Returns to Tenure and Employment Protection Legislations in the US

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Abstract

We study the impact of employment protection legislation on the returns to tenure in an environment with imperfect information on the job match quality. Workers can perform either a 'skilled' task whose productivity is very sensitive to match quality or an 'unskilled' task less risky, whose expected productivity is higher without information. The firm can invest in a costly signal which reveals match quality before hiring or reallocate the worker among tasks according to the information obtained while employed. We show that stricter employment protection increases the cost of forming low quality matches and leads the firm to invest more in the ex ante signal, which in turn lowers internal mobility and the returns to tenure. This result contrasts with the human capital argument which implies a positive relation between strictness of legislation and returns to tenure. The main prediction of the model is tested using US panel data drawn from the NLSY79 and information on the adoption across states from 1980 to 1996 of three common law exceptions to the employment at-will doctrine. We find that the "implied contract exception" significantly decreases the returns to tenure by 19.7 to 53.3 percent, which supports our information acquisition mechanism.

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1 Introduction

How does the introduction of dismissal restrictions modify wage profiles within the firm? Macroeconomists studying employment protection legislation (EPL) have mainly focused on the effects of dismissal restrictions on the employment level and on job flows[1]. This chapter addresses the new insight that wage profiles in firms are also modified by the employment protection legislative environment. We focuse on the original issue of the impact of legislative variables on the internal organization of the firm and thus on the internal mobility and the wage profiles offered by firms. To test our theoretical predictions, we use United States employment protection indicators.

While EPL strictness in the US is one of the lowest by international standards[2], giving more importance to the role of courts and jusrisprudence[3], as suggested by Bertola, Boeri and Cazes (2000), provides a more accurate measure of the US employment protection strictness. Indeed, in the 1970s through the 1980s, numerous American state courts have recognized "exceptions" to "employment at-will" that limit the circumstances of worker dismissal. Under employment at-will, parties to an employment relationship can, in the absence of an explicit contract, unilaterally terminate the match at any time, for any reason, and without penalty. The exceptions introduced to that principle have given workers the opportunity to sue firms for wrongful discharge and have generated both litigation costs and uncertainty about the termination date of the employment relationship. They have been grouped into three broad categories: 'implied contract', 'public policy', and covenant of 'good-faith and fair dealing'.

[1] These effects have been ivestigated in particular by Lazear (1990), Bentolila and Bertola (1990), Boeri (1999) among others.
OECD (1999) proposes a good survey of empirical studies of the impact of employment protection legislations on labor market performance.

[2] Many studies establishing cross country rankings (Lazear (1990), Bertola (1990), Grubb and Wells (1993), OECD (1994), OECD (1999)) agree on that point.

[3] The previous studies focus mainly on three indicators: procedural requirements in case of dismissal; notice and severance pay provisions; and prevailing standards and penalties in case of unfair dismissal.

The US case constitutes a good ground for empirical analysis for two reasons. First, the content of these exceptions is relatively homogenous through time and through states which adopt them. Second, there is a lot of variation in the timing of adoption of these wrongful discharge doctrines across states. Indeed, while the number of states recognizing the "implied contract" and "public policy" doctrine has sharply increased from 1979 (respectively, from 6 states to 43, and from 8 states to 41), the "good faith and fair dealing" exception has been recognized only by a minority of states through out the two decades (from 2 states in 1979 to 10 states nowadays).

However it appears quite difficult to directly evaluate the extent to which these exceptions impose costs on firms and restrict dismissals, due to a lack of systematic information on the number of wrongful discharge cases, courts decisions and required damages. Fortuitously, we are able to make an indirect evaluation by looking at the impact of these adoptions on various labor market outcomes. Indeed, it has been addressed in recent articles. Autor, Donohue and Schwab (2004b) conclude to a negative and significant impact of the implied contract exception on the employment level. Autor (2004) also agrees with Miles (2000) on the impact of these exceptions on the demand for temporary help agency employment. As permanent workers becomes more expensive, firms have an incentive to substitute them with temporary ones. Finally, Kugler & Saint-Paul (2004) show that they significantly decrease the re-employment probability of unemployed relative to employed workers. This article contributes to the literature by investigating the impact of employment protection on the returns to tenure.

To analyse the way wage profiles are modified by the introduction of EPL, it is useful to consider the nature of the match-specific learning process as proposed by Nagypal (2000, 2002). Returns to tenure are either due to the accumulation of specific human capital or to the accumulation of information about the match specific quality. Nagypál (2000, 2002) tries to distinguish the two learning processes by their different impacts on the exit rate from jobs through different tenure levels. Then, she studies the impact

of employment protection on productivity depending on the nature of the learning process[4]. According to the human capital accumulation approach, as tenure on the job increases, the worker accumulates more match-specific skills and hence her productivity rises. Examples of such learning by doing[5] are a worker knowing how to repair her machine or a salesman learning the technical particularities of the different products sold by the firm. As dismissal legislations are adopted, the average tenure in firms is expected to increase. Then, the expected return of investing in match-specific human capital increases[6]. Given that the match-specific productivity raises through time at a higher rate, the associated wage profiles are steeper. Thus returns to tenure increases with the strictness of the EPL.

This chapter, on the contrary, argues that EPL strictness may rather decrease returns to tenure if information accumulation about the match specific quality is the main source of return to seniority. Following the job matching literature, originated by the work of Jovanovic (1979), the match quality is assumed to be unknown at the beginning of the employment relationship. A worker-firm pair learns more precisely this quality over its employment relationship. Match quality may depend for instance on the compatibility of a worker with her coworkers or on the adequacy of the worker personality with the firm corporate culture. Low expected quality matches separate and the highest expected quality ones go on. So the average expected quality of an existing match rises through time. The wage profile increases according to the rate of accumulation of information about its quality.

Introducing EPL that restricts separations, increases the cost of being engaged in a bad quality match. The cost of experimentation of different

[4] In her paper (2000), she critisizes the idea of using the effect of these two processes on wages to distinghuish them, since the wages determination is difficult to tackle and suppose to add many other modeling assumptions. We avoid this problem by rather considering the impact of employment protection on the evolution of wages and not on the level of wages.

[5] the learning by doing concept was first developped by Arrow (1962).

[6] A recent paper of Belot, Boone and Van Ours (2002) analyses this tradeoff between the cost of employment protection and this positive effect on productivity through higher incentives for job training.

matches thus increases. A way to avoid supporting this additional cost is rather to invest on costly information about the quality of the match before engaging in production and so to be more selective *ex ante*. Better information about the match quality can be obtained either by a more selective recruitment procedure or by a longer trial period or by the use of fixed terms contracts. As the quality of the match is already more precisely evaluated, less remains to be learned, the accumulation rate of information through the employment relationship is then lower and returns to tenure tend to decrease.

In our model, returns to tenure are associated to a change of task within a firm. The more information the firm has about the match quality, the faster it allocates its worker between different tasks. High tenure workers are more efficiently allocated to tasks than recently hired workers. These hypotheses are motivated by a series of papers. Lazear (1993), using data from a particular American firm, found that within firm turnover rate from job to job is decreasing with tenure. The probability that a worker with one year of tenure will move to another job within the firm is above 20%, at five years of tenure, while it falls to 2% after 5 years of tenure. Baker, Gibbs and Holmstrom (1994) also found some evidence that the firm uses lower-level job performance to learn about the abilities of employees and uses this information in its subsequent promotion decisions[7].

