⁵. Each party will respect the terms of the legal contract, but will not do any more: neither the employer, nor the employee, will make costly and time-consuming investments.

⁴ For an introduction to repeated games, see Friedman (1986).

The result may be completely different if the parties do not know with certainty when the relationship will end. The two parties might agree on co-operative strategies which dictate the level of effort and investment expected from each and which provide for penalties in case these commitments are not respected. This is tantamount to an *implicit contract* between the employer and the worker. This contract is inherently *self-enforceable*, as the parties to the contract ensure that it is honoured. Each will co-operate as long as the benefits corresponding to opportunistic behaviour are less than the costs associated with the penalties for cheating. We find these notions of self-enforcing implicit contracts and repeated games in recent *efficiency-wage models* [Malcomson and MacLeod (1998)]⁶. These provide a microeconomic explanation for the phenomenon of an employer paying a wage exceeding the market wage, and possibly bonuses, in exchange for a higher level of effort.

The existence of co-operation, and of an efficiency wage, depends upon many factors related to the characteristics of the wage, of the job, and on conditions on the labour market. One factor, which is rarely accounted for in efficiency-wage models, is the cost of terminating a contract. Now, the exact conditions under which an employment relationship can be terminated has a significant impact on the severity and the credibility of the sanctions which can be used against a party engaging in opportunistic behaviour. For example, the worst penalty that an employer can impose on a worker is to not renew the contract. However, this threat is only credible if the costs of terminating the contract and of recruiting and training a new employee are not too high. Below, we present a model of employer-employee co-operation allowing a precise evaluation of the costs of breaking the employment contract.

⁵ It is possible, however, to establish co-operation in a finite horizon game when there exist multiple equilibria in the static game [Friedman (1985)], or when the players do not have complete information [Kreps, Wilson, Milgrom and Roberts (1982)].

⁶ See also Shapiro and Stiglitz (1984), which is the seminal article in this literature.

2.2 The Model

We here consider an employer with a job opening for a position requiring few skills and for which there are many candidates, the unemployment rate being high. Assume that, for economic reasons, the job may be abolished at the end of any period with probability $(1-\alpha)$ ⁷. When the job disappears, or an employee with seniority t is laid off, the employer must pay a severance benefit equal to F_t .

At the beginning of each period, the employer must choose the level of investment. The minimal, or *non-cooperative*, level is equal to nc_e . In the case of co-operation, it is c_e (where $c_e > nc_e$). The worker, in turn, will choose a level of labour effort: c_s being the co-operative level and nc_s the non-cooperative level ($c_s > nc_s$).

The instantaneous utility accruing to employee (S), having chosen the level of effort a_s when the employer has chosen a_e , is equal to $u_t(a_e, a_s)$, where t corresponds to the seniority of the relationship. The employer, on the other hand, obtains an instantaneous profit equal to $\pi_t(a_e, a_s)$. Benefits to both parties are captured in the following equations:

$$\begin{aligned} u_t(nc_s, c_e) &> u_t(c_s, c_e) > u_t(nc_s, nc_e), \\ \pi_t(nc_e, c_s) &> \pi_t(c_e, c_s) > \pi_t(nc_e, nc_s), \end{aligned} \quad \text{for all } t.$$

Here we find the classical structure of the prisoner's dilemma. Both parties have an interest in co-operating, even if each prefers letting the other co-operate alone. For convenience, we suppose that the employee's utility satisfies the property of separability and can be written as $u(a_s, a_e) = w + v(a_e) - z(a_s)$, where w is the wage received, $v(\cdot)$ the satisfaction deriving from the working conditions, and $z(\cdot)$ the disutility associated with his efforts⁸.

⁷ Consequently, α is the probability that the job will exist in the following period.

⁸ We have $z(c_s) > z(nc_s)$ and $v(c_e) > v(nc_e)$.

We define Π_t as the employer's expected profits⁹ in the case of co-operation with an employee of seniority t , and $\bar{\Pi}_t$ the expected profits in the case of separation. $\bar{\Pi}_t$ is, in fact, the employer's reservation profit. Similarly, we define U_t as the employee's expected utility after co-operating with the employer for t periods, and \bar{U}_t as the reservation utility if the job is lost. Benefits $\bar{\Pi}_t$ and \bar{U}_t correspond to the alternatives offered by the labour market: they define a floor beneath which the employee and the employer will not agree to maintain their working relationship. Finally, Π_t^{nc} is the employer's expected profit in the absence of co-operation when the employee's seniority is t , and U_t^{nc} is this employee's expected utility.

It is reasonable to assume that, if the contract is terminated, the employer will have no difficulty finding a replacement worker who will agree to co-operate, given the high unemployment rate. The reservation profit may thus be written $\bar{\Pi}_t = \Pi_0$ for all t . Furthermore, since in the second part of this paper we are interested in unskilled youths with less than three years seniority, we make the following two assumptions:

$$\text{H1: } F_t < \Pi_0 - \Pi_t^{nc},$$

$$\text{H2: } U_t^{nc} > \bar{U}_t.$$

This simply means that the level of lay-off benefits is limited¹⁰, so that an employer will always prefer firing an employee rather than keeping him or her in a non-cooperative relationship (assumption H1). In other words, an employer will always be able to credibly threaten to fire an opportunistic employee. Conversely, we assume that the unemployment rate is such that the worker will always want to keep the job, even with a non co-operative employer (assumption H2).

⁹ More precisely, this is the present value of the profits he expects to receive in the future periods.

¹⁰ Thus, French law provides for the computation of the amount of the layoff benefits based on the number of uninterrupted years of seniority with the employer (and on the employee's gross wage)—the less seniority, the lower the benefit, which essentially captures the situation of young employees.

Strategies for co-operation are very simple. As long as the two parties respect their commitments in terms of effort, co-operation is carried over into the next period, providing that the job is not abolished for economic reasons. If the worker does not honour the implicit contract, he is fired in the next period. This punishment is credible (see Hypothesis 1) and highly severe. If the employer does not honour the contract, a credible retaliation for the employee consists in abandoning all efforts. But the employer can avoid this punishment by firing his employee. Indeed, the employer prefers obtaining the profit $\Pi_0 - F_t$ (by firing his employee) rather than Π_t^{nc} (by accepting a non co-operative relationship).

Let δ be the discount factor for future benefits. This corresponds to a measure of individuals' preferences for the present. The expected utility of an employee with seniority t in the case of co-operation follows the relationship:

$$U_t = u_t(c_s, c_e) + \delta [\alpha U_{t+1} + (1 - \alpha)(\bar{U}_{t+1} + F_{t+1})]. \quad 1)$$

When the job is abolished with probability $(1 - \alpha)$, the employee may hope to attain future utility \bar{U}_{t+1} from another job, plus severance pay F_{t+1} .

The employer's expectation of profit is defined by the following recursive relationship:

$$\Pi_t = \pi_t(c_e, c_s) + \delta [\alpha \Pi_{t+1} - (1 - \alpha) F_{t+1}]. \quad 2)$$

What conditions are required for a co-operative relationship to be established between employee and employer from the moment of hiring ? Co-operation can only emerge if the implicit contract satisfies the constraints on both participation and on incentives.

2.2.1 Participation Constraints

It is important that, for each period, the expected benefits from a co-operative agreement exceed the reservation benefits:

$$\begin{aligned} \Pi_t &\geq \bar{\Pi}_t, \quad \text{for all } t. \\ U_t &\geq \bar{U}_t, \end{aligned}$$

The participation constraint on the employer can be rewritten as $\Pi_t \geq \Pi_0$.

2.2.2 Incentive Constraints

It is important to verify that in each period the employer and the employee have no incentive to adopt opportunistic behaviour (i.e. one ceases to co-operate while the other continues). For the worker, this constraint takes the form:

$$U_t \geq u_t(nc_s, c_e) + \delta(\bar{U}_{t+1} + F_{t+1}). \quad (3)$$

The right-hand side of this inequality represents the expected utility of an opportunistic strategy followed by being fired. This condition can be rewritten in the following form:

$$\delta \geq \frac{u_t(nc_s, c_e) - u_t(c_s, c_e)}{\alpha(U_{t+1} - \bar{U}_{t+1} - F_{t+1})}. \quad (4)$$

The right-hand term can be interpreted as the *threshold discount factor*, above which the worker is motivated to co-operate. *The lower this threshold, the greater the chances that the employee will co-operate*, since the range of discount factors δ compatible with his or her incentives is greater. We also observe that the greater the severance pay, F_{t+1} , the less the employee's incentive to co-operate. In fact, these benefits diminish the impact of the retaliations to which the opportunistic employee is subject. Similarly, we note that incentives to co-operate are greater when the job is unlikely to be abolished (α close to one).

