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Earnings profiles, employment protection, and the labour market for older workers

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The responsibility for the contents of this CPB Discussion Paper remains with the author(s)

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Abstract in English

This paper shows that countries with extensive Employment Protection Legislation (EPL) and Unemployment Insurance (UI) have steep experience profiles in wages, somewhat lower participation rates, and much lower job turnover, in particular for older workers. The paper proceeds by discussing a number of theories explaining the experience profiles in general, and their cross country differences in particular. The fact that EPL entitlements increase with job tenure explains why countries with extensive EPL have steeper profiles. It also explains why these countries have smaller job turnover, which is inefficient. The paper explains the political process that makes that EPL and UI are such pervasive institutions, despite their inefficiency. Finally, it discusses the principles for a successful reform strategy that accounts for these political constraints. The case of Denmark, which has almost no EPL and a flat experience profile, shows that avoiding these political pitfalls is not just an economists' Utopia.

Key words: employment protection, experience profiles, job turnover, older workers

JEL code:

Abstract in Dutch

Dit paper laat zien dat landen met een uitgebreid systeem van ontslagbescherming en werkloosheidsverzekering worden gekenmerkt door steile leeftijds-beloningsprofielen, lagere arbeidsparticipatie en een veel lagere baanmobiliteit, in het bijzonder voor oudere werknemers. Vervolgens worden een aantal theorieën besproken die deze beloningsprofielen kunnen verklaren, en meer in het bijzonder, de verschillen tussen landen. Het feit dat de ontslagbescherming veelal toeneemt met de aanstellingsduur in de huidige baan verklaart waarom landen met veel ontslagbescherming een steiler beloningsprofiel kennen. Dit verklaart ook waarom deze landen een lagere baanmobiliteit hebben, wat eenduidig inefficiënt is. Het paper besluit met een analyse van het politieke proces dat leidt tot de invoering van dergelijke systemen van ontslagbescherming, in de weerwil van hun inefficiëntie, en met een bespreking van een hervormingsstrategie die rekening houdt met deze politieke obstakels. Denemarken, een land met weinig ontslagbescherming en met vlakke beloningsprofielen laat zien dat zo'n strategie geen hersenspinsel is.

Steekwoorden: ontslagbescherming, beloningsprofielen, baanmobiliteit, oudere werknemers

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1 Introduction

Those who lose their job in the Netherlands above the age of 55 are in deep trouble. The chances of getting hired by another employer are slim. Dutchmen are so familiar to this phenomenon that they are convinced that labour markets for elderly cannot function properly anyway. “Employers just don’t like elderly” is the common opinion. This paper borrows some statistics from the CPB’s project ‘Rethinking Retirement’ to show that this view is both right and wrong. Yes, indeed, being laid off above the age of 55 is a disaster in the Netherlands, but no, it is not true that this is a natural state of affairs. The Dutch situation is man-made, the outcome in other countries is entirely different, in some sense much more egalitarian than in the Netherlands, with much less discrimination of elderly. Then the question is: why is the labour market for older workers so disrupted in the Netherlands?

The statistics that I present suggest that relative wages are a large part of the answer. Across the world, wages tend to rise with experience. However, this experience profile is much steeper in the Netherlands than in other countries. Elderly workers remain employed basically because implicit or explicit employment protection forces a firm to keep them on the payroll. However, if for some reason this employment protection fails to work properly and the worker gets fired, the worker will never be rehired simply because his wage is above his marginal productivity.

Having established the role of experience profiles, we push the analysis one step further. Why have some countries steeper experience profiles than others. There are a number of theories that can explain why elderly tend to earn higher wages. Some stress the role of incentives, to find better jobs, or to motivate workers to put in more effort. Other theories stress the role of bargaining and quasi-rents. Elderly earn higher wages because they occupy the high rent jobs. But how can these theories yield different outcomes in different countries? Basically there are three explanations, all three based on differences in institutions between countries: Employment Protection Legislation (EPL), Unemployment Insurance (UI), and the institutions for wage setting. We consider the first two in greater detail, and spend some words on how the third can account for the somewhat divergent situation in the United States. Having done this, one can ask: what institutions are optimal? Is a steep experience profile desirable from a social point of view? Are extensive EPL and UI for elderly a good thing to have?

The set up of this paper is as follows. Section 2 presents some empirical evidence on EPL and UI, on wages, on participation and unemployment rates, and on the distribution of job tenure for six countries. Section 3 discusses theories that explain why wages tend to rise with the worker’s experience. In section 4, I analyse the impact of EPL and UI on wages and on the distribution of job tenures. Section 5 seeks to explain why so many countries (not all!) install extensive EPL and UI for elderly while the analysis clearly shows that these institutions are detrimental from a social point of view. Countries with extensive EPL and UI are trapped in a “bad equilibrium”. Moreover, I discuss how a country can get out of this trap to a situation where the labour market functions properly, also for elderly.