In the model, the firm faces the trade-off between the cost of investing in *ex ante* information on the match quality and the benefit of a faster allocation of the worker to a particular task. The introduction of EPL modifies the terms of the trade-off by increasing the benefit of acquiring earlier information avoiding costly matching errors. As a corollary, firms have a better evaluation of the match quality and are then able to allocate their workers in a more efficient way. On average there are less occupational changes through the working life in the firm and returns to tenure are flatter.

[7] New hires to a position have a greater variance of wages than workers promoted to the same position.

To summarize, depending on the nature of the prevailing match specific learning process, returns to tenure can be rather increasing (in case of human capital accumulation) or decreasing (in case of information acquisition about the match quality). The issue of which learning process dominates on the US labor market and how wages do react to the adoption of wrongful-discharge doctrines are addressed in the empirical part of the paper.

Using the National Longitudinal Survey of Youth (NLSY) from 1980 to 1996, we perform a panel data estimation of a Mincerian wage equation and evaluate the impact of the adoption of the three exceptions of employment at will on the return to seniority. These data are suitable for this purpose as the detailed workhistory provides weekly data on individual work status, which allows the construction of precise measures of the actual on-the-job tenure and labor market experience.

We find that the implied contract significantly reduces the returns to tenure. For the average worker, the return to tenure drops from 19.7 to 53.3 percent in states adopting these exceptions. This result is robust to the introduction of a number of controls such as time and state effects dummies as well as union membership or effective general experience. As a by product of our estimation we also find a significant and negative impact of these legal doctrines on wages.

Our main empirical finding suggests that information acquisition about the match-quality dominates the process of accumulation of human capital which is coherent with the Nagypál's (2000) finding on a french matched employer-employee data set.

The rest of chapter is organised as follows. Section 2 describes the partial equilibrium model of the labor market with imperfect information about the match-specific quality and shows that employment protection policies have a negative impacts on returns to seniority. Section 3 presents the Wrongful-discharge doctrines in more detail. Section 4 describes the data, the estimation method and presents the results. Section 5 concludes.

2 The Model

Both agents are risk neutral and live for two periods. At date 0, a firm meets a worker. If they decide to form a match, it lasts for a maximum of two periods. Employment protection legislation is exogenously determined and imposed to the agents. Two different extreme cases are considered, either the firm is allowed to lay off workers or, on the contrary, it is strictly forbidden.

The match specific quality[8] θ is unknown to both agents at date 0 and distributed over $[\theta_{\min}, \theta_{\max}]$ according to the density function $f(\theta)$ and the cumulative distribution function $F(\theta)$.

2.1 Production Structure

The worker can be allocated to two different tasks T_i with $i = 1, 2$ in order to produce an unique output Y. Hence, two possible levels of production correspond to each quality level of the match θ. Think of θ as the degree of adhesion of the worker to the corporate culture of the firm and of the two following tasks as a production engineer (T_1) and a commercial engineer (T_2). Productions in both tasks $\mathrm{Y}_1(\theta)$ and $\mathrm{Y}_2(\theta)$ are strictly increasing in θ. T_1 is assumed to be on average more productive than T_2. If the firm has no *ex ante* information about the match quality θ, it is optimal to affect the worker directly to the first task (see figure1).

$$E\left(Y_1\left(\theta\right)\right) \geq E\left(Y_2\left(\theta\right)\right)$$

However, production in T_2 is more sensitive to the quality level θ. It means that high quality matches produce a higher output if workers are allocated to task 2. It is more important for the commercial engineer to conform to the firm's rules and to share the firm's corporate culture than it

[8] It would be equivalent in this article to consider the case of imperfect information about the worker productivity, as it is further assumed that, once the match is terminated the worker gets out of the labor market and receives an exogenous outside option (e.g. unemployment benefit, utility of leisure...). This outside option is independent of the information she has about her productivity. This assumption is necessary to get rid of asymmetric information issues in the relationship with following potential employers.

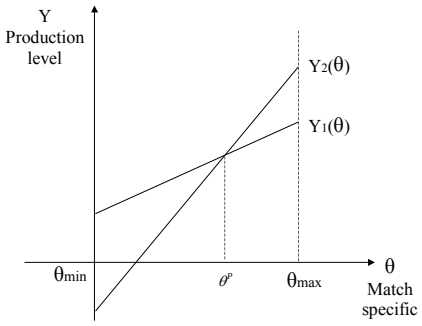

Figure 1: Production Structure

is for the production engineer since the commercial one is directly in touch with the firm's customers. The high quality matches in which workers are allocated to task 2 are the ones with θ greater than a defined threshold θ^P.

$$Y_2(\theta) > Y_1(\theta) \Longleftrightarrow \theta > \theta^P$$

The match with quality θ^P is the one who produces the same level of output whatever the task:

$$\theta^P \ / \ Y_1\left(\theta^P\right) = Y_2\left(\theta^P\right).$$

2.2 Timing

The timing is represented in figure 2.

At date 0, both parties have no information *ex ante* about the quality θ. The firm may decide to acquire information. Whenever a firm meets a worker, it can choose to buy a signal at some price P[9]. If it decides to buy the signal, both agents perfectly learn θ. According to its information about the quality of the match, the firm decides to recruit the worker and to allocate her to one of the two tasks T_1 or T_2. Both parties agree on a wage contract contingent on the realization of the quality of the match θ[10]. At date 1, the match produces Y_i (subscripts identify the task) and θ is realized and

[9] To simplify the setting, we assume that the worker is credit constrained and not the firm so that the worker does not buy the signal.

[10] We assume than once θ is learned by both agents at the end of period one, it is also observable by a third party that would enforce the signed contract.

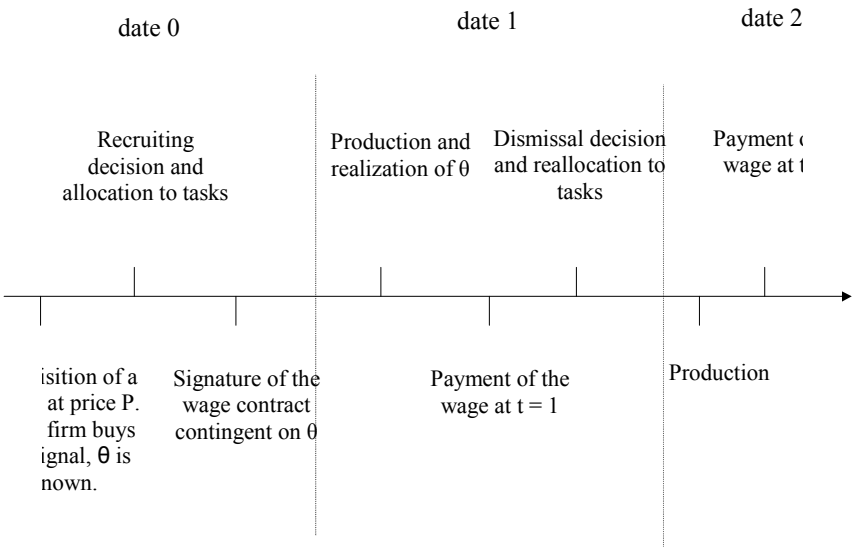

Figure 2: Timing of the Model

perfectly observed by both parties. The firm pays the worker the bargained wage for period 1, $w_i^1(\theta)$ (superscripts are used for the period). At the end of period 1, knowing θ, the firm may choose to dismiss the worker or to reallocate her to an other task, where it would be more productive. Then, production takes place for period 2 and the firm pays the worker the wage, $w_i^2(\theta)$. At the end of period 2, the match ends as both agents live for two periods.

2.3 Information Acquisition and Returns to Tenure

For simplicity, it is always assumed that the worker has a sufficiently low outside option such that she would always prefer to participate to the match (except at a zero wage). Under this assumption, only the firm may choose to terminate the employment relationship by laying off its worker [11]. The worker never chooses to quit. The following analysis focuses exclusively on the demand side of the labor market.