Consider now the incentive constraints on the employer:

$$\Pi_t \geq \pi_t(nc_e, c_s) + \delta(\alpha\Pi_0 - F_{t+1}). \quad (5)$$

Again, the term on the right corresponds to the expected value of an opportunistic strategy. Whether or not the job is abolished, the employer separates from the employee and pays him a severance pay F_{t+1} . The condition yielded by equation 5 can be rewritten as:

$$\delta \geq \frac{\pi_t(nc_e, c_s) - \pi_t(c_e, c_s)}{\alpha(\Pi_{t+1} - \Pi_0 - F_{t+1})}. \quad 6)$$

The term on the right can be defined as the *threshold discount factor* for the employer, below which he has no incentive to respect the co-operative contract. The employer, unlike the worker, has an interest in co-operating which increases with the size of the severance pay. In fact, profit expectations for an opportunistic strategy diminish as the cost of separating from an employee increase. The viability of the job, measured by α , also provides an incentive to co-operate.

2.2.3 The Co-operative Wage

The employer is always interested in paying the worker the lowest wage compatible with the employee's incentive and participation constraints. Co-operative or efficiency wages are thus determined from the following equation:

$$(U_{t+1} - \bar{U}_{t+1}) = \frac{u_t(nc_s, c_e) - u_t(c_s, c_e)}{\alpha\delta} + F_{t+1}. \quad 7)$$

We observe that the wage in the current period has no incentive effect on the worker, since $u_t(nc_s, c_e) - u_t(c_s, c_e)$ only depends on the disutility of effort [i.e. $z(c_s) - z(nc_s)$]. In the co-operative case the employee is only responsive to the future wage-income trajectory. Let $\{\hat{w}_{t+1}, \hat{w}_{t+2}, \dots, \hat{w}_{t+s}, \dots\}$ be the wage profile satisfying equation 7, and $\hat{\Pi}_{t+1}$ the corresponding profit. Co-operation is thus an equilibrium solution if the factor used by the employer to discount profits satisfies:

$$\delta \geq \frac{\pi_t(nc_e, c_s) - \pi_t(c_e, c_s)}{\alpha(\hat{\Pi}_{t+1} - \Pi_0 + F_{t+1})}, \quad \text{for all } t. \quad 8)$$

Severance benefits have complex effects on employers' incentives to co-operate. If they increase, rendering an opportunistic strategy more costly (direct effect of F_{t+1} decreasing the right hand term in equation 8), the employer is constrained to propose a more generous wage regime to the employee in the framework of an implicit contract. This

makes the co-operative strategy less profitable for the employer (indirect effect on $\hat{\Pi}_{t+1}$ rising the right hand term). Nonetheless, we can demonstrate that the former effect always dominates the latter.

Proposition 1: *Given the efficient wages profile $\{\hat{w}_{t+1}, \hat{w}_{t+2}, \dots\}$, such that $U_{t+1}(\hat{w}_{t+1}, \hat{w}_{t+2}, \dots) - \bar{U}_{t+1} = \frac{u_t(nc_s, c_e) - u_t(c_s, c_e)}{\alpha\delta} + F_{t+1}$, the possibilities for co-operation between employer and employee with seniority t increase with the severance benefits, which would be payable if the contract were terminated at the end of period t .*

Proof: According to equation 8, the employer's incentive to co-operate is particularly related to the value of $(\hat{\Pi}_{t+1} - \Pi_0 + F_{t+1})$.

Recursively from equation (2), we can rewrite Π_0 as:

$$\Pi_0 = \sum_{j=0}^t (\delta\alpha)^j \pi_j + (\delta\alpha)^{t+1} \hat{\Pi}_{t+1} - \delta(1-\alpha) \sum_{j=1}^t (\delta\alpha)^{j-1} F_j - \delta(1-\alpha)(\delta\alpha)^t F_{t+1},$$

yielding:

$$\begin{aligned} \hat{\Pi}_{t+1} - \Pi_0 + F_{t+1} &= \left[1 - (\delta\alpha)^{t+1}\right] \hat{\Pi}_{t+1} + \left[1 + \delta(1-\alpha)(\delta\alpha)^t\right] F_{t+1} - \sum_{j=0}^t (\delta\alpha)^j \pi_j \\ &\quad + \delta(1-\alpha) \sum_{j=1}^t (\delta\alpha)^{j-1} F_j. \end{aligned}$$

Only the first two terms on the right depend on F_{t+1} . Given the separability of the worker's utility function, an increase in severance benefits ΔF_{t+1} translates into an equivalent increase in wages, ($\Delta F_{t+1} = \sum_{i=1} \delta^i \Delta \hat{w}_{t+i}$) and thus into an equal decrease in profits ($\Delta \hat{\Pi}_{t+1} = -\sum_{i=1} \delta \Delta \hat{w}_{t+i} = -\Delta F_{t+1}$).

Since $\left[1 - (\delta\alpha)^{t+1}\right] < \left[1 + \delta^{t+1}\alpha^t(1 - \alpha)\right]$, $\left(\hat{\Pi}_{t+1} - \Pi_0 + F_{t+1}\right)$ is clearly an increasing function in F_{t+1} , and the opportunities for co-operation increase with F_{t+1} . \square

Proposition 1 is of interest in the framework of the French labour market. French employers have the choice between two types of contract for recruiting employees, fixed-term contracts (FTC), and open-ended contracts (OEC). These contracts differ in their termination procedures, and should consequently not create the same incentives to co-operate.

2.3 The Impact of FTCs and OECs on Co-operation

2.3.1 The Costs of Terminating FTCs

French law prohibits the unilateral termination of FTC contracts. An employer can only separate from a worker if he pays him the entire amount that would have been paid in wages over the duration of the contract. The cost of termination thus decreases as the end of the contract term approaches. At the end of the contract, the employer may propose to roll over the contract into an OEC, or to separate from the employee. If the contract is not renewed, the employer must pay the employee a severance package¹¹. The obligation to pay severance does not exist if the relationship is continued under an OEC. If the employee breaks a FTC, he or she must, in theory, compensate the employer. In practise, employees rarely break FTC contracts, owing to the fact that during periods of high unemployment, workers have difficulty finding new jobs.

¹¹ The amount of this package equals 6% of the total gross remuneration for the duration of the contract.

2.3.2 The Costs of Terminating OECs

An OEC begins with a variable-length trial period¹² over the course of which the employer may terminate the contract freely and without penalty. After this trial period, termination of the OEC becomes more difficult, especially in the face of union mobilisation. The employer then needs “just cause” (labour law), and must be able to show concrete proof, especially when the firing is attributed to the character of the worker¹³. Furthermore, the employer must pay severance benefits to the employee if the layoff occurs after at least two years of uninterrupted service with the employer (regardless of the type of contract). This payment must be made whatever the reason for the separation, except in the case of serious misconduct by the employee (violence at the workplace, unjustified absence or tardiness, etc.) Because of the severance benefits and the need to justify a layoff, it is reasonable to state that terminating an OEC represents a supplementary cost to the employer compared to not rolling over a FTC into an OEC. In fact, even though the direct costs of layoffs (severance benefits) are relatively minor when seniority is less than two years, the layoff procedure under an OEC (the obligation to providing advance notice, the requirements for just cause, judicial supervision of the justification for layoffs, penalties for unjustified layoffs, etc.) is more complex and expensive than termination after the normal expiry of a FTC, which is not subject to any particular formality. Employers’ threats to terminate OECs are thus less credible than those to not renew FTCs.

An employee, on the other hand, can leave a job governed by an OEC by simply giving notice. The credibility of such a threat, presented in response to opportunistic behaviour by the employer, relies on the same conditions as the threat to not accept an OEC at the end of a FTC. Experience and qualifications, but also job-market conditions, determine the credibility of threats to voluntarily leave an OEC. Though the direct costs of leaving

¹² This may vary from several weeks to nearly six months, depending on the job. The greater the qualifications for the job, the longer the trial period may be.

¹³ However loss of confidence can be invoked as a reason for terminating the employment contract. Thus, the existence of a poor relationship or of diverging opinions is sufficient to confer “just cause” on the termination of employment. This possibility undermines the guarantees provided by the OEC contract.

an OEC are low for the worker, the opportunity costs (indirect costs) remain substantial in periods of high unemployment.

2.3.3 Theoretical Predictions

According to Proposition 1, since the costs of not renewing a FTC are lower than the costs of terminating an OEC, the employer should be more opportunistic under a FTC. Conversely, the worker should be more opportunistic under an OEC. Furthermore, incentives to the employer to co-operate should increase with the worker's seniority, since severance benefits increase over time. An evaluation of FTCs and OECs can be conducted rigorously using the preceding model, allowing us to generate testable predictions.