2 Some stylized facts

For the sake of the argument, the discussion in this paper will focus on limited list of countries. Apart from the Netherlands, I consider Denmark, France, Portugal, the United Kingdom, and the United States. These countries span a variety of labour market institutions. Table 1 gives an overview of EPL and UI in these countries. As the overall indicator of EPL shows, France, the Netherlands, and Portugal have extensive EPL, Denmark, the United Kingdom, and the United States almost none. For the Netherlands and Portugal, the strictness of EPL can be seen from the length of the sum of the notice period and the severance pay in months. Note that EPL is strongly related to the job tenure, and not to the age of the worker. For France, EPL takes a somewhat different form. The complexity of the procedures for lay off and the uncertainty regarding their outcome makes it very expensive for firms to lay off workers.¹ This feature shows up in the overall indicator of EPL, but not in the months of the notice period and severance pay. The UI entitlements in France, the Netherlands, and Portugal are remarkably similar. Contrary to EPL, these entitlements are strongly related to the age of the worker, not to her job tenure. UI seems to be most generous in Denmark. However, Denmark has strict active labour market policy, that forces unemployed to participate in all kind of labour market programmes. In practice, UI in Denmark is therefore less generous than in most other countries.

Table 2.1 EPL and UI for selected ages and employment records ¹⁾

Age	40		55		55		Indicator overall
	Job tenure		20		4		
	EPL	UI	EPL	UI	EPL	UI	EPL
Netherlands ²⁾	4,5	19	31,5	37	8,5	34	2,3
Denmark ³⁾	3	48	5,75	48	3	48	1,8
France	2,6	23	6	36	2,6	36	2,9
Portugal	6	24	22	38	6	30	3,5
UK	1,4	6	5,2	6	1,4	6	1,1
US	0	6	0	6	0	6	0,7

1) EPL refers to severance payments and notice periods (in months), UI refers to the maximum duration of UI (in months).

2) EPL entitlement based on the juridical formula, not the CWI procedure

3) UI entitlement subject to active labour market policies

¹ An interesting way to assess the complexity of these procedures is the number pages that is needed to describe the system of country; Denmark: 13, France: 43, the Netherlands: 19, Portugal: 19, UK: 14, US: 13. OECD (2004).

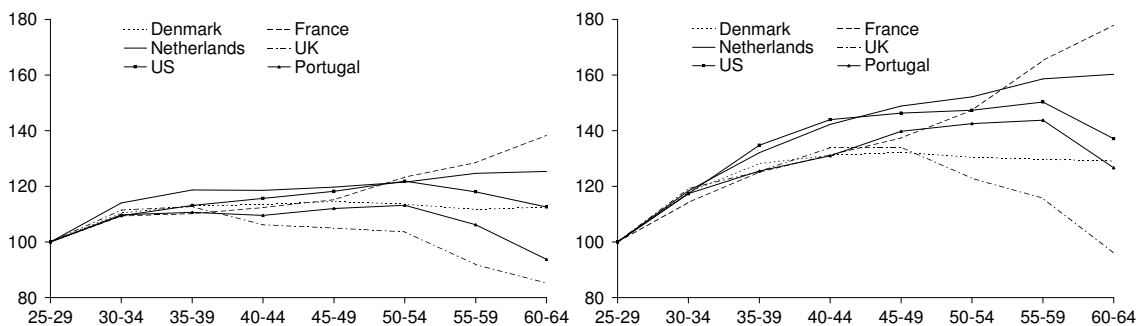
Institutions for wage setting

Denmark, France, the Netherlands and Portugal have some centralization in wage bargaining, the United Kingdom a little, and the United States has none, see Teulings and Hartog (1998:3). In his contribution, Ruud de Mooij shows that the countries discussed here are typical for wider groups of countries: Denmark is a prototype for most of Scandinavia; France, the Netherlands and Portugal are typical for continental Europe, while the United Kingdom and in particular the United States are typical for the Anglo Saxon economies

Large cross country differences in experience profiles in wages

Figure 2.1 shows the experience profiles in wages for the countries in our sample, for men and women separately.

Figure 2.1 Experience profiles in wages, women (left), men (right)