[11] Classical problems of *ex post* bargaining about the responsability of the separation (lay off or quit?) are avoided under this assumption. Therefore, our model does not give any conclusion about the impact of employment protection on the level of wages.

The firm has to decide whether it acquires information about the quality of the match before hiring the worker. The cost of having formed a low quality match depends on the employment protection legislation. Therefore, the signal acquisition decision has to be analyzed in the two possible legislative environments: either the firm is allowed to lay off its workers (L case) or it is strictly forbidden ($\overline{L}$ case). First the benchmark case where there is no employment protection is considered.

2.3.1 No Employment Protection Case

The firm buys the signal at price P if its expected profit is greater when it acquires information. Both expected profits are then computed and compared to find the threshold value of the signal cost above which the firm gives up investing in the signal.

- Case $\left(L, \overline{S}\right)$: laying off is allowed (case L) and the firm does not buy the signal (case $\overline{S}$)

At date 2, both parties perfectly know θ. The employee is allocated to the most productive task, either T_1or T_2 depending on the realization of θ. We assume that the worker is paid by the firm proportionately to her production. Each party uses as a threatening device the possibility to destroy the ongoing production. The firm will pay the worker the following wage with β interpreted as the bargaining power of the worker:

$$w_1^2(\theta) = \beta Y_1(\theta) \text{ and } w_2^2(\theta) = \beta Y_2(\theta)$$
$$\text{to simplify notations, } w^2(\theta) = \beta \max(Y_1(\theta), Y_2(\theta))$$

Superscripts are used for the date t while subscripts identify the task T.

The previous expressions are simple as it is further assumed that neither the firm nor the worker can decide to separate before the end of the period to save on the outside option. Once they have decided to start production, they have to wait until the end of the period to terminate the employment relationship[12].

[12]The problem solved here is a particular and simplified version of a more general Nash bargaining problem.

At the end of period 1, the firm ends matches that are not productive enough i.e. that do not verify the firm participation constraint. The quality level $\overline{\theta}$ is defined as the threshold above which the firm decides to keep the worker.

$$\overline{\theta} \ / \ (1-\beta)\max(Y_1(\overline{\theta}), Y_2(\overline{\theta})) = \pi$$
$$\forall \theta \geq \overline{\theta}, \ \Pi^2 = (1-\beta)\max(Y_1(\theta), Y_2(\theta)) \geq \pi$$

π identifies the outside option of the firm, above which the firm decides to form a match.

In a match with quality higher than $\overline{\theta}$, the worker is allocated to task 1 if this critical quality level $\overline{\theta}$ is lower than the technological threshold θ^P, since she is more productive in task 1. Otherwise, if $\overline{\theta}$ is greater than θ^P, she is allocated to task 2. To simplify notations, the two possibilities $\overline{\theta} \gtrless \theta^P$ are summarized by expressing the maximum of the production level in one of the two tasks.

At date 1, both agents have no information about the quality of the match, in that situation, the worker is automatically allocated to the less risky task T_1. After θ is realized, the worker is paid proportionately to her contribution to the production.

$$\forall \theta, w_1^1(\theta) = \beta Y_1(\theta)$$

To summarize, at date 0, the firm proposes to the worker a wage contract contingent on the realization of θ.

$$\begin{cases} w_1^1(\theta) = \beta Y_1(\theta) \\ w^2(\theta) = 0, if \ \theta < \overline{\theta} \\ w^2(\theta) = \beta \max(Y_1(\theta), Y_2(\theta)), if \ \theta \geq \overline{\theta} \end{cases}$$

Notice that the wage profile is increasing for the matches whose quality θ is greater than the technological threshold θ^P as the workers are reallocated from task one to task two.

The expected profit of the firm in the $(L, \overline{S})$ case is given by the following expression:

$$\Pi^e_{L,\overline{S}} = (1-\beta)E(Y_1(\theta)) + (1-F(\overline{\theta}))(1-\beta)E(\max(Y_1(\theta), Y_2(\theta))/\theta \geq \overline{\theta}) + F(\overline{\theta})\pi$$

The first term represents the firm share of the expected production level at date 1 when the worker is allocated to task 1. With probability $p(\theta \geq \overline{\theta})$, the firm has created a productive match and preserves it. Its expected profit is a fraction $(1-\beta)$ of the expected maximum production level knowing that the match is highly productive. With probability $p(\theta < \overline{\theta})$, the firm prefers to separate and receives its outside option. The discount factor is omitted without loss of generality.

The *ex ante* participation constraint of the firm in expected terms is assumed to be verified. Otherwise, no match would be formed in the no signal case.

$$\Pi^{e}_{L,\overline{S}} \geq 2\pi$$

The computed expected profit of the firm has to be compared to the one it gets if it acquires information about the match quality before hiring the worker.

- Case (L, S) : laying off is allowed (case L) and the firm buys the signal (case S)

As θ is known at date 0, the worker is already optimally allocated at date 1 and is offered the following wage contract. Wages are still proportional to the worker's production level. Notice that as the worker does not change her occupation, her proposed wage profile is then flat:

$$\left\{ \begin{array}{c} w^1(\theta) = 0, if\ \theta < \overline{\theta} \\ w^1(\theta) = \beta \max(Y_1(\theta), Y_2(\theta)), if\ \theta \geq \overline{\theta} \\ w^2(\theta) = w^1(\theta) \end{array} \right.$$

The firm only recruits a worker if θ verifies his *ex post* participation constraint. P is a sunk cost. Once the signal is bought, the firm still wants to hire the worker if its profit is sufficiently high compared to its outside option. It is sufficient that θ verifies the first period participation constraint as it induces the second period one to be also verified.

$$\Pi^1(\theta) = (1-\beta) \max(Y_1(\theta), Y_2(\theta)) \geq \pi$$

The same threshold $\overline{\theta}$ is found as in the previous case. The firm creates at date one the same quality level matches that it prolongs for period 2 in the $(L, \overline{S})$ case. Matches do verify the following participation constraint:

$$\overline{\theta} \ / \ (1-\beta)\max(Y_1(\overline{\theta}), Y_2(\overline{\theta})) = \pi.$$

Thus, the expected profit of the firm in the (L, S) case is defined by:

$$\Pi^e_{L,S} = -P + 2(1-F(\overline{\theta}))(1-\beta)E(\max(Y_1(\theta), Y_2(\theta))/\theta \geq \overline{\theta}) + 2F(\overline{\theta})\pi$$

First the signal is paid at price P. Either the match is of high quality with probability $p(\theta \geq \overline{\theta})$ and the firm hires the worker for two periods or the match is of low quality with probability $p(\theta < \overline{\theta})$ and the firm prefers its outside option for two periods. Acquiring information about the match quality *ex ante* allows the firm to benefit from a better allocation of its worker from period one on. For the highest quality matches, workers are allocated to the task T_2 from period one already.

The *ex ante* participation constraint is still assumed to hold inducing the existence of any match.

$$\Pi^e_{L,S} \geq 2\pi$$

- Comparison of $\Pi^e_{L,\overline{S}}$ and $\Pi^e_{L,S}$: For low values of the signal cost, the firm benefits from the further information it gets to better allocate workers between the two possible tasks from period one. The informational step consisting in allocating all workers to task one at period one to learn about the quality of the match is not anymore necessary. The firm faces a trade-off between the cost of the signal and the benefit of a better allocation at date one.