Assume that the employer can hire a worker for the vacant job under an OEC or a FTC. At the end of the first period the FTC must be rolled over into an OEC if the employee is to be retained. Let F^{OEC} represent the separation benefits in case of termination at the end of the first period, and F^{FTC} the corresponding amount for the non-renewal of a FTC. We have $F^{OEC} > F^{FTC}$. This differential in benefits constrains the employer, in the case of co-operation, to promise a higher wage trajectory to a worker hired directly under an OEC. However, the wage differential only affects the second period¹⁴. Indeed, the employer can propose the same initial wage under an OEC as under a FTC, since income-related incentives to co-operate only depend on future salaries. Furthermore, as of the second period, the employee's working contract and conditions are the same regardless of the hiring contract (same severance benefit). In consequence, the employer must commit to the same future wage trajectory beginning with the second period of employment ($w_j^{OEC} = w_j^{FTC}$ for all $j \geq 2$). So we have:

$$U_0^{OEC} - U_0^{FTC} = \delta \left[\alpha (w_1^{OEC} - w_1^{FTC}) + (1 - \alpha) (F^{OEC} - F^{FTC}) \right]$$

¹⁴ The second period corresponds to the period beginning in $t = 1$.

where U_0^{FTC} (U_0^{OEC}) is the expected utility of the worker in a FTC hiring (in a OEC hiring) and w_1^{FTC} (w_1^{OEC}) is the second period wage after a FTC hiring (after an OEC hiring). The difference in utility between a FTC and an OEC hiring corresponds to a weighted mean of second-period wage differentials and layoff benefits differentials.

Proposition 2: In a low-skill employment relationship, the possibilities for co-operation are greater, and the wages higher, during the initial periods if the hiring occurs under an OEC rather than under a FTC.

Proof: Since co-operative wages are set by the following equation:

$$(U_1^i - \bar{U}_1) = \frac{u_0(nc_s, c_e) - u_0(c_s, c_e)}{\alpha\delta} + F^i, \quad \text{where } i = FTC \text{ or } OEC$$

we have : $U_1^{OEC} - U_1^{FTC} = F^{OEC} - F^{FTC} > 0$. The worker's expected utility or satisfaction is higher when he is directly hired with an open ended contract. We derive the following: $w_1^{OEC} - w_1^{FTC} = F^{OEC} - F^{FTC} > 0$. The wage differential in the second period exactly corresponds to the difference in severance benefits. In the case of co-operation, an employee hired directly under an OEC receives a higher wage than one who first passed through a FTC.

We next demonstrate that the employer's incentives to co-operate are greater in the case of an employee hired under an OEC. Consider the incentive constraint facing the employer during the initial period ($t = 0$):

$$\delta \geq \frac{\pi_0(nc_e, c_s) - \pi_0(c_e, c_s)}{\alpha(\Pi_1^i - \Pi_0^i + F^i)}, \quad \text{where } i = FTC \text{ or } OEC.$$

The numerator of the right-hand term is constant regardless of the hiring contract, owing to our assumption that the employee earns the same initial wage. However, the

denominator varies with the contract. Thus, the employer's expected profit under a FTC hiring, with renewal under an OEC, is defined by the following relationships:

$$\begin{aligned}\Pi_0^{FTC} &= \pi_0^{FTC}(c_e, c_s) + \delta[\alpha\Pi_1^{FTC} - (1-\alpha)F^{FTC}], \\ \Pi_1^{FTC} &= \pi_1^{FTC}(c_e, c_s) + \delta[\alpha\Pi_2^{FTC} - (1-\alpha)F_2].\end{aligned}$$

Conversely, when the employer opts to hire directly under an OEC, expected profits are defined as:

$$\begin{aligned}\Pi_0^{OEC} &= \pi_0^{OEC}(c_e, c_s) + \delta[\alpha\Pi_1^{OEC} - (1-\alpha)F^{OEC}], \\ \Pi_1^{OEC} &= \pi_1^{OEC}(c_e, c_s) + \delta[\alpha\Pi_2^{OEC} - (1-\alpha)F_2].\end{aligned}$$

When co-operation enters into its third period (beginning in $t = 2$), expected profits are identical whatever the hiring contract ($\Pi_2^{OEC} = \Pi_2^{FTC}$). Recursively, at the second period ($t = 1$), expected profit differentials in the co-operative case are equal to $\Pi_1^{OECi} - \Pi_1^{FTC} = \pi_1^{FTC} - \pi_1^{OECi} = w_1^{FTC} - w_1^{OECi}$.

Finally, we have:

$$\Pi_1^{OEC} - \Pi_1^{FTC} = F^{FTC} - F^{OEC}$$

and

$$\Pi_0^{OEC} - \Pi_0^{FTC} = \delta\left\{[\alpha\Pi_1^{OEC} - (1-\alpha)F^{OEC}] - [\alpha\Pi_1^{FTC} - (1-\alpha)F^{FTC}]\right\} = \delta(F^{FTC} - F^{OEC}).$$

$$\text{Let } (\Pi_1^{OECi} - \Pi_0^{OEC} - F^{OEC}) - (\Pi_1^{FTC} - \Pi_0^{FTC} - F^{FTC}) = \delta(F^{OEC} - F^{FTC}) > 0.$$

$$\text{i.e. } \frac{\pi_0^{OEC}(nc_e, c_s) - \pi_0^{OEC}(c_e, c_s)}{\alpha(\Pi_1^{OEC} - \Pi_0^{OECi} + F^{OEC})} < \frac{\pi_0^{FTC}(nc_e, c_s) - \pi_0^{FTC}(c_e, c_s)}{\alpha(\Pi_1^{FTC} - \Pi_0^{FTC} + F^{FTC})}.$$

As the *threshold discount factor* associated with an open ended hiring contract (see equation (8)) is less than that associated with hiring under a FTC, the possibilities for co-operation are greater in the first case.□

According to proposition 2, the expected wage profile for hiring directly under an OEC is, on average, higher for two reasons: 1) co-operation is more likely under an OEC than

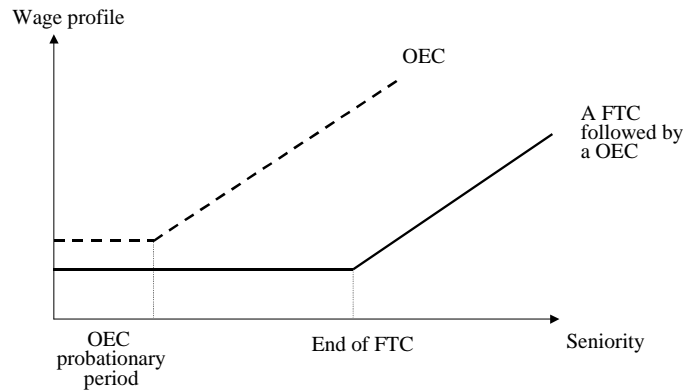
under a FTC, and 2) the employer is committed to paying a co-operative wage, or an efficiency wage, which is higher under an OEC than a FTC. Consequently, since higher wages imply better job satisfaction, the utility differential between employees recruited under OECs and under FTCs is positive.

We can give a measure of the expected wage and utility differentials. Over the set of all workers present at time $t = 1$, (all are under OECs), we define Φ^{OEC} as the probability of co-operation by workers hired directly under an OEC, and Φ^{FTC} as the probability of co-operation by workers hired under a FTC, yielding $\Phi^{OEC} > \Phi^{FTC}$ (by proposition 2). In the case of non-cooperation, we assume that the wage is fixed at a minimum \underline{w} . The mean initial wage paid the employee is thus: $\Phi^i w_0^i + (1 - \Phi^i) \underline{w}$, where $i = OEC \text{ or } FTC$ and corresponds to the hiring contract and w_0^i is the co-operative wage with $w_0^i \geq \underline{w}$. The mean wage in the subsequent period ($t = 1$) becomes $\Phi^i w_1^i + (1 - \Phi^i) \underline{w}$.

In the first period, the wage differential between employees recruited under OECs and under FTCs is thus, on average, equal to $(\Phi^{OEC} - \Phi^{FTC})(w_0^{OEC} - \underline{w}) > 0$ (because the co-operative hiring wage is the same whatever the hiring contract is). During the second period this gap increases, becoming $(\Phi^{OEC} - \Phi^{FTC})(w_1^{OEC} - \underline{w}) + \Phi^{FTC}(w_1^{OEC} - w_1^{FTC})$, where the first term is linked to the higher probability of co-operation under an OEC and the second term to efficiency-wage differentials, the utility differential between an OEC and a FTC is positive and increases during the second period.

Figure 1 represents the expected wage trajectories for FTC and OEC employment contracts.

Figure 1 : Expected evolution of the wage by type of contract



If we are studying young workers with few skills employed under an OEC, we may expect wage rates to vary with the initial contract, all other things being equal. Youths initially hired under a FTC will reduce their wage expectations in order to see their contract transformed into an OEC and to counter the risk of being the victim of opportunistic behaviour by their employers. We can reformulate these conclusions in the terminology of game theory: under FTCs, employers can motivate their workers by relying on the stick (not renewing contracts), while under OECs they must fall back on the carrot (higher wage) to compensate for the reduced effectiveness of threats under this arrangement¹⁵. Furthermore, employees hired directly into OECs, who receive a greater share of the benefits from co-operation, should evince greater job satisfaction than those under FTCs. Workers initially hired under FTCs need to provide greater efforts and may interpret the FTC contract as a lack of commitment from their employer.

These qualitative predictions concerning the profile of wages and job satisfaction among young employees are tested in the following section.

¹⁵ See Abreu (1988) for a presentation of retaliation strategies of the “stick and carrot” type.