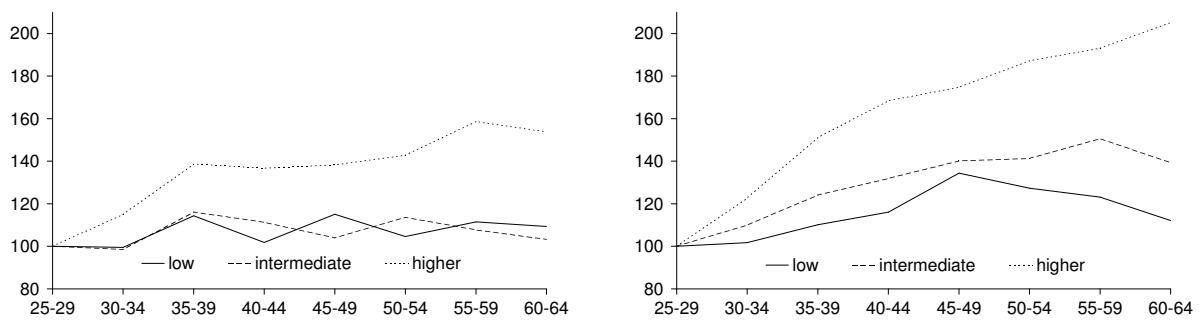


These profiles differ widely, between sexes and between countries, and these differences seem to be correlated to the extent of EPL in a country: the more EPL, the steeper the tenure profile. In general, the profiles for women are much flatter than for men. Focussing on the profiles for men, the profile is almost flat for Denmark, an elderly earning on average only some 20 % more than somebody in the age-group 25-29. The profiles for the United Kingdom and the United States have an inverted U-shape. The profile for the United Kingdom reaches a plateau somewhere between the age of 40 and 54 (some 20 % above the wage in the age group 25-29), and comes down to the level of the age-group 25-29 in the final age group. The profile for the United States is more pronounced, reaching a much higher peak at a later age. The profile for France and the Netherlands rises monotonically, the age-group 60-64 earning 60 % more on average than the youngest age-group. Portugal stands out a bit, having high EPL, but nevertheless having an inverted U-shaped, though steep experience profile. I return to the case of Portugal below.

Experience profiles differ by education level

Figure 2.2 shows for the Netherlands that experience profiles are much steeper for higher education levels, in particular for men. Though we present only actual numbers for the Netherlands, this pattern holds in other countries, too.

Figure 2.2 Experience profiles in wage by education levels, women (left) and men (right)



For the Netherlands, there is hardly any difference in the experience profiles between the public and the private sector. The fact that experience profiles are steeper for higher education levels can account for the fact that Portugal has a flatter experience profile than France and the Netherlands, countries with comparable institutions for EPL and UI. The average education level in Portugal is substantially lower than the other five countries considered in this paper. Hence, other things equal, the average experience profile can be expected to be flatter in Portugal.

Experience profiles mix up returns to tenure and to experience

The experience profiles as reported in Figure 2.1 are a mix of a return to job-tenure and a ‘true’ return to experience. Since tenure is strongly correlated to experience, see Table 3 below, part of what is in fact a return to tenure shows up as a return to experience if one does not control for tenure. Teulings and Hartog (1998:37) report returns to tenure for most of these countries.^{2,3} France, Portugal, and the United States have high returns to tenure, the others much lower, except for the United Kingdom, where the evidence is mixed. Hence, these returns to tenure do not fit in easily in the pattern of cross-country differences in EPL and UI.

Participation rates for men differ across countries only for youngsters and elderly

Table 2.2 shows the participation and unemployment rates for these countries by broad age-groups and sex. For women, there are substantial differences between countries. The causes of these differences have largely to do with labour supply issues, which fall outside the scope of this paper. Hence, we focus on men. The first thing to note is that the differences in participation rates for prime age men are slim. Almost everybody works. However, at the bottom and the top of the age distribution, the differences are substantial. Portugal, the Netherlands, and France stand out by having low participation rates for elderly.

² Establishing a ‘true’ return to tenure is a hairy issue due to all kind of selectivity problems, e.g. good jobs tend to survive longer. Hence, the direction of the causality is unclear: is the job-tenure high because the job pays well, or is the pay high due to the high job-tenure? See Altonji and Shakotko (1987) and Topel (1991), for extensive discussions of these issues. The estimates of Teulings and Hartog (1998) do not correct for these issues.

³ Miguel Portela provided separate information on the return to tenure in Portugal, that is available on request.

Table 2.2 Participation and unemployment rates by age and gender

Participation (in %)	Men			Women		
	15 to 24	25 to 54	55 to 64	15 to 24	25 to 54	55 to 64
	Denmark	73,8	92,3	66,9	71,4	84,6
France	40,1	94,2	42,8	33,8	82,4	38,0
Netherlands	70,9	91,7	63,3	70,3	80,0	41,1
Portugal	45,3	92,8	63,0	38,4	82,8	46,7
United Kingdom	68,2	91,6	68,9	62,5	77,6	50,1
United States	61,5	90,9	69,6	57,2	75,4	58,3

Unemployment (in %)	Men			Women		
	15 to 24	25 to 54	55 to 64	15 to 24	25 to 54	55 to 64
	Denmark	7,5	2,3	3,5	6,8	3,2
France	18,0	6,3	5,3	19,6	7,7	4,9
Netherlands	6,5	2,2	4,5	8,1	3,3	3,6
Portugal	13,5	6,1	7,1	20,3	9,6	5,8
United Kingdom	16,0	3,7	4,1	12,7	3,7	2,2
United States	11,6	3,7	3,2	9,4	3,8	3,0

There are large cross-country differences in job turnover, in particular for elderly

Table 2.3 shows the tenure distribution per sex and age category in these countries. There, an even stronger contrast emerges between Portugal, France, and the Netherlands on the one hand and the other countries on the other hand. The great majority of the working elderly in the former group of countries have more than 10 years of tenure, while almost nobody has less than a year of tenure. This implies that there is hardly any job switching in this age category. A similar pattern of cross country differences emerges for the younger age categories, though not as pronounced as for the elderly. The picture for women is the same as for men.

Countries with extensive EPL have steep tenure profiles and low job turnover

The grand picture that emerges from the combination of Figure 1 and Table 1 to 3 is that countries with extensive EPL and UI have steeper experience profiles in wages. Only the United States stands out, as it has no EPL at all and nevertheless it has a steep experience profile. Extensive EPL and UI, and steep experience profiles go hand in hand with somewhat lower participation rates for elderly men, but in particular with lower job mobility among elderly. Steep experience profiles tend to keep workers locked in at their current job. A tempting interpretation of these observations is that their current employer is not allowed to lay them off, and therefore has to keep them on payroll. However, as soon as for some reason or another, this lay off protection fails and the worker loses his job, it is hard for him to find a new job.