This comparison allows us to define the critical cost of the signal above which the firm does not want to acquire information.

$$\Pi^e_{L,\overline{S}} \geq \Pi^e_{L,S}, \ iff$$

$$P \geq \underbrace{(1-F(\overline{\theta}))(1-\beta)E(\max(Y_1(\theta), Y_2(\theta))/\theta \geq \overline{\theta}) + F(\overline{\theta})\pi - (1-\beta)E(Y_1(\theta))}_{A \equiv \text{benefit of a better allocation}}$$

If the cost of acquiring the signal exceeds the benefit of a better allocation of the worker at period one, the firm does not choose to buy information. The benefit of a better allocation called A is defined as the difference in the expected profits of the firm for period one in each case $\overline{S}$ or S.

For high values of the signal cost, the firm prefers to hire workers without information about the quality of the match. However, this strategy could be very costly with restrictive dismissal legislations; the higher the cost of having formed a low quality match is, the more difficult it is to dissolve it. In the following section we consider the extreme case, where the firm is forced to keep a bad match until the end of the contract, as the dismissal legislation prohibits laying off workers.

2.3.2 Restrictive Employment Protection Case

The two possible strategies, either buying the signal or not, are again compared in this new institutional environment. The benchmark case, in which the firm does not acquire information is first developped.

- Case $\left(\overline{L}, \overline{S}\right)$: laying off is forbidden (case $\overline{L}$) and the firm does not buy the signal (case $\overline{S}$)

By assumption, the proposed wage is always sufficient to induce the worker to participate to the match and the firm is not allowed anymore to go out of the employment relationship. Therefore every match goes on at period 2 whatever the realization of θ. There are no dismissals. As the firm does not buy the signal in the $\left(\overline{L}, \overline{S}\right)$ case, the worker is allocated to task 1 at period 1. Once θ is known, she is either reallocated to task 2 at period 2 or maintained in task 1, depending on the true realization of θ compared to θ^P. Even matches of very low quality are maintained for period 2 and workers kept in task 1. Thus the average expected quality of an existing match at period 2 is lower.

Under the previous hypotheses we made (i.e. no quit and the impossibility to end a match before the end of production), the legal environment

on dismissals has no impact on the way wages are determined. Wages are still proportional to the production level and similar to the previous $(L, \overline{S})$ case. The proposed wage contract is the following:

$$w_1^1(\theta) = \beta Y_1(\theta)$$
$$w^2(\theta) = \beta \max(Y_1(\theta), Y_2(\theta))$$

The expected profit of the firm in the $\left(\overline{L}, \overline{S}\right)$ case is given by:

$$\Pi^e_{\overline{L},\overline{S}} = (1-\beta)E(Y_1(\theta)) + (1-\beta)E(\max(Y_1(\theta), Y_2(\theta))$$

In first period, the worker is allocated to task one and produces $Y_1(\theta)$. In the second period the worker is optimally allocated and her production level depends on the realization of θ compared to the technological threshold θ^P.

The *ex ante* participation constraint should again be verified for the existence of any match [13]. The average production in task one has to be greater than the outside option of the firm.

$$E(Y_1(\theta)) \geq \pi$$

As in the no employment protection case, the strategy of not buying the signal reveals itself to be costly since workers are not optimally allocated at period one. Moreover, the expected average quality of matches is lower. The benefit of acquiring the signal increases as it becomes more difficult to dismiss workers.

- Case $\left(\overline{L}, S\right)$: laying off is forbidden (case $\overline{L}$) and the firm buys the signal (case S)

The benefits of acquiring the signal may overtake its cost and the firm may decide to buy it. As θ is known, only the highest quality matches are then formed and workers are optimally allocated at period one. This case is completely equivalent to the (L, S) case, where laying off a worker is allowed. The matches whose quality levels are higher than the same threshold $\overline{\theta}$ are

[13] This participation constraint imposes the most restrictive condition. If it is verified, the firm always wants *ex ante* to form a match in all considered cases.

formed and last for two periods. Otherwise the firm prefers its outside option. In this way, the firm avoids the problem of being engaged in low quality matches at date 2.The workers are proposed the same wage profile and the firms have the same expected profit as in the (L,S) case[14]:

$$\left\{\begin{array}{c} w^1(\theta)=0, if\ \theta<\overline{\theta} \\ w^1(\theta)=\beta\max(Y_1(\theta),Y_2(\theta)), if\ \theta\geq\overline{\theta} \end{array}\right. \\ w^2(\theta)=w^1(\theta)$$

$$\Pi^e_{\overline{L},S}=\Pi^e_{L,S}=-P+2(1-F(\overline{\theta}))(1-\beta)E(\max(Y_1(\theta),Y_2(\theta))/\theta\geq\overline{\theta})+2F(\overline{\theta})\pi$$

The firm decides to buy the signal comparing the two computed expected profits.

- Comparison of $\Pi^e_{\overline{L},\overline{S}}$ and $\Pi^e_{\overline{L},S}$: Acquiring the signal is now more valuable. It avoids some matching errors inherent to the lack of information.

$$\Pi^e_{\overline{L},S}\geq\Pi^e_{\overline{L},\overline{S}},\ iff$$

$$P\leq\underbrace{\left[(1-F(\overline{\theta}))(1-\beta)E(\max(Y_1(\theta),Y_2(\theta))/\theta\geq\overline{\theta})+F(\overline{\theta})\pi\right]-(1-\beta)E(\max(Y_1(\theta),Y_2(\theta))}_{B\equiv\text{ benefit of a better average quality}}$$

$$+\underbrace{\left[\left[(1-F(\overline{\theta}))(1-\beta)E(\max(Y_1(\theta),Y_2(\theta))/\theta\geq\overline{\theta})+F(\overline{\theta})\pi\right]-(1-\beta)E(Y_1(\theta))\right]}_{A\equiv\text{ benefit of a better allocation}}$$

The firm decides to buy information at date 0, if the cost of acquiring the signal does not exceed the sum of two benefits: a better allocation at period one (A term) and a better expected average quality of existing matches at period two (B term). Only the most productive matches are kept at period two in the (L,S) case compared to the $(L,\overline{S})$ case where all matches are prolonged. Therefore, for intermediate values of the signal cost P, acquiring the signal is valuable for the firm with stricter employment protection and worthless otherwise. The following proposition states this result:

[14] Again the assumptions insuring that the legislative environment on dismissals has no impact on the determination of wages are necessary for this result to hold.

Proposition 1

- *For any P verifying $P < A$, the firm acquires the signal in both cases L and $\overline{L}$, so workers are already allocated to the optimal task from the first period and returns to tenure are flat.*
- *For P verifying $A \leq P \leq A + B$, the firm does not acquire the signal when it is allowed to lay off, so for some workers engaged in matches verifying $\theta > \theta^P$, returns to tenure are increasing. But on the contrary when laying off is forbidden, it decides to invest in the signal, and then returns to tenure are flat.*
- *For P verifying $P > A + B$, the firm does not buy the signal in both cases L and $\overline{L}$, returns to tenure are increasing for the workers engaged in matches verifying $\theta > \theta^P$.*

Proof. It is sufficient to prove than $A \geq 0$ and $B \geq 0$ for the proposition to hold.

$$\begin{aligned} A \equiv & \left[(1 - F(\overline{\theta}))(1 - \beta)E(\max(Y_1(\theta), Y_2(\theta))/\theta \geq \overline{\theta}) + F(\overline{\theta})\pi\right] \\ & -(1 - \beta)E(Y_1(\theta)) \end{aligned}$$