3 Empirical Estimation

First, we provide a brief overview of our data (3.1). This is followed by a description of the various econometric specifications and the results for the wage (3.2) and for a measure of job satisfaction (3.3).

3.1 Data

Our data is taken from the CEREQ¹⁶ survey *Devenir professionnel des jeunes sortis de l'enseignement secondaire général ou technique ou de l'apprentissage en 1989*. This survey covers 13,100 individuals having finished school in 1989, with a level of education strictly lower than the French *baccalauréat*¹⁷. More precisely, this survey concerns young people leaving secondary school (*college*) or high school (*lycée*) without any qualification or leaving the schooling system with a vocational diploma¹⁸ obtained either through apprenticeship or in a vocational school. The interviews were conducted in November 1993 that is four and a half years after leaving school. We have information on all jobs held during the period covered by the survey (type of employment contract, duties and position, size and sector of the firm, whether or not training was provided, etc.). For individuals who were employed at the time of the survey, further information is available (in particular, the current wage and job satisfaction). These data are augmented with information from the *Atlas des zones d'emploi de l'INSEE*, which provides a series of 81 economic indicators for 348 geographic employment zones in France. These indicators pertain to demographics, production facilities, employment, the initial training system, the labour market, etc. for each zone. They enable us to characterise the hiring firm's local environment.

¹⁶ *Centre d'Etudes et de REcherche sur les Qualifications*.

¹⁷ The *baccalauréat* is a degree obtained after 12 years of schooling.

¹⁸ This vocational diploma can be a *Certificat d'Aptitudes Professionnelles* (CAP) or a *Brevet d'Enseignement Professionnel* (BEP). The CAP and the BEP are obtained after about 10 years of schooling. The BEP is a higher diploma than the CAP, but they can be obtained simultaneously as complementary diploma (a CAP in bakery and a BEP in pastry cooking, for example).

In this study we focus on a sample of 4602 individuals under OECs at the time of the survey. 1000 of them were initially hired under FTCs, while 3602 went directly into OECs. The characteristics of the sample are presented in appendix 1.

3.2 The Wage

In the jobs occupied at the time of the survey, mean wages are quite similar across individuals regardless of the nature of the hiring contract (see the table below). Econometric estimation will allow us to test whether, in keeping with our theoretical predictions, the wages of youths having followed the FTC-OEC trajectory are lower than those of individuals hired directly into OECs, for constant seniority with the firm, and controlling for characteristics specific to the individuals, the jobs, and the local environment. Different econometric specifications will be used, and the possibility that the hiring contract type introduces a selectivity bias will be discussed.

Wages of individuals under OECs at the time of the survey

Hiring Contract	Number of Observations	Mean	Standard Error	Minimum	Maximum
FTC	3602	35.8	6.8	16.1	65.9
OEC	1000	34.8	7.5	14.0	88.7

3.2.1 Selectivity in the Hiring Contract Type

The selectivity problem occurs when observed or unobservable characteristics affecting the wage also impact on the nature of the hiring contract. It may, for example, be the case that workers hired under FTCs are less motivated, and that this lack of motivation is observed by employers over the course of the job interviews. In this case, individuals initially hired under FTCs would have lower wages regardless of the type of contract. This problem can introduce a selectivity bias into the estimation of the coefficient of the variable “hiring contract type.” This coefficient not only captures the pure effect of the

nature of the hiring contract on the wage, but also the impact of selectivity. Formally, this problem can be elucidated as follows:

If there is no selectivity, the impact of the nature of the hiring contract on the wage may be measured by estimating the following equation:

$$W = \beta'X + \alpha C + \varepsilon, \quad 9)$$

where W is the wage, X is a vector of exogenous individual characteristics, and C is a dummy variable representing whether the worker was initially hired under a FTC ($C = 1$) or an OEC ($C = 0$). The impact of the type of contract is measured by α .

In the presence of selectivity bias, C can no longer be considered an exogenous variable. In this case we assume that the value of C is determined by the following relationship:

$$C^* = \gamma Z - u, \quad 10)$$

where:

$$\begin{cases} C = 1, & \text{if } C^* > 0, \\ C = 0, & \text{if } C^* \leq 0, \end{cases}$$

with Z representing a set of exogenous individual characteristics influencing the choice of the type of hiring contract. Selectivity bias creates a correlation between ε and u . If we assume that ε and u are distributed normal with mean zero, their variances are σ_ε^2 and σ_u^2 respectively, with covariance $\sigma_{\varepsilon u}$, the conditional wage expectation can be written:

$$E[W|X, C] = \beta'X + \alpha C + E[\varepsilon|X, C] = \beta'X + \alpha C + \sigma_{\varepsilon u} E[u|X, C].$$

Thus, ordinary least squares estimation of equation 9 yields a biased coefficient for α , since the conditional expectation of the error term u is not accounted for in the equation.

To correct for this bias, a two-stage estimation technique proposed by Barnow, Cain and Goldberger (1981) can be used. This method consists of estimating equation 10 with

probit, and then using the resulting coefficients $\hat{\gamma}$ to construct the estimated conditional expectation of u , denoted $\hat{\lambda}$. The term $\hat{\lambda}$ is then introduced into equation 9, yielding:

$$W = \beta'X + \alpha C + \delta \hat{\lambda} + \mu. \quad 11)$$

The parameters β , α and δ in equation 11 are then estimated using ordinary least squares. Construction of the term $\hat{\lambda}$ is detailed in appendix 2.

The complete list of variables used for the probit determining the type of hiring contract and probit estimation results can be obtained from authors. Three results, important for the subsequent analysis, need however to be underscored. First, the FTC-OEC trajectory is more likely to be observed in medium- and large-sized firms than in smaller ones. Second, employees having taken the FTC-OEC path with their employer at the time of the survey have had fewer previous jobs with different firms than those going directly into an OEC. This result suggests that two different courses may lead to securing an OEC contract four and a half years after leaving school. The first path involves holding several short term jobs before landing an OEC with a different employer—this is characterised by external mobility. The second track is distinguished by the fact that one of the short-term jobs is transformed into an OEC contract. In this case internal mobility leads to an OEC. It should be noted that this implies that seniority will be longer for the FTC-OEC group than for the simple OEC group in our sample (34.9 vs. 26.2 months). Nonetheless, seniority within the OEC is roughly equivalent for the two groups (25.3 months for the FTC-OEC trajectory). Third, hiring into FTCs is more likely in employment zones where the macroeconomic conditions are poor (high unemployment rate, low rate of firm creation).

3.2.2 Various Specifications

The logarithm of the wage at the time of the survey is regressed on a set of individual characteristics: age, sex, marital status, the presence of children, the level of

qualification¹⁹, the educational history (age at which primary school is completed, grade-repeating in secondary school). Variables characterising the job are also introduced: the amount of training received²⁰, seniority, seniority squared, an index for part-time and the size and sector of activity of the firm. We also account for the potential impact of the length of unemployment spells preceding the job, earlier episodes of job training and the number of jobs held since leaving school. Finally, we account for factors relevant to the local environment: the unemployment rate among the active population, the rate of firm creation, school attendance among 16-19 year-olds, the mean wage in the employment zone, the proportion of the population of adult graduates having a vocational diploma of CAP or BEP type, and the evolution of this ratio between 1982 and 1990.

Column 1 in table 1 (below) presents the results of the standard specification of the wage equation²¹ from which the variable for the type of hiring contract is excluded. This first specification is estimated to generate a benchmark for comparisons. The specification in column 2 includes the nature of the hiring contract (denoted *FTC*). Column 3 contains the adjustment factor for selectivity bias (denoted *lambda*)²². In column 4 we introduce a variable for the number of contract, job, duty or employer changes (denoted *nbchg*) since the beginning of the relationship²³, as well as a composite variable comprising the

¹⁹ We distinguish 7 levels of qualification. level1 : No diploma (leaving secondary school), level2 : Apprentice who did not obtain the vocational diploma prepared, level3 : Vocational school leaver who did not obtain the vocational diploma prepared, level4 : Apprentice who obtained the vocational diploma prepared and was kept in the training firm for first job, level5 : Apprentice who obtained the vocational diploma prepared and not kept in the training firm for first job, level6 : Vocational school leaver who obtained the vocational diploma prepared, level7 : High school leaver who did not obtain the baccalauréat.

²⁰ This pertains to formal training given in the firm. 15% of individuals hired under OECs and 8% of those under FTCs receive some.

²¹ Experience and experience squared, usually included in wage equations, were found not to be significant in our model. This is explained by the strong correlation between the variables for experience, seniority and previous unemployment.

²² As to the wage equation, the variables in the probit exclude all the variables defined after the beginning of the employment relationship (such as seniority, seniority squared, on the job training). Furthermore, the mean wage in the employment zone, marital status, and the number of children have also been excluded (the latter two variables are only defined at the date of the survey, not at the point in time when the type of hiring contract was chosen). However, position and duties in the firm and dummy variables for whether the individual was acquainted with an employee of the firm (family member, friend or neighbour) are included.