Table 2.3 Distribution of job tenure by age and gender

Men				
15 to 24	<1 year	1-5 years	5-10 years	>10 years
Denmark	52,8	41,2	5,3	0,6
France	51,2	40,1	8,5	0,1
Netherlands	33,7	50,1	15,9	0,2
Portugal	39,2	45,7	15,1	0,0
United Kingdom	44,6	45,7	9,7	0,0
USA	55,6	39,4	5,0	0,0
25 to 54	<1 year	1-5 years	5-10 years	>10 years
Denmark	21,9	30,2	19,9	28,0
France	12,5	19,4	23,9	44,3
Netherlands	8,5	23,3	27,6	40,7
Portugal	12,6	21,1	23,1	43,1
United Kingdom	14,5	29,8	23,3	32,3
USA	19,0	30,1	23,1	27,8
55 to 64	<1 year	1-5 years	5-10 years	>10 years
Denmark	11,1	17,2	15,0	56,7
France	4,1	7,0	13,1	75,8
Netherlands	2,5	7,9	14,4	75,2
Portugal	4,0	12,0	13,6	70,4
United Kingdom	8,7	21,3	20,1	49,9
USA	8,5	18,6	18,8	54,0
Women				
15 to 24	<1 year	1-5 years	5-10 years	>10 years
Denmark	63,3	34,1	2,4	0,3
France	54,3	40,7	4,9	0,0
Netherlands	37,0	52,2	10,8	0,0
Portugal	40,1	46,6	12,6	0,7
United Kingdom	49,1	43,3	7,5	0,1
USA	57,7	37,9	4,3	0,1
25 to 54	<1 year	1-5 years	5-10 years	>10 years
Denmark	25,4	30,4	19,4	24,8
France	12,7	20,2	24,1	43,0
Netherlands	8,7	23,9	34,5	32,9
Portugal	12,6	21,0	25,4	41,0
United Kingdom	15,3	31,5	25,7	27,5
USA	19,7	32,1	23,8	24,4
55 to 64	<1 year	1-5 years	5-10 years	>10 years
Denmark	10,7	13,0	16,1	60,2
France	4,2	8,0	11,9	75,9
Netherlands	2,1	8,3	22,4	67,2
Portugal	3,7	7,1	13,2	75,9
United Kingdom	6,4	18,1	22,4	53,1
USA	10,3	17,5	20,5	51,8

This explains the somewhat lower participation rates among men and the much lower fraction of workers with low tenures. Only for the United States, the rather steep experience profile in wages does not preclude job mobility among the elderly. The fact that the observed experience profiles is in fact mainly due to the high return to tenure (Teulings and Hartog, 1998:37) offers an explanation for this deviation. When an older worker loses his job in the United States, he gets rehired at a much lower wage because the tenure clock is set back to zero. The rest of this paper seeks to interpret and to evaluate these findings in greater detail.

3 Why is there a return to tenure in wages?

3.1 Introduction

In Section 2, we have shown that labour market outcomes, and in particular experience profiles in wages, differ widely between countries. The question is: why? For answering this question we need a theory that explains why we observe returns to tenure and experience in wages in the first place. Next, we can address the question why these patterns differ so widely across countries. The simplest explanation of a return to experience is straightforward. During their career, workers collect general human capital that makes them more productive. Since this human capital is fully embodied in the worker, he or she can take it to the firm that is willing to pay the highest wage. Hence, the worker captures the full return to this human capital. Theories explaining why there is a return to tenure are more complicated. I discuss them in Section 3.2, 3.3, and 3.4. The difference between the return to tenure and the return to experience turns out to be very subtle. What looks like a return to tenure at first sight, turns out to be a return to experience in practice. There is no clear cut distinction between both concepts. This might explain why the evidence on the cross-country differences in the return to tenure is less clear cut than the evidence on experience profile in general.

3.2 The role of specific human capital

Maybe the most popular rationale for why wages should go up with tenure is firm specific human capital. At least part of the human capital that the worker acquires during his career is specific to his current job. At the moment the worker quits from her current job, this human capital loses its value, by definition, for if it retains its value at another job, it is not job specific, but more general. The implication of existence of firm specific human capital is that the worker's productivity at her current job is higher than her productivity at her best alternative

employment.⁴ As long as there is a positive specific human capital, it is a waste of resources for the worker to change jobs.⁵ Hence, specific human capital drives a wedge between the worker's productivity at her current job and her productivity at the best alternative job. The other way around, if the value of the specific human capital becomes negative, it is a waste of resources *not* to change jobs: the worker's productivity at her best alternative job is higher than at the current job.

Why should the quasi-rents of specific human capital go to the worker?