By definition of the conditional expectation, it is equivalent to:

$$\begin{aligned} A \equiv & \left[(1 - F(\overline{\theta}))(1 - \beta)E(\max(Y_1(\theta), Y_2(\theta))/\theta \geq \overline{\theta}) + F(\overline{\theta})\pi\right] \\ & - \left[(1 - F(\overline{\theta}))(1 - \beta)E(Y_1(\theta)/\theta \geq \overline{\theta}) + F(\overline{\theta})(1 - \beta)E(Y_1(\theta)/\theta < \overline{\theta})\right] \end{aligned}$$

According to the definition of the threshold $\overline{\theta}$ such that $\pi = (1-\beta)\max(Y_1(\overline{\theta}), Y_2(\overline{\theta}))$, it gives:

$$\begin{aligned} A \equiv & (1 - F(\overline{\theta}))(1 - \beta)\left[E(\max(Y_1(\theta), Y_2(\theta))/\theta \geq \overline{\theta}) - E(Y_1(\theta)/\theta \geq \overline{\theta})\right] \\ & +F(\overline{\theta})(1 - \beta)\left[\max(Y_1(\overline{\theta}), Y_2(\overline{\theta})) - E(Y_1(\theta)/\theta < \overline{\theta})\right] \end{aligned}$$

Both terms in brackets are positive without assuming particular restrictions on the distribution function. The first term expresses the fact that workers in high quality matches can be better allocated in task 2 rather than in task

1 at period 1. The second term shows that it is more profitable for the firm to have its outside option rather than producing in task one when matches are of low quality.

$$\begin{aligned} B &\equiv \left[(1-F(\overline{\theta}))(1-\beta)E(\max(Y_1(\theta),Y_2(\theta))/\theta \geq \overline{\theta}) + F(\overline{\theta})\pi\right] \\ &\quad -(1-\beta)E(\max(Y_1(\theta),Y_2(\theta)) \end{aligned}$$

By definition of the conditional expectation, it is equivalent to:

$$\begin{aligned} B &\equiv \left[(1-F(\overline{\theta}))(1-\beta)E(\max(Y_1(\theta),Y_2(\theta))/\theta \geq \overline{\theta}) + F(\overline{\theta})\pi\right] \\ &\quad - \left[(1-F(\overline{\theta}))(1-\beta)E(\max(Y_1(\theta),Y_2(\theta))/\theta \geq \overline{\theta}) + F(\overline{\theta})(1-\beta)E(\max(Y_1(\theta),Y_2(\theta))/\theta < \overline{\theta})\right] \end{aligned}$$

According to the definition of the threshold $\overline{\theta}$ such that $\pi = (1-\beta)\max(Y_1(\overline{\theta}), Y_2(\overline{\theta}))$, it gives:

$$B \equiv F(\overline{\theta})(1-\beta)\left[\max(Y_1(\overline{\theta}),Y_2(\overline{\theta})) - E(\max(Y_1(\theta),Y_2(\theta))/\theta < \overline{\theta})\right]$$

Even when workers are better allocated, by definition of $\overline{\theta}$, the firms prefers its outside option to low quality matches. The term in brackets is then positive. ■

3 Wrongful-Discharge Doctrines

The common law restrictions to employment at will are divided into three main classes. Under the implied contract exception, courts infer the presence of a contract from the circumstances of an employment relationship. Such a contract can be created through either oral assurances (for instance, a promotion promise) or expectations created by employer handbook, policies, or other written assurances. A landmark decision establishing the implied-contract exception was the 1980 case of *Toussaint v. Blue Cross & Blue Shild* (Autor, Danahue and Schwab, ADS 2004a), in which a dismissed worker successfully sued for breach of contract by citing an internal personnel policy handbook stating that is was Blue Cross's policy to terminate employees only for just cause. The court held that the handbook implied a binding contract, and the worker has to be remunerated for breach of contract.

The expected employer costs of the implied-contract exception are difficult to assess. First, implied-contract cases lead only to contractual damages (that is economic rather than punitive or fully compensatory damages). Second, employers can potentially insulate themselves from implied-contract claims by rewriting employment contracts and handbook to state clearly that employment contracts are at will. On the other hand, the factors creating an implied-contract claim are vaguer than those for a public-policy claim, which likely contributes to employer uncertainty about the litigation risks entailed.

Second, the public policy exception prevents termination for reasons that violate a state's public policy, for example, performing jury duty or reporting an employer's wrongdoing. It also imposes limits on terminations by forbidding employers to layoff workers for refusing to commit unlawful acts such as denying to commit perjury. The first case to recognise a public-policy exception occurred in California in 1959. In *Petermann v International Brotherhood of Teamsters* (Muhl, 2001), Peter Petermann was fired because he refused to perjure himself for his employer's benefit. The California appellate court recognised this layoff as illegal.

Finally, the covenant of good faith implies either that employer personnel decisions are subject to a "just cause" standard or that terminations made in bad faith or motivated by malice are prohibited. It prevents employers from firing workers to deprive them of earned benefits, such as sales commissions, pensions bonuses or Christmas bonuses. A leading example is the case *Fortune v National Cash Register Co.* (ADS, 2004a), where the employer fired a salesperson just before a substantial commission was due.

The exception of good faith represents the utmost departure from the traditional employment at will doctrine, as it imposes a covenant of good-faith into *every* employment relationship, but it is also the less widely adopted exception. In most of cases, the public policy and the good faith doctrines provide tort based protection, meaning that plaintiffs can sue for punitive damages.

As shown on figure 3, states vary greatly in the timing and extent of their recognition of wrongful-discharge doctrines. According to Autor, Donohue and Schwarz (2004b), while the number of states recognizing the "implied contract" and "public policy" doctrine has sharply increased from 1979 (respectively, from 6 states to 43, and from 8 states to 41), the "good faith and fair dealing" exception has been recognized only by a minority of states through out the two decades (from 2 states in1979 to 10 states nowadays). Most of the states adopting the good-faith covenant exception are western states. The largest number of states (40 states) recognize at least two doctrines. Seven states recognize all three doctrines[15] (California, Arizona, Idaho, Utah, Wyoming, Alaska, Massachusetts), while three states still have recognized none of the doctrines (Florida, Georgia, Rhode Island). The adoption of exceptions was widespread in the 1980s. In 1990, all states (i.e. 41 recognizing states) already recognized the implied contract exception, 42 out of 43 states already adopted the public policy and 8 out of 10 the good faith covenant exception.

It seems difficult to select a single case as the precedent for a state's recognition of a particular wrongful discharge. Therefore, authors working on that topic not necessarily agree on the dates of adoption. There are currently two main classifications available provided by Walsh and Schwarz (WS, 1996)[16] and Autor, Donohue and Schwab (ADS, 2004). They use different criteria to select the relevant cases. Autor, Donohue and Schwarz (2004) looked for the *first* major appellate-court decision that signaled the sustained adoption of the particular at-will exception. Instead, Walsh & Schwarz select cases that best articulate court's rationales for promulgating a new doctrine, cases that provide the *clearest* articulation of the newly adopted doctrines. Therefore, Walsh & Schwarz, most of the time have selected posterior adoption dates than ADS. In the following sections, only

[15] Montana also recognized the three doctrines as from now, it is the only state to have passed a statute (since 1987) establishing a good-cause standard for employment terminations. All other recognitions are common law doctrines.

[16] The Walsh and Schwarz classification stops in 1994. We completed it using Muhl(2001) who provides the recognition of exceptions through Oct. 1, 2000.