²³ In the CEREQ survey the respondents are asked, for each job held, whether they have changed contract, job, duties, or employer without distinguishing between the four possibilities.

number of changes and the index for the hiring contract (denoted $nbchg \times FTC$). This latter specification allows us to account for the fact that renewal of a FTC as another FTC, or as an OEC, is sometimes accompanied by a change in position within the firm (the worker is assigned different duties, given a different position²⁴, etc.) Similarly, changes in conditions may be observed for those hired directly into OECs. Finally, to the extent that some individuals occupy several FTCs within a firm before obtaining an OEC, the composite variable ($nbchg \times FTC$) provides a measure of the impact of multiple FTCs on the wage. It is reasonable to assume that successive renewals of FTCs, such that the length of time spent under FTCs becomes very long, evinces the employer's opportunism, and lack of commitment, vis-à-vis the worker even more than does an OEC preceded by a single FTC.

²⁴ Changing the position sometimes even serves a pretext for renewing a FTC when the maximum duration under the law of a FTC (18 months) has expired, or when the employee has already occupied two successive FTCs within the firm. The change of position captures a loophole in the legislation governing the succession of FTCs for one employee.

Table 1: Log of the wage at the time of the survey

Variables	Specification			
	(1)	(2)	(3)	(4)
Constant	3.108 (19.839)	3.118 (19.891)	3.044 (16.644)	3.051 (15.815)
FTC	-	0.012 (1.672)	-0.068 (1.987)	-0.109 (2.814)
Nbchg	-	-	-	0.051 (4.988)
Nbchg×FTC	-	-	-	-0.027 (1.696)
Male	0.072 (9.443)	0.072 (9.436)	0.071 (9.255)	0.070 (9.127)
NotSingle	0.013 (2.254)	0.013 (2.262)	0.013 (2.261)	0.013 (2.242)
Children	-0.008 (0.901)	-0.008 (0.885)	-0.008 (0.897)	-0.008 (0.850)
Age93	0.013 (4.741)	0.013 (4.752)	0.014 (4.818)	0.014 (4.797)
Prim11	Réf.	Réf.	Réf.	Réf.
Prim12	-0.006 (1.011)	-0.006 (1.043)	-0.005 (0.824)	-0.004 (0.679)
Prim13	-0.029 (3.894)	-0.029 (3.948)	-0.027 (3.449)	-0.025 (3.204)
Repeat	-0.003 (0.496)	-0.003 (0.495)	-0.003 (0.534)	-0.003 (0.521)
Level1	-0.080 (3.572)	-0.078 (3.505)	-0.092 (3.629)	-0.093 (3.545)
Level2	-0.032 (1.349)	-0.031 (1.327)	-0.035 (1.461)	-0.037 (1.513)
Level3	-0.028 (1.503)	-0.029 (1.523)	-0.026 (1.371)	-0.025 (1.277)
Level4	-0.004 (0.339)	-0.002 (0.214)	-0.011 (0.842)	-0.012 (0.86)
Level5	-0.015 (2.230)	-0.015 (2.134)	-0.019 (2.477)	-0.019 (2.362)
Level6	Réf.	Réf.	Réf.	Réf.
Level7	0.023 (1.061)	0.023 (1.048)	0.024 (1.103)	0.026 (1.180)
UnempBef	-0.002 (4.942)	-0.002 (5.046)	-0.002 (5.041)	-0.002 (5.042)
TrainBef	0.007 (0.883)	0.007 (0.896)	0.002 (0.261)	0.0003 (0.040)
Nbj	-0.004 (1.328)	-0.004 (1.448)	-0.007 (1.955)	-0.007 (2.052)
Intensf	0.012 (4.091)	0.012 (4.081)	0.012 (4.002)	0.011 (3.755)
Sen	0.002 (2.985)	0.002 (2.841)	0.002 (2.874)	0.002 (2.774)
Sen2	-0.00003 (2.381)	-0.00003 (2.369)	-0.00003 (2.444)	-0.00004 (2.581)
Small	Réf.	Réf.	Réf.	Réf.
Mean	0.044 (6.755)	0.042 (6.375)	0.056 (5.051)	0.059 (4.825)
Large	0.115 (10.471)	0.114 (10.316)	0.124 (9.370)	0.126 (9.020)
AgrFish	-0.029 (1.011)	-0.031 (1.083)	-0.018 (0.559)	-0.016 (0.507)
FoodInd	-0.051 (3.803)	-0.052 (3.868)	-0.046 (3.255)	-0.045 (3.117)
IntGoods	0.009 (0.832)	0.007 (0.715)	0.016 (1.325)	0.017 (1.326)
Bequip	0.016 (1.250)	0.015 (1.202)	0.019 (1.448)	0.020 (1.428)
Automo	0.015 (0.822)	0.013 (0.726)	0.025 (1.241)	0.027 (1.299)
ConsGood	-0.004 (0.349)	-0.006 (0.471)	0.006 (0.428)	0.008 (0.560)
Constru	Réf.	Réf.	Réf.	Réf.
Trade	-0.046 (4.801)	-0.046 (4.834)	-0.044 (4.462)	-0.045 (4.442)
Hotel	-0.134 (10.977)	-0.134 (10.969)	-0.135 (10.805)	-0.136 (10.775)
Transtel	-0.026 (1.968)	-0.027 (1.984)	-0.027 (1.953)	-0.027 (1.934)
PublAdm	-0.025 (0.795)	-0.024 (0.774)	-0.029 (0.902)	-0.029 (0.899)
Services	-0.052 (4.219)	-0.052 (4.215)	-0.053 (4.255)	-0.053 (4.240)
EduHealth	-0.040 (2.489)	-0.041 (2.512)	-0.038 (2.274)	-0.036 (2.133)
SocAct	0.003 (0.143)	0.002 (0.101)	0.010 (0.408)	0.009 (0.363)
PTime	0.024 (2.361)	0.024 (2.389)	0.024 (2.395)	0.025 (2.498)
UemplR92	-0.003 (2.101)	-0.003 (2.190)	-0.002 (1.453)	-0.002 (1.204)
CreatR	0.008 (2.542)	0.008 (2.589)	0.007 (2.192)	0.007 (2.035)
EnrolR1619	-0.003 (1.938)	-0.003 (2.011)	-0.002 (1.313)	-0.002 (1.306)
Wage91	2.58^e-06 (7.079)	2.60^e-06 (7.137)	2.50^e-06 (6.673)	2.48^e-06 (6.508)
Pcap90	0.002 (1.468)	0.002 (1.425)	0.002 (1.705)	0.00 (1.847)
Evcap	0.002 (0.471)	0.002 (0.525)	0.002 (0.368)	0.001 (0.272)
Lambda	-	-	-0.048 (2.264)	-0.059 (2.684)
R2	0.20	0.21	0.21	0.21

Significant at the 5% level, *Significant at the 10% level*

This table shows the estimated coefficient and, in parenthesis, the Student's *t*.

3.2.3. Results

3.2.3.1 The Standard Determinants of the Wage

The standard wage equation (column 1 of table 1) reveals that being male, living in a couple, and age, all contribute to a higher wage. Having children has no impact. Individuals who had difficulty with their studies at the primary school level, and who consequently entered secondary school late (at 13) earn less than those who entered at the usual age of 11 years.

The longer the spell of unemployment before obtaining a job, the lower the wage. This result may be explained using principles from the theory of job search. Youths having been unemployed for a long time have a lower reservation wage and are willing to accept poorly paying jobs.

Wages increase with seniority at a decreasing rate. Medium-sized (between 50 and 499 employees) and large firms (500+ employees) pay more than small firms (fewer than 50 employees). Wages are lower in zones of high unemployment and in zones with little economic dynamic, measured as the rate of firm creation. We also observe that in the zones in which youths aged 16 to 19 are generally more educated, those leaving school at 17-18 and who do not possess a CAP or a BEP are disadvantaged in terms of wages. This could indicate discrimination against the least qualified youths when the number of young people remaining in school longer and obtaining diplomas is greater. However, the structure of the active population by level of education has no impact on wages.

3.2.3.2 The Impact of the Hiring contract

Specification 2 first reveals that introducing the nature of the hiring contract does not alter the estimated coefficients for the other explanatory variables. In particular, the estimated coefficient of seniority remains constant between specifications 1 and 2, it appears that the variables “type of hiring contract” and “seniority” are not correlated. This suggests that seniority does not capture any of the impact of the hiring contract on the quality of the employment relationship, as one might have expected, as this would reveal itself in

variations in the coefficient of seniority between the different contract types. That being said, we see in specification (2) that being hired under a FTC has an effect on the wage which is positive and statistically significant at the 10% level. This initial result contradicts our theoretical predictions. Estimates from specification (3) indicate that this coefficient is biased.

3.2.3.3 Correcting for Selectivity

Once we correct for selectivity bias, the estimated coefficient of the variable FTC does, in fact, become negative and significant at the 5% level. For given seniority, and all other things being equal, individuals initially hired under FTCs earn 6.8% less than those hired directly into OECs. The significance (at 5%) of the correction factor λ confirms the existence of a selectivity bias in the type of hiring contract. The negativity of λ has the following interpretation: the unobserved characteristics which positively affect the probability of being hired under a FTC contract also contribute to a higher wage. Not accounting for selectivity tends to inflate the estimates of the wages of those who passed through the FTC. This result is expected, since the FTC-OEC progression is observed mostly in medium-sized and large firms, which generally pay higher wages.