Suppose for the sake of argument that this specific human capital tends to increase over time, at least on average. Would that be an argument for letting wages increase with tenure? At first sight the answer is affirmative. If a worker becomes more productive over time, his wage should increase in line. A second thought reveals that this is all but evident. There is a surplus between the productivity in the current job and in the best alternative employment. This surplus is called the quasi-rent of the firm specific human capital. As long as the worker paid at least the equivalent of her productivity at the best alternative employment, she has no incentive to change jobs. This provides a lower bound. Similarly, as long as the current employer does not have to pay more than the worker's productivity, this employer has no incentive to fire the worker either. This provides an upper bound. However, these two boundaries do not provide a guideline for how to divide the surplus between these bounds, the quasi rents of the specific human capital, between the worker and the firm.

The cost of specific human capital and its quasi rents should be shared in the same way

Do other principles provide such guidelines? In fact, there are two. The first principle is the so-called Hosios (1990) condition. The quasi-rents should be divided between the worker and the firm in accordance with their shares in the cost of the investment in firm specific human capital. If the firm made the investment, the firm should get the quasi rents, and hence wages should not increase with tenure. If the worker acquired all the firm specific human capital by studying at home, in his "own" time, the worker should get the quasi rents.

For social insurance, the assignment of all quasi rents to the firm is optimal

The second principle is that of risk aversion. Firm specific human capital is a risky investment. Knowing how to maintain IBM typewriters is a form firm specific human capital. It pays off only at the maintenance division of IBM. However, since these typewriters are hardly used these days, the value of this human capital has declined to zero. Since the quasi rents of specific

⁴ One might argue that the worker can have also human capital that is specific to her best alternative. Then, the concept of specific human capital should be generalized to a net specific human capital, that is, net compared to the worker's productivity in the best alternative employment.

⁵ Here one might argue that not only the worker's productivity matters, but also his appreciation of the job (e.g. commuting distance, the type of work, his colleagues, the work atmosphere etc.). A general concept of specific human capital includes these items. It complicates the argument, but would not change its conclusion.

human capital are risky returns it is optimal to assign them to the least risk averse party. Firms are likely to be less risk averse than workers, because they can diversify risks at the capital market, see Bovenberg and Teulings (2008). Combining both principles leads to the conclusion reached by Becker (1964), many years ago, that firms should pay for the cost of specific human capital, and hence should get all the quasi rents. Hence, specific human capital does not provide a rationale for a return to tenure, even when this specific human capital rises on average with the worker's tenure at the job.

Does giving up the return to tenure works in favour of capital?

It looks as though this theory ignores the issue of the grand conflict between classes, the distribution of income between labour and capital. By assigning all quasi-rents to the firm/employer/capital, labour seems to worse off. In the long run, this view is incorrect, due to an hold problem, see Bovenberg and Teulings (2008) for an extensive discussion. If the worker wants to capture some share of the quasi rents, it also has to pay part of the cost of investment – in fact: this is the Hosios (1990) condition. This makes workers' remuneration more risky, which workers do not like, since they are risk averse. If they do not pay for the cost of the specific human capital and nevertheless capture part of the quasi rents workers are worse off, because firms will postpone investing in firm specific human capital till the value of the worker's best alternative employment has come down so much –and hence: the quasi rent have gone up by so much- that firms can cover the cost of the specific investments even if they get only part of the quasi rent.

Summarizing

Specific human capital provides a straightforward explanation why workers do not switch jobs every minute, and why most jobs last for years, see Table 3. By switching jobs, workers (or for that matter: firms) waste the job specific human capital. However, specific human capital *per se* does not provide a rationale for wages depending job-tenure. To the contrary: in an ideal type world, the worker's wage should be equal to what she could get in her second best job-opportunity (implying a zero return to tenure), leaving all the risky quasi-rents to the firm, which can diversify these risk on capital markets.

3.3 Incentive based explanations for a return to tenure

Theories that explain why wages go up with tenure can be roughly divided into two categories: incentive based explanations and explanations that start from a bargaining framework. The latter are the topic of the next subsection, the former will be discussed here. I do not pretend to give a complete discussion of all incentive based theories. I discuss here two types of theories, first theories that start from search frictions, and second theories that start from incentives for performance on-the-job.

Search frictions yield wage-returns to tenure and/or experience

Theories with search frictions account for the fact that your best alternative employment is not readily available. If you decide to switch jobs today, you cannot start in a new job tomorrow. Opportunities for job switching come along randomly. If such opportunity occurs, you must decide whether or not to take the chance. But remember the analysis in section 3.1: your current employer is likely to capture some quasi rents, that is, the productivity in your current job is less than your wage. Hence, your current employer is likely to have an incentive to stop you from switching to a new job, for example by promising to pay you a higher wage in the future, or equivalently, by paying a no-quit premium on top of your wage. One way to do that is to pay a higher wage across the board. Burdett and Coles (2003) show that there is a more cost-effective strategy for the firm: let the wage increase gradually with tenure. The advantage of this strategy compared to a flat wage is that the payment of the no-quit premium is now conditionally on it having been effective. You only get the premium after having shown no to quit, that is, having build up some job tenure. If the prospect of receiving a return to tenure is insufficient to keep you in your current job, the employer does not have to pay the tenure/no-quit premium. A strange feature of their model is that though firms increase their wage payment with the worker's job-tenure, we do not observe a return to tenure in the data, but a return to experience. To understand why this is the case, consider two workers who start their career in the same type of job, paying the same starting wage and the same return to tenure. After some years, one of them is lucky. He switches jobs because the new job pays a higher wage. Hence, he has a shorter tenure and a higher wage. What looks like a return to tenure shows up in the data as a return to experience.⁶