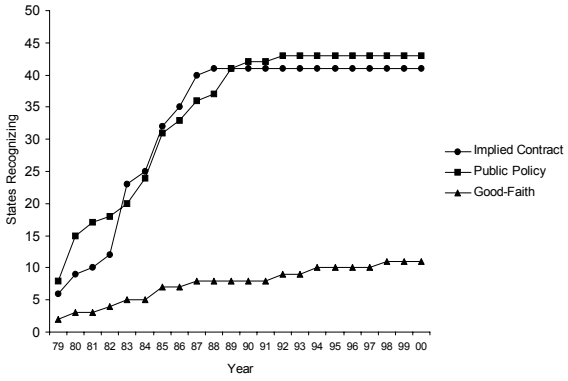

Figure 3: Timing of Adoption

the results using the ADS classification are presented, as it has been used in some recent articles (Schanzenbach (2003), Kugler and Saint-Paul (2004), Autor (2004), and ADS(2004b)). We also checked the robustness of our results using the WS classification[17].

4 Empirical Evidence from the US

4.1 Data and Sample restrictions

To test our theoretical predictions we match information from three sources. Annual data from 1980 through 1996 for young workers drawn from the NLSY79 are matched with information on their state of residence from the NLSY's Geocode file. Lastly, we use data on the date of adoptions of common law exceptions from ADS (2004a).

The NLSY 1979 young adult cohort is a panel of 12686 male and female youths, aged 14 to 21 in 1979. This data set have substantial advantages for our study, it allows us to draw a weekly workhistory of subjects and to construct precise measures of the actual on-the-job tenure and labor market

[17] The results using the WS classification are available on request. Using "post-adoption" time dummies, we found that the impact of adopting an exception at the date chosen by ADS is stronger two years after the change. This may explain why the estimates using WS classification are even more significant than those presented here.

experience[18]. This contrasts with other candidates data sets that have been used to investigate returns to tenure and that do measure tenure and wages only at the year frequency. In particular, the drawback with the PSID data set (the primary data source used to study returns to tenure) is that it only offers limited information on job changes, so that one has, as Altonji and Shakotko (AS, 1987) or Topel (1991) did, to limit on annual data. When the worker changes job during the year (see Connoly and Gottschalk, 2001) it is impossible in the PSID to distinghuish clearly between the old job tenure and earning and the new job tenure and earning. The NLSY overcomes these problems by including every year the key variables enabling to track the work-history of an individual both while working for the same employer and when moving to a new employer[19]. Another advantage of using the NLSY79 is that the survey covers the period during which most of states adopted common law exception to the employment at will doctrine. Indeed prior to the 1980s, only a handful of states recognised exceptions, but by the end of the decade an overwhelming majority did.

Although the NLSY records information about multiple jobs, we only consider the Current Population Survey (CPS) job which is the main or more recent job held at the time of interview and second, the job for which more detailed information is available. We restrict our sample to those working for a private profit organization and working for a wage of at least one dollar in 1985 constant value and on full time basis, which we take to be equivalent of at least 20 hours worked in a week. Wages are deflated using a consumer price index provided by the bureau of labor statistics. Working students are dropped such as not to confound their low wages with those of other low-wage respondents. To avoid dealing with issues involving the White/Black and Male/Female wage gap which may spured the effect we are looking for, we further restrict our sample to white male[20]. Lastly, since

[18] Most of papers on retuns to tenure has to rely on potential experience (age minus years of education minus six). Here we can construct a precise history of experience taking into account unemployment and out of labor force spells.

[19] We should note that NSLY data are employer based and not job based, hence we can not keep track of job changes that occurs with the same employer.

[20] Some autors argue that exceptions to employment at will doctrine may be less effective

Table 1: Mean Sample Charecteristics

Real Hourly Wage ($1985)	8.54
Hours worked	43.80
Experience	7.44
Tenure	2.9
Years in school	12.4
Percentage married	52.1
Age	29
Number of individuals	3469
Number of jobs held	7.22
EPL	
dic=1	0.65
dpp=1	0.67
dgf=1	0.18
LEG=1 if at least one EPL is adopted	0.80
Number of observations	26349

the work history can not be tracked before 1979, our sample begins in 1980, ending up with 26349 observations over the period 1980-1998. Individuals enter the sample as they enter in the labor market. Table1 shows the means for a key set of variables included in our regressions:

4.2 Specification and Methodological Background

Returns to tenure have fueled a lot of debate among economists and depending on the estimation procedure results range from negligeable impact (AS, 1987), to as much as 25% of wage gain for 10 years of tenure for Topel (1991). Much of the debate on this issue focused on the appropriate econometric methods to be used to handle the issue of endogeneity of the tenure variable. To test our theoretical prediction regarding the impact of firing legislations on the returns to tenure we will estimate the following standard model of wage determination where we add the three state's legislations

as a firing restriction for minorities and female because they are already covered by equal opportunity laws that may be more efficient to appeal in a court.

dummies and their cross products with respect to tenure and experience[21]:

$$\begin{aligned} W_{ijt} &= \beta_0 t + \beta_1 Exp_{ijt} + \beta_2 Ten_{ijt} + \beta_3 Ten_{ijt}^2 + \beta_{4l} LEG_{lt} + \beta_{5l} LEG_{ilt} * Ten_{ijt} \\ &\quad + \beta_6 LEG_{ilt} * Exp_{it} + \beta_{7l} LEG_{ilt} * Ten_{ijt}^2 + \epsilon_{ijt}. \end{aligned}$$

Where W_{ijt} denotes the log of real hourly wage rate of person i in job j at time t, Exp is the total labor market experience, Ten is the tenure with the current employer (current job seniority), and LEG_{ilt} is a dummy variable taking the value one if the individual is working in a state that adopted the legislation l at time t. Parameters β_1, β_2 represent average returns to an additional year of experience and tenure, respectively. The coefficients β_{4l} and β_{5l} are the additional returns to one year tenure and experience in states having adopted legislation l, compared to states that do not. The parameter β_3 measures the growth rate to the tenure's return, and β_{7l}, the way it is modified by the adoption of a given legislation l. For references with research on the effects of firing legislation on the labor market we will also comment on the coefficient β_{4l} measuring the impact of legislations on wage levels in adopting states. The parameter β_0 controls for the economy wide trend. Altonji and Williams (1997) use different treatments of time trend and found minor effect in their OLS estimates[22]. We rely on their results here and include in the estimation year specific dummies, noted t.

Several issues due to unobserved heterogeneity (ϵ_{ijt}) need to be carefully handled when one deals with the previous equation. This unobserved heterogeneity can be decomposed as follows:

$$\epsilon_{ijt} = \mu_i + \theta_{ij} + \eta_{ijt} + u_{it} \tag{1}$$

where μ_i is a fixed individual specific error component, θ_{ij} is a fixed job match specific error component, η_{ijt} is a time varying job match specific component, and u_{it} is the sum of measurement errors in the wage and a person specific error component that affect wages of all employees. Usually

[21] For the ease of presentation the equation abstracts from a set of control variables and non linear terms in experience.