3.2.3.4 The Impact of the Number of Contract Changes

Finally, it appears in specification (4) that the greater the number of changes of contract, of position, of duties, or of firm, the higher the wage. However, this effect is weaker for the FTC-OEC trajectory than for the simple OEC path (the composite variable $nbchg \times FTC$ is significantly negative at the 10% level). This result reveals that the rollover of a FTC into an OEC eventually leads to a change of position within the firm and frequently, though not always, to a substantial pay raise. This increase is, nonetheless, less than in the case of a youth hired directly into an OEC initially. In this latter case, the change in position is more likely to coincide with a raise. Introducing these two variables

causes the coefficient for the type of contract to be lower than in specification (3). The wage is now 10.9% lower for the FTC-OEC trajectory than for the simple OEC course.

Thus, the allocation of the benefits from co-operation appears somewhat more favourable to workers under an OEC. Under FTCs, workers reduce their wage claims in order to have their contract transformed into OECs. After this transfer, the balance of credible threats shifts in favour of the worker, resulting in an increase in wages. Nonetheless, for given seniority, wages remain lower among those having begun with a FTC. The wage profiles thus appear quite different, depending on whether the hiring occurred under a FTC or an OEC.

3.3 Job Satisfaction

3.3.1 The Interpretation of Satisfaction

This section examines the impact of the hiring contract type on the young worker's level of satisfaction. We assume that the youth's expressed satisfaction reflects the extent to which the job matches expectations. In this section we subscribe to the definition of job satisfaction presented by Levy-Garboua and Montmarquette (1997). Their definition is based on the assumption that when expressing job satisfaction, the worker evaluates both past experience and the probability that the current job will remain the best possible in the future. Under this hypothesis, the very act of accepting a job can at that moment be construed as an expression of satisfaction. Later, when we ask the individual to pass judgement on the job, this assessment should be construed as being conditional on the individual's previous experience in the job.

An indicator of job satisfaction is available in our survey data. It can be gleaned from a question asking the subject's opinion of the employer and the job at the date of the interview. The answers distinguish between three levels of satisfaction (dissatisfied, somewhat satisfied, and very satisfied). The table below reveals that youths initially hired

under FTCs more frequently express dissatisfaction than those employed directly under OECs.

Satisfaction of individuals under OEC at the time of the survey, by hiring contract

Hiring contract	N	Dissatisfied	Somewhat Satisfied	Very Satisfied	Total
FTC	3602	39.5	34.7	25.8	100%
OEC	1000	35.1	34.7	30.2	100%

Econometric estimation, using an ordered logit, of the factors explaining young workers' expressed satisfaction will allow us to impute a value to the influence of the type of hiring contract. We will observe if, in line with our theoretical predictions, for given seniority youths hired under FTCs express a lower satisfaction with their employer than those hired directly into OECs.

3.3.2 The Estimated Models

In a preliminary specification (equation 1 in table 2 below), the index of the hiring status is omitted. Again, the results yielded by this specification serve as a benchmark. Besides individual and employment-related characteristics, we include the duties and the position in the firm occupied by the youth, the wage and the variation in the wage between the time of hiring and the time of the survey (denoted *change*)²⁵. We add the type of hiring contract in specification 2. Then, we consider the fact that the primary determinant of satisfaction is the wage (both the level and the growth) but that the wage, in turn, is affected by the nature of the contract. In consequence, this latter has a direct effect on satisfaction and an indirect effect over the wage. If the variable for wage is omitted, the

²⁵ To the extent that we only have information about the initial wage by bracket, the wage increases are measured by the number of 1000-franc increments received between the time of hiring and the survey. The variable *change* is set to 0 if the individual is still in the same bracket, 1 for a one 1000-franc bracket increase, 2 for an increase by two brackets, etc.

indicator for the hiring contract should capture the entire effect of the job on satisfaction. Specification (3) thus consists of estimating the satisfaction equation without the wage variables.

Table 2: Job satisfaction

Variables	Specification		
	(1)	(2)	(3)
FTC	-	- 0.087 (1.168)	- 0.106 (1.459)
Wage	0.039 (8.610)	0.039 (8.530)	-
Change	- 0.087 (2.288)	- 0.079 (1.981)	-
Male	0.017 (0.197)	0.018 (0.203)	0.109 (1.264)
NotSingle	- 0.089 (1.471)	- 0.089 (1.465)	- 0.070 (1.167)
Children	- 0.020 (0.223)	- 0.021 (0.233)	- 0.017 (0.189)
Prim11	Ref.	Ref.	Ref.
Prim12	0.008 (0.130)	0.009 (0.143)	0.008 (0.127)
Prim13	0.088 (1.191)	0.090 (1.214)	0.069 (0.937)
Repeat	0.004 (0.064)	0.002 (0.038)	- 0.008 (0.126)
Level1	- 0.071 (0.312)	- 0.082 (0.360)	- 0.171 (0.758)
Level2	- 0.016 (0.066)	- 0.018 (0.076)	- 0.071 (0.299)
Level3	0.010 (0.050)	0.012 (0.060)	- 0.039 (0.201)
Level4	0.252 (2.344)	0.244 (2.263)	0.246 (2.288)
Level5	0.086 (1.215)	0.082 (1.165)	0.069 (0.975)
Level6	Ref.	Ref.	Ref.
Level7	- 0.234 (1.045)	- 0.229 (1.024)	- 0.194 (0.876)
UnempBef	0.001 (0.305)	0.002 (0.405)	- 0.0009 (0.022)
TrainBef	- 0.079 (1.018)	- 0.079 (1.016)	- 0.075 (0.967)
Nbj	- 0.038 (1.358)	- 0.036 (1.256)	- 0.033 (1.174)
Sen	- 0.017 (2.180)	- 0.017 (2.095)	- 0.014 (1.745)
Sen2	0.0002 (1.377)	0.0002 (1.371)	0.0001 (1.067)
Small	Ref.	Ref.	Ref.
Mean	- 0.304 (4.539)	- 0.291 (4.285)	- 0.229 (3.400)
Large	- 0.036 (0.315)	- 0.026 (0.229)	0.152 (1.367)
Fam	0.289 (3.657)	0.286 (3.627)	0.286 (3.634)
Friend	- 0.019 (0.301)	- 0.017 (0.266)	- 0.020 (0.310)
No-one	Ref.	Ref.	Ref.
AgrFish	- 0.152 (0.491)	- 0.143 (0.461)	- 0.189 (0.613)
FoodInd	- 0.032 (0.230)	- 0.028 (0.197)	- 0.077 (0.554)
IntGoods	- 0.151 (1.383)	- 0.145 (1.325)	- 0.127 (1.172)
Bequip	- 0.098 (0.757)	- 0.096 (0.740)	- 0.060 (0.466)
Automo	- 0.321 (1.757)	- 0.314 (1.714)	- 0.278 (1.523)
ConsGood	- 0.147 (1.165)	- 0.140 (1.110)	- 0.126 (1.000)
Constru	Ref.	Ref.	Ref.
Trade	- 0.071 (0.632)	- 0.071 (0.632)	- 0.140 (1.257)
Hotel	0.031 (0.222)	0.029 (0.207)	- 0.125 (0.892)
Transtel	0.092 (0.581)	0.090 (0.568)	0.075 (0.476)
PublAdm	0.807 (2.452)	0.802 (2.434)	0.736 (2.246)
Services	0.052 (0.372)	0.052 (0.368)	0.013 (0.090)
EduHealth	0.729 (3.669)	0.732 (3.684)	0.674 (3.411)
SocAct	0.459 (1.725)	0.465 (1.745)	0.469 (1.753)
Duty1	0.094 (0.372)	0.095 (0.379)	0.134 (0.532)
Duty2	Ref.	Ref.	Ref.
Duty3	- 0.066 (0.730)	- 0.067 (0.734)	- 0.041 (0.456)
Duty4	- 0.526 (3.136)	- 0.530 (3.161)	- 0.592 (3.541)
Duty5	- 0.223 (1.900)	- 0.219 (1.859)	- 0.226 (1.930)
Duty6	0.370 (1.791)	0.368 (1.783)	0.411 (1.998)
Duty7	0.499 (2.336)	0.499 (2.336)	0.511 (2.396)
Duty8	0.004 (0.029)	0.006 (0.043)	0.026 (0.189)
Duty9	- 0.087 (0.262)	- 0.081 (0.243)	- 0.126 (0.377)
Duty10	- 0.034 (0.269)	- 0.033 (0.256)	- 0.003 (0.027)
Position1	- 0.061 (0.866)	- 0.056 (0.801)	- 0.123 (1.777)
Position2	Ref.	Ref.	Ref.
Position3	0.306 (1.673)	0.302 (1.650)	0.446 (2.458)
Position4	- 0.061 (0.479)	- 0.057 (0.478)	- 0.056 (0.478)
Position5	- 0.186 (1.394)	- 0.191 (1.431)	- 0.184 (1.382)
JSProp25	0.022 (3.896)	0.023 (3.979)	0.014 (2.474)
Log likelihood	- 4919.5	- 4918.8	- 4957.4

Significant at the 5% level, Significant at the 10% level.