Postel-Vinay and Robin (2002) work out a somewhat different strategy for the firm. Suppose you get an outside offer from another firm. If your current employer can observe your productivity at the other firm, both firms start a Bertrand competition game to hire the worker. The most productive of the two firms offers the worker a wage equivalent to her productivity in the least productive firm. Then, the worker will always choose the most competitive firm. On average, wages increase with tenure in this world, because every time the worker receives an offer from another firm, this starts a Bertrand competition game that may lead to a higher wage. This model yields a return to tenure as observed in the data.⁷

Tournament models: workers play to 'win' a promotion

An alternative approach to the issue is Lazear's (1979) theory of deferred compensation as a way to incentivize worker in their current job. It does not suffice for the firm just to have the worker at his office. He must provide effort for the firm. However, effort is hard to monitor

⁶ The reader might even think that this yields a negative return to tenure. This is incorrect because low paid workers have a greater chance of finding a better paid job. Both effects cancel exactly, see Topel (1991).

⁷ The reason is that workers who change jobs are prepared to take a wage cut, since switching to a more productive job increases the scope for future wage increases, when new job opportunities come along which invoke new rounds of Bertrand competition. In these competition games, a more productive firm will be able to offer a higher wage.

instantaneously. Lazear's idea is that the firm can postpone part of the compensation till a later date by promising to pay a tenure profile, that is, a higher wage in the future. If the worker does not work hard enough, the firm can fire the worker, who thereby loses his prospect of getting this tenure premium. The problem of this theory is that the firm can cheat. It can claim later on that the worker has not provided adequate effort, and hence that the worker can be fired legitimately, without paying the return to tenure. Hence, this model can only work if there are sufficient quasi-rents, so that even after paying the tenure premium the firm still has an incentive to retain the worker. An alternative solution to this problem is the so-called tournament model, see Lazear and Rosen (1981), later on elaborated in Malcomson (1984). The firm hires a group of say 10 workers, and it promises to promote best performing two of them to the rank of senior. Which workers have been the best performing is hard to verify for an outsider. However, it is easy to verify that the firm has indeed promoted two workers to a senior position, so that the firm cannot cheat. Since the firm has a clear incentive to promote the best performing workers, the firm has no incentive whatsoever to renege on this agreement by not promoting the best workers. The promotion scheme yields on average a return to tenure. Since the workers who have been promoted to a senior position need to be incentivised again, it makes sense to let the two promoted workers play a tournament for the position of senior of the seniors, yielding a further return to tenure.

But these theories cannot explain cross-country differences in experience profiles

What do all these theories have in common? That the incentives based theories for experience profiles in wages are largely independent of the cross country differences in labour market institutions. Search frictions are everywhere, hence firms have an incentive to pay no quit-bonuses in every country. Workers need to be incentivised everywhere, so that cannot explain why some countries have steeper tenure and experience profiles. When we want to explain why the returns to tenure differ among countries, bargaining theories offer a much better scope. These theories tend to be not as popular among economist as incentive-based theories. The reason is probably that incentive-based theories usually yield unique outcomes, while the outcome in bargaining models is much more fragile. However, this fragility of the outcome is exactly what we need, because it can explain why the labour market outcome can differ so widely across countries.

3.4 Bargaining theories of tenure profiles

Section 3.2 has discussed why specific human capital *per se* does not provide a rationale for a return to tenure in wages. However, specific human capital does yield quasi-rents.

Theoretically, the worker and the firm can negotiate a contract at the start of their employment relation specifying the distribution of these quasi-rents between both parties for the whole duration of the employment relation to avoid any future conflict on the distribution of these

rents. In practice, this is not realistic. It is hardly possible to foresee all future contingencies and some of the investments of both players during the course of the job are probably hard to verify, so that we cannot negotiate a contract conditional on these investments. Since such all encompassing contracts do not exist, future bargaining between the worker and the firm cannot be avoided in practice. This section considers a simple representation of this bargaining process, due to Buhai, Portela, Teulings, and Van Vuuren (2008).

Specific human capital is a risky investment

The starting point is a firm that faces a demand curve that follows a random walk –it shifts up and down randomly over time-. The firm hires workers if demand shifts upward, it fires workers if demand shifts downward, see Bentolila and Bertola (1990). However, upon hiring, the firm has to make a specific investment in the new worker: it has to learn the new hire the tricks of its production process. This specific investment makes the firm somewhat hesitant, first to hire the worker –it postpones hiring for some time, saving the cost of the investment- and then to fire the worker –again it postpones firing, hoping that demand will recover, because if the worker is fired, the specific investment is lost-. This drives a wedge between the hiring and firing bounds: it only hires new workers if its output price is at the high hiring bound, it only fires workers if its output price is at the low firing bound. In between both bounds, employment does not respond to fluctuations in the output price. Only if demand runs too far ahead of employment (pushing up the output price), the firm hires new workers, and only if demand falls too far below employment (pushing down the output price), the firm fires some of its workers.