[22] 0.22 for 10 years of tenure using year dummies and 0.25 using deflated wages.

u_{it} is ignored as it is unlikely to be related to turnover behavior. Topel (1991) argued that η_{ijt} is unlikely to influence returns to tenure if it follows a random walk and shows that the data are consistent with that. We will thus rely on his result. More problematic are the correlations of the individual and job fixed effects, μ_i, with unobserved individual and match specific heterogeneity, θ_{ij}, which lead to potential biases in the estimation of returns to tenure and experience. These correlations are specific in a sense that they are the outcome of optimising search behavior. In particular those individuals with high μ_i (high productivity) may have experienced less unemployment and self-select in better jobs. Individual hererogeneity associated with μ_i will biased OLS estimate of the wage-tenure profile upward. Also, matching and search models imply that job shopping over a career will induce a positive correlation between experience and the job match specific component, this will biased upward the coefficient on experience. To provide some correction for these problems, we adopt the instrumental variable methodology proposed by AS (1987). Tenure and its square are instrumented with their deviation from job-match means, $\tilde{T}_{ijt} = T_{ijt} - \bar{T}_{ij}$ and $(\tilde{T}_{ijt})^2 = T^2_{ijt} - (\bar{T}_{ij})^2$ whereas according to the extension proposed by Finnie (1993) experience and its square are instrumented with their deviations from individual means[23], $\tilde{E}xp_{it} = Exp_{it} - \bar{E}xp_i$ and $(\tilde{E}xp_{it})^2 = Exp^2_{it} - (\bar{E}_i)^2$. The instruments for tenure and experience are, by construction, uncorrelated with match quality and individual components[24]. The methodology has been used to investigate the racial gap in returns to tenure (Bratsberg and Terell, 1997), and extended to quantify the returns to industry specific human capital (Parent, 1999) and the impact of employer provided training (Parent, 2000). More recently Dustman and Pereira (2005) have applied it to compare the relative contribution of experience and tenure in U.K. and Germany.

[23] The cross products of tenure, experience and their square with legislative dummies are instrumented by the same way.

[24] Topel (1991) proposed a two step method to deal with the endogeneity issue. The Topel's method is worth to apply here since the first step involves computing the within job growth rate, which is by itself an interesting component given our focus. We look forward to apply the Topel's estimation and compare it to our results.

4.3 Descriptive statistics

In order to test the prediction developped in the theoretical section agains the alternative model which rest on the human capital theory the legislative variables at hand should have a positive impact on tenure. Figure (4) plot the average tenure across labor market experience provides some preliminary evidence on that. After controlling for labor market experience, albeit small, it shows a positive correlation of tenure with the strictness of EPL measured here by a dummy variable taking the value 1 if any of the three exceptions to employment at will doctrine is adopted. The effect is larger for more senior workers, it may be because those costs implied by the EPL are higher for more experienced workers.

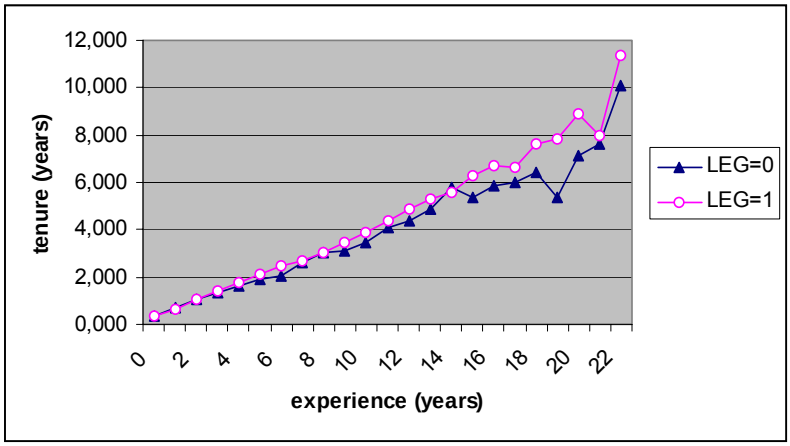

Figure 4: Tenure and EPL along the carreer
note: the variable leg takes the value one if at least one exception to employment at will doctrine is adopted.

In figure (5) we display average within job wage growth by year and labor market experience. Within job wage growth is much less liable to change in states that have adopted restrictions to employment at will. Moreover it is lower in those states for more senior workers. This is not surprising as for those wokers figure (4) shows that tenure is also higher. Hence for the same level of labor market experience the sample of workers LEG=0 is made up of more tenured workers which consequently should experience less wage

growth if rate of wage growth decreases with tenure.

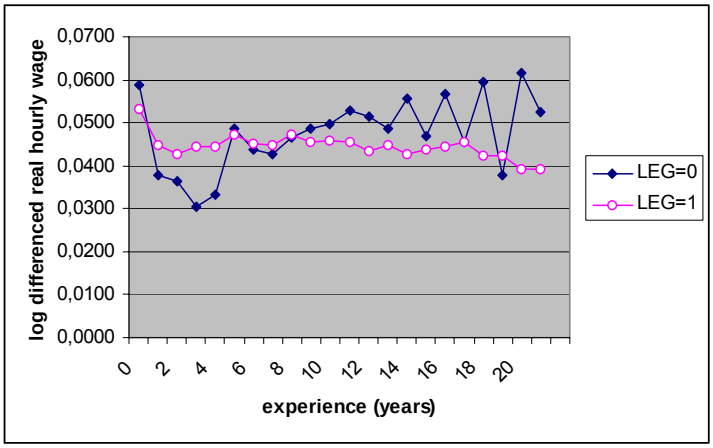

Figure 5: Within job wage growth along the carreer and EPL note: the variable leg takes the value one if at least one exception to employment at will doctrine is adopted.

4.4 Estimation Results

As a benchmark with others studies we note that our basic regression presented in table (2) display coefficient estimates that are in accordance with other mincerian wage estimation on US labor maket. Notably, we find that a worker with 10 years of tenure on the job is paid 20% more than the same worker entering the job, which is in the range of Topel's result's from the PSID, and Bratsberg and Terell (1997) for the white make sample of the NSLY. Return to general human capital as it is measured by labor market experience is higher than the returns to specific human capital and is also in the range of findings in the literature. As expected, local unemployment rate has a negative impact on wages. We also find a significant wage premium for unionised workers. According to the literature on returns to tenure estimation, return to tenure are reduced by half using instrumental variables estimators (see table 2 and 3).

From this base wage equation we investigate the impact of firing legislation on returns to tenure. Firing legislations dummies are first introduced

one by one and then together. We focus on their impact on return to tenure which is the main effect we are interested in, and marginally their impact on wages. In all specifications considered (OLS, random effect, and fixed effect), with and without instrumental variable (IV), we found that that in states that have adopted the implied contract policy (*dic*) wage profiles are much flatter since, assuming random effects, returns to tenure is reduced by 30%, (table 2) without instrumentation, and by almost 54% in the IV case (table3). The public policy exception, has a negative but not significative impact on returns to tenure if we do not control for the endogeneity of tenure. However, it has a positive and significant smaller impact once the tenure is instrumented. Given that most of the states have adopted these two exceptions together, the total impact of having adopted these exceptions is significantly negative and close to 20-30 percent. The good faith exception does not seem to have any significant impact on the returns to tenure. The previous results confirms our theoretical prediction and suggest that wage growth within the firm is mainly due to the acquisition of information process about the match quality and that firing legislations change the timing of the trade-off in favor of early gathering of information (at the hiring stage).

The robustness of the result are also checked using fixed effect estimators, which do not change substantially our findings. It is worthy to note that returns to experience increases sharply in the abscence of instrumental variables.

Another interesting result concerns the second-order effect of the legislation on wages. We find, whatever the estimation method used, a positive coefficient on $dic * Ten^2$. The concavity of the wage function relative to tenure, which means that the rate of learning on the match quality is higher at the begining of the job, is thus reduced. This result is coherent with our theoretical prediction that less gains from information acquisition remain to be done in states with tougher EPL. The wage evolution diverges more at the beginning of the job match than latter on, as it appears clearly on

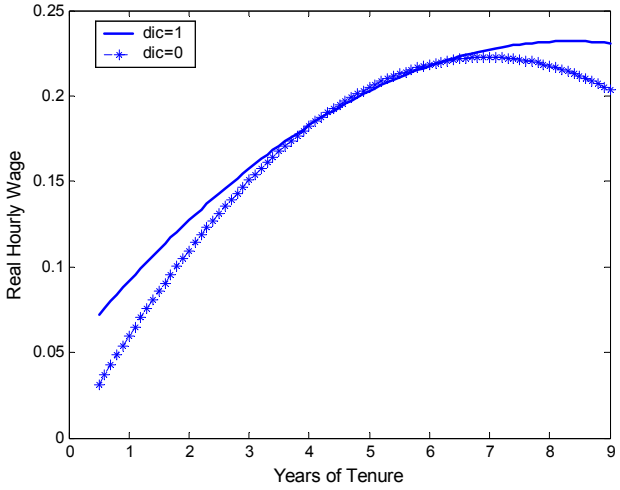

Figure 6: Returns to tenure

figure 4, which depicts the wage evolution depending on the adoption of the implied contract exception.