3.3.3 Results

3.3.3.1 The Impact of the Wage and Other Variables on Satisfaction

The current wage appears to be the primary determinant of job satisfaction. Changing the income bracket has a negative impact. This is borne out by the lower satisfaction of individuals having begun with low wages.

Individual characteristics (sex, age, marital status, etc.) are, for the most part, insignificant. Only apprentices retained by their apprenticeship masters (level4) declare a higher level of satisfaction. This is doubtlessly because they can maintain the benefits of their specific training. Work experience acquired with previous employers does not impact on satisfaction with the current job.

Satisfaction decreases with seniority. At first blush, this result is very surprising since it contradicts the job-matching hypothesis, according to which poor matches are terminated as information becomes available. According to this model, job satisfaction should increase with seniority, since only good matches will persist beyond a certain experience-acquisition period. It appears that the quality of the match can be established in a relatively short time (the probationary period). Afterward, the possibility of positive and negative surprises is absorbed into the population mean. Thus, the impact of seniority on satisfaction should be neutral. The negative effect associated with seniority may be related to the optimal job search strategy for youths. Having acquired a considerable amount of experience in a job (the average seniority here is about thirty months), and having received the training available in the firm, it may be wise for young people to change jobs and capitalise on better opportunities available elsewhere. Those remaining in their job because they were unable to seize an opportunity will be dissatisfied. This result casts doubt on the traditional assumption that youths are primarily interested in a job in which they can remain for a long time, even for life²⁶.

²⁶ Regressions (not presented here) performed on all individuals employed at the time of the survey (as opposed to only those with an OEC) reveal that those with a FTC declare less satisfaction than those in an OEC, illustrating that the precariousness of employment is, nonetheless, an attribute of work which young workers reject.

Satisfaction levels are lower in medium-sized firms than in small businesses. They are higher when the youth is working in a firm employing another member of her family. A similar result was obtained by Granovetter (1995), who advances as a possible explanation the fact that information received before being hired is richer and of better quality when it is provided by a family member. Workers receiving information through a network will perform a self selection; they will not apply for jobs if they anticipate a poor matching. Satisfaction is higher in the public service and in education and health. The position held is also important. Youths are less satisfied with jobs involving cleaning, as security guards or warehouse labourers, or when working in transportation or shipping, than they are in production. On the other hand, they are more satisfied in secretarial services, management, accounting and administration. The impact of position is weak. Only foremen and engineers declare themselves more satisfied. Finally, satisfaction among youth increases with the difficulty of finding work elsewhere, characterised by the proportion of job-seekers who are under 25 in the zone in which they work. This demonstrates that it is one's position relative to the opportunities available in the job market that counts.

3.3.3.2 The Impact of the Hiring contract

The coefficient for the nature of the hiring contract is negative, but not significant, in specification (2). It suggests that once an OEC has been obtained, the satisfaction of having landed a stable job overrides the dissatisfaction engendered by the employer's opportunism during the FTC period. It is indeed possible that being transferred from a FTC to an OEC constitutes a pleasant surprise for the youth. In this case, even if the relationship is less co-operative than it might have been had it begun with an OEC, the young employee will declare greater satisfaction because the rollover of the contract corresponds to expectations and satisfies desires for a stable job. This "surprise effect" will be greater to the extent that it is accompanied by a pay raise. Thus, the positive impact of the surprise will compensate the negative effect of the employer's limited commitment under the FTC. This is compatible with the interpretation of satisfaction

found in Lévy-Garboua and Montmarquette (1997), according to which the *a posteriori* choice captured in the expression of satisfaction is conditional on the information available at the time of the survey, including surprises which occurred earlier in the working relationship.

Moreover, because employers have a variety of reasons for resorting to FTCs, the estimated coefficient for the type of contract may be biased. Indeed, hiring under a FTC contract may occur on several grounds other than the one we are examining. One of these is to use the FTC as a probationary period. This type of contract provides an opportunity to test the youth's skills over a limited time, and rollover to an OEC occurs if the demonstrated level of ability is satisfactory. A second possible motivation is to maintain the greatest possible flexibility to adjust to fluctuations in activity and the business cycle²⁷. To employers the FTC represents an instrument for adjusting labour demand which eliminates more costly OEC layoffs. In this case, the rollover of FTCs into OECs will only occur if the economic outlook is good.

In the absence of direct observations on firms' recruitment decisions, it is difficult to isolate the reasons which prevail in the FTC hiring decision. The choice between a FTC and an OEC is clearly made on the basis of a combination of considerations, obscuring our measure of the impact of the hiring contract type on the satisfaction level. For example, the fact that firms experiencing increased activity and favourable economic conditions react by transforming FTCs into OECs makes econometric testing difficult. Is it not possible that young people declare greater satisfaction simply because they work in a firm with a bright future, providing them with rewarding interactions with other firms, even if their commitment and confidence is not reciprocated? Conversely, a young person may be hired into a firm under an OEC only to find that the firm later encounters

²⁷ We observed in our estimation of the probit on the type of hiring contract that this flexibility argument is borne out.

difficulties. This youth will declare himself unsatisfied, being in a job with an uncertain future, even if there is a high level of co-operation between him and his employer.

For these reasons, isolating co-operation or opportunism by employers is no easy matter.

Furthermore, it is likely that the variables *wage* and *change* (pay raise) capture part of the effect of the type of hiring contract, since individuals hired under FTCs experience wage increases more frequently than the others. The results for specification (5) corroborate this reasoning. When the wage variables are omitted from the equation, the variable for FTC remains negative and becomes slightly more significant (at the 14.5% level). Thus, we may infer that the impact of the nature of the hiring contract passes essentially over the evolution of the wage level.

4 Conclusion

The employment-type contract does influence the quality of relationships between the parties to the contract. The wage, for a given seniority, is significantly lower when the contract is a FTC. Satisfaction also depends on the contract type, though this relationship is essentially indirect, operating over the wage.

The theory of repeated games offers an interpretation of the results. OECs create conditions which are more conducive to co-operation between the employer and the employee, as they constrain the employer's opportunism. Employment under FTCs delays, or discourages, co-operation. The quality of the employment relationship in a FTC-OEC trajectory is thus expected to be lower at the beginning than it would be under a strictly OEC contract.

A better empirical test of our predictions would require details about on-the-job training, working conditions, and the worker's commitment to the firm—all data which is very difficult to observe. This information would allow us to directly measure the investments and efforts made by the parties to the hiring contract.

In conclusion, it appears that, even if the FTC facilitates integration into the labour market, and sometimes provides a matching process leading to an OEC, it is also liable to create inefficient working conditions in which employers and employees are insufficiently committed. These results lead us to question the usefulness of government programmes aimed at integrating youths into the work force (youth-employment contracts), which are generally based on FTCs. The limited duration of these contracts creates the risk of opportunistic behaviour by employers. To avoid this, government employment programs should account for concerns relating to employers' level of commitment to the employment relationship. Disincentives, such as the limited duration of the contract, and the ease with which the employment relationship can be terminated at the end of the contract, may be compensated by an obligation to provide training, as in training-oriented contracts for example.

Finally, our results on satisfaction highlight the results on youth integration. Youths do not like the uncertainty associated with FTC contracts, but at the same time they are not necessarily in search of job stability in the traditional sense. They are doubtlessly aware that for their integration to succeed, they need to seize opportunities which present themselves on the labour market, and they seek the mobility to build their careers.