Insider power enables incumbents to capture part of the quasi rents

In practice, learning new workers the tricks of the production process requires the cooperation of the incumbents. Hence, new hiring requires their consent, see Lindbeck and Snower (1990). Incumbents will only accept new hiring if that improves their own position. This requires that the firm commits itself to a LIFO lay off rule, which stipulates that incumbents will never be fired before all new hires are laid off, and a seniority profile in wages, which attributes senior worker (those with longer job tenures than their co-workers) higher wages than their junior colleagues, see Kuhn (1988) and Kuhn and Robert (1989) for an elaboration of this idea. In this way, insiders with a long tenure get a higher wage than outsiders who have just entered the firm. Whether those outsiders will ever be able to capture these insider rents depends on whether the firm will grow any further. If so, they will capture insider rents, if not, they will always remain the marginal worker. A return to seniority is therefore a risky return. Buhai *et.al.* (2008) provide strong empirical evidence for the existence of a return to seniority for Denmark, but in particular for Portugal.

Violation of the principle of optimal insurance

Clearly, this seniority profile in wages violates the principle of Bovenberg and Teulings (2008) discussed in Section 3.2 that risky returns can better be assigned to firms than to workers. If workers bear a share of the cost of the specific human capital that is equivalent to the net present value of their return to seniority, this seniority profile is accordance with the Hosios (1990) condition. In this case there is a trade off between both principles. Moving the cost of specific human capital would allow workers to get rid of their risky return and to obtain better insurance.

If workers do not bear a share in the cost but nevertheless bargain for a return to seniority, then the Hosios condition is violated and the return to seniority leads to an hold up problem, where the firm postpones hiring new workers even further –that is: it sets the hiring and firing bounds further apart-. The greater wedge between the hiring and the firing bound implies a higher average job tenure. The evidence in Section 2 clearly supports the notion that countries with steep experience profiles have smaller job mobility, again, with the exception of the United States. If there is a hold up problem, outsiders will be either unemployed or they will be trapped in low productivity jobs that require little specific human capital (because these jobs do not suffer from the hold up problem). High unemployment (or, equivalently, low participation) and a high variety in productivity among employed workers are therefore *prima facie* evidence for a hold up problem.

Reduction of investment in specific human capital if firms pay for that

In this simple model with a fixed investment in specific human capital at the start of a job, the greater wedge between the hiring and the firing bound also implies a lower level of specific human capital, because each job change requires new specific investments to be made. In a more general model, where parties can increase the level of specific human capital over the duration of the job, a longer duration might lead to more specific human capital, so that the conclusion regarding the relation between average job duration and the level of specific investment is less clear cut. Here, economic theory has not provided proper models yet. However, extending our model with EPL suggests that there is in indeed a hold up problem in the countries with a high return to tenure, France, the Netherlands, and Portugal. This is the topic of the next section.

4 The role of EPL and UI

4.1 EPL as fixed transfer

What is the effect of EPL in this type of world? The best way to start the analysis of this issue is to consider what happens in the case that EPL takes the form of a fixed transfer from the employer to the worker who is to be laid off; while this transfer is a firing cost from the point of

view of the firm, it is a firing compensation from the point of view of the worker. It has two immediate effects: first, it makes the actual lay off more expensive for the firm, and second, it strengthens the bargaining position of the worker since she knows that if the firm wants to fire her for not reaching agreement on a proper wage, the firm has to pay the worker firing cost . Hence, other things equal, wages will be higher with EPL. However, this higher wage bill works in the opposite direction as the firing cost itself: it makes firing the worker more attractive from the point of view of the firm.

EPL has no effect on firing when bargaining is 'efficient'

Buhai *et.al.* (2008) show that the both effects on the firing bound (almost)⁸ cancel. The intuition for this result is simple. Close to the firing bound, both the worker and firm are indifferent between the continuation of the employment relation and separation, with or without EPL, for if the worker preferred continuation of the relation, while the firm did not, the worker would have given up part of her wage claim in the bargaining process, in exchange for the continuation of the employment relation. The worker would continue to do so till the point where she is indifferent between continuation and being fired. The only difference EPL makes is that it changes the cost calculation of the both parties. The firm considers the transfer in case of firing as a cost that has to be offset by the saving on the expected wage bill that is achieved by firing; the worker considers the transfer as an attractive compensation, that she is only willing to forego if it is offset by an expected surplus of their wage above the alternative wage. The gain for the one is the loss of the other, for the transfer as well as for the expected wage surplus. Hence, they cancel.

However, firing cost also has an effect on hiring. There the two immediate effects work in the same direction. Firing cost discourages the firm to hire new workers since it is more expensive to fire them if necessity arises. Moreover, firing cost improves the bargaining position of workers, and hence their wages, also making hiring less attractive. Hence, the hiring bound goes up: vacancies will have to be very productive before firms are willing to fill them. Since the hiring bound goes up while firing bound remains almost untouched, the net effect is a greater distance between both bounds. Hence, with fixed firing cost, jobs will last longer on average and wages will be higher. The higher hiring bound implies that there is less specific investment: only in case new jobs are very productive, firms will take the risk to make these investments. Many workers are trapped in jobs whose productivity has become low due to negative random shocks. They cannot find new jobs, because do not want to make investment due to the firm's hold up problem: workers have sufficient bargaining power over wages to capture part of the quasi rents of the specific investment, while they do not contribute to its cost.