The three exeptions have heterogeneous impact on the wage levels, that are not always robust to the estimation method. Whereas the implied contract exception exception has always a positive effect on wages, the good faith exception has always a negative one. The public policy exception's impact is not stable.

Finally, the implied contract and public policy have clear negative impacts on the returns to experience, whereas the good faith convenant has a strong and positive impact. As the good faith exception was adopted by a minority of states, mainly western states, the total impact of our EPL indicators on the returns to experience is mostly negative. This result could be understood in terms of job shopping. More efforts are provided early in the carreer to find a good job, as it becomes more difficult to change jobs with stricter EPL. It could also be that general human capital is less valued in tougher EPL as it is more difficult to moove through jobs.

5 Conclusion

The internal organization of the firm is no longer the "black box" of neoclassical models. A huge strand of the literature is now devoted to understand the wage formation, the organization of the promotion system and the internal mobility. However, only a few number of articles have focused on the impact of the firm's legislative environment on its internal organization. Therefore our model is a step forward to address the impact of employment protection institutions on internal mobility, hence on the wages growth rate within the firm. EPL is not neutral for the employer's human resources policies. Our model predicts that higher separation costs increase the firm's incentives to adopt more selective and costly recruitment procedures, to opt for flexible and fixed-term employment contracts and to impose longer trial periods. Then, depending on the legislative environment, the firm does not offer the same career perspectives and internal mobility paths. We expect that internal mobility to decrease faster with tenure in tougher employment protection environments. Due to lack of data on the internal organisation of firms, we only successfully tested the main conclusion of the model, i.e. that tougher employment protection institutions decreases returns to tenure, without testing our main assumption, that it is due to lower internal mobility. Nevetheless, our empirical investigation on the US case suggests that information acquisition is an essential determinant of wage growth within the US firms, as found by Nagypal (2000). Being able to assess the human capital based approach of wage growth (as learning by doing, or firms provided training) vs the learning about the match quality process may have strong practical implications for the firm's dismissal, promotion and training policies.

This article can be extended by looking at the impact of EPL on different categories of workers, for instance, by educational attainment or by sectorial activities. According to our theoretical argument, we expect that the impact of our EPL indicators on the returns to tenure would be stronger for those categories of workers, where information acquisition is relatively

Table 2: Earnings functions estimates using ADS classification

	Dependent Variable: Log of Real Hourly Labor Income ($1987)		
Independent variable	OLS	random effect	fixed effect
Tenure	.0773***	.0640***	.0683***
	(.0072)	(.0046)	(.0049)
$(\text{Tenure})^2$	-.0046***	-.0046***	-.0056**
	(.0007)	(.0004)	(.0004)
Experience	.0349***	.0465***	.1247***
	(.0041)	(.0029)	(.0025)
$(\text{Experience})^2$	-.0008	-.0004	-.0028**
	(.0010)	(.0008)	(.0013)
dic	.0243	.0508***	.1282**
	(.0184)	(.0122)	(.018)
dpp	-.0274	-.0247*	.0334***
	(.0199)	(.0131)	(.0127)
dgf	-.0455	-.0498**	-.0331*
	(.0336)	(.0225)	(.0176)
Tenure*dic	-.0152**	-.0206***	-.0286***
	(.0072)	(.0046)	(.0048)
Tenure*dpp	-.0109	-.0008	-.0015
	(.0075)	(.0045)	(.0048)
Tenure*dgf	-.0054	.0011	.0055
	(.0071)	(.0044)	(.0047)
Tenure^2*dic	.0013**	.0020**	.0026***
	(.0007)	(.0004)	(.0004)
Tenure^2*dpp	.0009	.0004	.0006
	(.0007)	(.0004)	(.0004)
Tenure^2*dgf	-.0004	-.0005	-.0008**
	(.0005)	(.0004)	(.0004)
Experience*dic	-.0019	-.0074***	-.0105***
	(.0036)	(.0023)	(.0024)
Experience*dpp	-.0046	-.0046**	-.0079***
	(.0038)	(.0023)	(.0024)
Experience*dgf	.0123***	.0100***	.0137***
	(.0034)	(.0021)	(0.0027)

Note: all regressions include controls for time trend, state of residence, union membership, local unemployment rate, marital status, education, and AFQT (Armed Force Qualification Test) score.

Legislative variables are also crossed with the previous number of jobs.

** significative at 5%, * significative at 10%, standard deviations are given into parentheses.

Table 3: Earnings functions estimates using ADS classification

	Dependent Variable: Log of Real Hourly Labor Income ($1987)		
	Instrumental Variable Estimators		
Independent variable	(1)	(2)	
Tenure	.0291**	.0313**	.0317**
	(.0063)	(.0060)	(.0067)
(Tenure)^2	-.0028***	-.0031***	-.0032**
	(.0008)	(.0005)	(.0005)
Experience	.0502***	.0558***	.0536***
	(.0050)	(.0032)	(.0040)
(Experience)^2	-.0027**	-.0007	.0026**
	(.0011)	(.0009)	(.0013)
dic	.0184	.0482***	.0512***
	(.0208)	(.0127)	(.0133)
dpp	-.0619***	-.0329**	-.0303**
	(.0221)	(.0135)	(.0141)
dgf	-.0275	-.0442*	-.0420*
	(.0361)	(.0226)	(.0237)
Tenure*dic	-.0121	-.0167***	-.0167***
	(.0087)	(.0063)	(.0064)
Tenure*dpp	.0206**	.0109*	.0093
	(.0087)	(.0062)	(.0062)
Tenure*dgf	-.0100	-.0054	-.0044
	(.0080)	(.0061)	(.0061)
Tenure^2*dic	.0011	.0016**	.0017***
	(.0008)	(.0005)	(.0005)
Tenure^2*dpp	-.0012	-.0003	-.0002
	(.0008)	(.0005)	(.0005)
Tenure^2*dgf	.0001	-.0003	-.0003
	(.0007)	(.0004)	(.0004)
Experience*dic	-.0016	-.0079***	-.0081***
	(.0046)	(.0026)	(.0027)
Experience*dpp	-.0086*	-.0065**	-.0053**
	(.0046)	(.0025)	(.0026)
Experience*dgf	.0097**	.0189***	.0113**
	(0.0042)	(0.0024)	(0.0028)

Note: all regressions include controls for time trend, state of residence, union membership, local unemployment rate, marital status, number of previous jobs, education, and AFQT (Armed ForceQualification Test) score.

Legislative variables are also crossed with the previous number of jobs.

** significative at 5%, * significative at 10%

Standard deviations are given into parentheses.

more imortant, as their mobility prospects are likely higher: high education and skilled occupations.

A more challenging empirical extension would be to test these predictions through different labor market as observed in the US and European countries. This would certainly help us to better understand the contrasted evolution of wages inequalities within the firm, and eventually if we extend the theory to job mobility, the lifetime wage profiles in different institutional environments.

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