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APPENDIX 1

Descriptions of Explanatory Variables

Variable Name	Definition
INDIVIDUAL CHARACTERISTICS	
Sex	Dichotomous variable for the sex
Male	1 if male, 0 if female
Age	Continuous variable for the age
Age93	Age at the survey date in 1993
Diploma	Dichotomous variable for the diploma
Level1	No diploma (leaving secondary school)
Level2	Apprentice who did not obtained the vocational diploma prepared
Level3	Vocational school leaver who did not obtained the vocational diploma prepared
Level4	Apprentice who obtained the vocational diploma prepared and kept in the training firm for first job
Level5	Apprentice who obtained the vocational diploma prepared and not kept in the training firm for first job
Level6	Vocational school leaver who obtained the vocational diploma prepared
Level7	High school leaver who did not obtained the baccalauréat
Age of leaving high school	Dichotomous variable for the age of leaving high school
Prim11	11 years
Prim12	12 years
Prim13	13 years or plus
Grade-repeating in secondary school	Dichotomous variable indicating grade-repeating in secondary school (college)
Repeat	1 if the individual repeated grades five or six at least once, 0 otherwise
Marital Status	Dichotomous variable for the marital status
NotSingle	1 if the individual is married or living as married, 0 otherwise
Presence of children	Dichotomous variable for the presence of children
Children	1 if the individual has 1 or more children, 0 otherwise

CHARACTERISTICS OF THE LOCAL ENVIRONMENT (EMPLOYMENT ZONE)	
UemplR92	Unemployment rate as defined by the ILO in the first quarter of 1992
JSProp25	Share of job seekers under 25 at the end of 92/12/31
CreatR	Rate of firm creation (Mean over 3 years : 1990, 91, 92)
SectProp	The share of the sector for which the youth was trained in total employment in 1990 (building, agriculture, industry or service)
SectEv	Evolution of employment between 1982 and 90 in the sector (building, agriculture, industry or service) for which the youth was trained
Pcap90	Proportion of CAPs and BEPs in the population 15+ aged group in 1990
Evcap	Evolution of CAPs and BEPs between 1982 and 1990
EnrolR1619	Enrolment rate (including apprentices) of 16-19 year-olds in 1990
Wage91	Mean wage in 1991

CHARACTERISTICS OF THE JOB OCCUPIED AT THE TIME OF THE SURVEY

Hiring contract FTC	Index for the type of hiring contract 1 if FTC, 0 if OEC
Number of changes Nbchg	A continuous variable for the number of changes of contract and/or of position, or of duty in the job
Acquaintances in the firm Fam	Dichotomous variable for acquaintances in the firm 1 if a family member works in the same firm, 0 otherwise
Friend	1 if a friend works in the same firm, 0 otherwise
No-one	1 if the individual knows no-one within the firm, 0 sinon
Size of the firm :	Dichotomous variable for the size of the firm
Small	From 0 to 49 employees
Mean	From 50 to 499 employees
Large	Over 500 employees
Employed before the hiring UnempBef	Continuous variable for the duration of unemployment (in months) before being hired
Previous Training TrainBef	Number of instances of job training before the job held at the time of the survey
Number of jobs Nbj	Nombre of jobs held since leaving school
Training intensity Intensf	Intensity of training received in the job held at the time of the survey (scale from 1 to 5)
Seniority Sen	Continuous variable for seniority (in months) in the job
Sen2	Seniority squared
Part time Ptime	Dichotomous variable for part time 1 if the job is part time, 0 if full time
Hourly Wage Wage	Hourly wage at the time of the survey
Page raise Change	Continuous variable for pay raises received between the time of hiring and the date of the survey (number of brackets of 1000 francs difference)
Duty in the firm Duty1	Dichotomous variable for the duty in the firm Education, health
Duty2	Production, manufacturing, construction
Duty3	Installation, maintenance, regulation, repairs
Duty4	Cleaning, guarding, manual labour
Duty5	Shipping, storage, transportation
Duty6	Teller, secretary, receptionist, switchboard operator
Duty7	Management, accounting, administrative operations
Duty8	Trade, sales
Duty9	Research, study
Duty10	Other duties
Position in the firm Position1	Dichotomous variable for the position in the firm Operator, specialised worker
Position2	Skilled and highly skilled worker
Position3	Foreman, Engineer
Position4	Employee
Position5	Other positions
Sector of the firm AgrFish	Dichotomous variable for the sector of the firm Agriculture and fisheries
FoodInd	Food-processing industry
IntGoods	Intermediate goods
EquipItem	Equipment items
Automo	Automobile
ConsGood	Consumer goods
Constru	Construction
Trade	Trade
Hotel	Hotel industry
TranTel	Transportation and telecommunications
PublAdm	Public administration
Services	Services
EduHealth	Education and health
SocAct	Action sociale
Year of hiring T89	Dichotomous variable for the first year in the job 1989
T90	1990
T91	1991
T92	1992
T93	1993

Descriptive Statistics of Explanatory Variables

This table presents the frequencies for the dichotomous variables and the mean, standard deviation, minimum and maximum for the continuous variables

Variable Name	Descriptive Statistics	
	FTC at hiring	OEC at hiring
Sex		
Male	71.2	72.7
Age		
Age93	22.8 (1.0, 20, 29)	22.7 (1.1, 18, 31)
Qualification		
Level1	0.6	1.9
Level2	1.2	1.4
Level3	2.2	2.1
Level4	3.7	9.2
Level5	17.2	24.7
Level6	73.2	59.1
Level7	1.9	1.5
Age at leaving primary school		
Prim11	33.5	36.5
Prim12	40.3	39.6
Prim13	26.2	23.8
Grade repeating in secondary school		
Repeat	27.7	29.6
Marital Status		
NotSingle	45.5	44.2
Presence of childrens		
Children	13.3	12.0
Number of changes		
Nbchg	1.2 (0.5, 1, 4)	0.08 (0.3, 0, 3)
Knowledge of the firm		
Fam	17.3	17.0
Friend	32.5	26.8
No-one	50.2	56.2
Size of the firm:		
Small	42.7	70.3
Mean	44.9	22.6
Large	12.4	7.1
Unemployment before the job		
UnempBef	3.7 (6.8, 0, 45)	3.1 (7.0, 0, 51)
Previous training		
TrainBef	0.08 (0.3, 0, 3)	0.15 (0.4, 0, 3)
Number of jobs		
Nbj	2.4 (1.3, 1, 6)	2.7 (1.3, 1, 7)
Intensity of the training		
Intensf	0.4 (1.1, 0, 5)	0.3 (0.9, 0, 5)
Seniority		
Sen	34.9 (12.6, 4, 59)	26.2 (14.3, 1, 57)
Part time		
PTime	7.0	10.9
Pay raises		
Change	1.0 (0.9, 0, 4)	0.4 (0.7, 0, 6)
Duty in the firm		
Duty1	2.4	2.1
Duty2	49.2	39.8
Duty3	11.0	14.3
Duty4	3.2	5.2
Duty5	12.7	10.2
Duty6	2.4	2.6
Duty7	2.1	2.2
Duty8	9.1	13.4
Duty9	1.2	0.7
Duty10	6.6	9.0
Position in the firm		
Position1	38.8	25.3
Position2	36.6	41.1
Position3	2.2	3.3
Position4	18.6	22.2
Position5	3.2	7.0

Variable Name	Descriptive Statistics	
	FTC at hiring	OEC at hiring
Sector of the firm		
AgrFish	1.2	0.8
FoodInd	7.1	5.2
IntGoods	18.5	10.4
EquipItem	7.7	6.2
Automo	5.2	2.2
ConsGood	13.6	6.5
Constru	10.4	17.2
Trade	16.1	20.7
Hotel	3.4	9.3
TranTel	5.3	5.8
PublAdm	0.6	0.8
Services	4.9	9.5
EduHealth	4.2	3.8
SocAct	1.8	1.5
Year of hiring		
T89	4.3	8.7
T90	16.5	12.2
T91	28.6	27.6
T92	31.0	28.2
T93	19.6	23.3
UemplR92	10.1 (2.4, 2.8, 17.3)	9.9 (2.5, 2.8, 17.3)
JSProp25	29.2 (4.3, 11.7, 39.2)	27.4 (5.3, 11.7, 39.9)
CreatR	6.0 (1.3, 3.2, 10.2)	6.4 (1.5, 3, 12)
SectProp	35.6 (18.5, 1.1, 83.9)	35.6 (20.8, 1.1, 89.4)
SectEv	0.5	0.4
Pcap90	19.4 (2.4, 9.2, 28.6)	19.0 (3.1, 9.2, 28.6)
Evcap	5.1 (0.8, 1.6, 8.8)	5.1 (1.1, 1.6, 8.8)
EnrolR1619	91.2 (2.2, 83.6, 95.8)	91.1 (2.2, 83.6, 95.8)
Wage91	98930 (11452, 80009, 157565)	102724 (15817, 72722, 157565)

APPENDIX 2

Construction of the term $\hat{\lambda}$:

$\hat{\lambda}$ is the estimated conditional expectation of the error term u . According to equation 10, the event $C=1$ is equivalent to the event $\gamma Z > u$, while the event $C=0$ corresponds to $\gamma Z \leq u$. If we let $\sigma_u^2 = 1$ the distribution of u is standard normal, and we have:

$$\begin{aligned} E[u|X, C=1] &= E[u|X, u < \gamma Z] = -\frac{\phi(\gamma Z)}{\Phi(\gamma Z)}, \\ E[u|X, C=0] &= E[u|X, u \geq \gamma Z] = \frac{\phi(\gamma Z)}{1 - \Phi(\gamma Z)}, \end{aligned}$$

where ϕ and Φ are, respectively, the density function and the cumulative distribution function of the standard normal distribution. It follows that $[\phi(\gamma Z)$ and $\Phi(\gamma Z)$ are truncated by ϕ and Φ respectively]:

$$\begin{aligned} E[u|X, C] &= C \times E[u|X, C=1] + (1-C) \times E[u|X, C=0], \\ &= -C \times \frac{\phi}{\Phi} + (1-C) \times \frac{\phi}{1-\Phi}, \\ &= \frac{\phi(\Phi - C)}{\Phi(1-\Phi)}, \\ &= \lambda. \end{aligned}$$