⁸ There is a very small negative effect on the firing bound (implying that the firm fires the worker later), see Buhai *et.al.* (2008) for an explanation.

France as a special case: EPL not as a transfer, but as red tape

France stands out as a special case. There, EPL does not take the form of a transfer from the firm to the worker, but as red tape (or equivalently, as a tax where government does not benefit from the revenues). In that case, workers do not benefit from being laid off by being able to collect firing compensation and EPL has an equivocal negative effect on the firing bound, thereby inducing firms to be more reluctant to lay off their workers.

EPL does not contribute to social insurance, to the contrary

Contrary to the popular view that firing cost is a form of social insurance, firing cost do not contribute to insurance at all. Firing cost raise the wage of incumbents above the market wage, while making it harder for unemployed outsiders to find a job, since firing cost reduces job creation. Hence, outsiders face greater uncertainty, while for insiders the prospect of getting a compensation for firing exactly offsets the risk of losing a high paying job (where the high pay is the immediate consequence of the firing cost). On a lifetime basis, one can show that the expected future advantage as an insider is more than offset by the initial disadvantage as an outsider. Indeed, Clark and Postel-Vinay (2006) show that older workers in countries with extensive EPL feel much more insecure than their colleagues in countries with a more flexible labour market.

EPL improves efficiency if workers pay for specific human capital

What if the hold up problem is the other way around: the worker has to pay the cost of the specific investment, while the firm capture part of the rents? Then, firing cost raises efficiency, because it makes it easier to satisfy the Hosios (1990) condition that the cost and the quasi rents of the specific investments should be shared among the worker and the firm in the same proportions. Hence, workers are more willing to invest in new jobs (now, they are the investors, not firms), so that firing cost pushes up job creation and specific investment. Empirically, this would imply that average job durations are shorter in countries with high firing cost. This conclusion is at odds with the data presented in Section 2.

4.2 Tenure related EPL

In practice, firing cost is not a fixed transfer. The transfer increases with the worker's job tenure in most countries. For example, in the Netherlands, workers get one month of pay for every year of tenure. What difference does this institutional setting have for the labour market outcome? Since firing cost increases with tenure, the worker's bargaining position improves over the duration of the job. Hence, her wage goes up with tenure, leading to a steeper tenure profile in wages. Like before, the net effect of the higher firing cost and the higher wages on the firing boundary is (almost) zero. Again, the firing cost pushes up the hiring bound, so that there is less job creation.

Explains cross country differences in experience profiles and job turnover

The empirical predictions of this model are therefore that countries with extensive tenure related EPL have steep experience profiles in wages and that EPL reduces job turn over since it drives a wider wedge between the hiring and the firing bound. A comparison between France, the Netherlands, and Portugal on the hand and Denmark on the other hand confirms this prediction. The former group has extensive tenure related EPL, steep experience profiles, and low job turnover, while the reverse holds for Denmark. The United States does not fit this pattern: it has high job turnover, as is expected for a country with little EPL, but it also has steep experience profile. We return to this issue later on.

Differences in participation and unemployment rates are small

What are the predictions for the effect of EPL on the participation and unemployment rates for elderly males? That depends largely on what happens to those elderly workers who loose their job. As long as they find a job easily, tenure related EPL will have hardly any effect on their participation and unemployment rates. The fact that EPL is related to tenure by itself does not affect their chances to get rehired negatively, for an elderly worker seeks a new job after being fired by his former employer, his tenure clock starts again at zero, and so does his entitlement to EPL. Whether this is fair or desirable is another issue. However, there is a reason why EPL makes it more difficult for elderly to find a new job. Above a certain age, it will be hard for a worker to find a new job anyway, just because the time till retirement is too short to recoup the cost of the investment in specific human capital. EPL increases the wedge between the hiring and the firing bound. Hence, firms will stop hiring workers at a lower age. However, this effect is much smaller than the effect on job mobility *per se*. This conclusion is confirmed by the data in Table 3: participation rates among elderly men are somewhat lower in the countries with extensive EPL, but the difference is small compared to the huge difference in job mobility among elderly.

4.3 Last wage related EPL

In practice, EPL is not only related to the job tenure of the worker. It is also related to her wage. For example, in the Netherlands the compensation to a worker who is fired is one month of her wage at the moment of firing per year of job tenure. Hence, this payment is directly related to the last earned wage. The fact that a worker's firing compensation is related to his last wage has some undesirable features. When the compensation is unrelated to the last pay, the bargaining over wages is efficient. However, when accepting a lower wage translates automatically into a reduction of the firing compensation, the worker is less willing to accept a wage cut. He has two reasons for being hesitant. First, if he is fired at some future point of time, he will receive a lower compensation. Second, a lower firing compensation weakens his future bargaining

position, so that even if he will not be fired, the lower compensation is going to affect his future income.

Last pay related firing compensation reduces wage flexibility and increases job loss

The last pay related firing compensation therefore reduces the downward flexibility of wages. It does so in particular for high job tenures, since the firing compensation is higher for these workers. Hence, they have more to lose by giving up part of their pay, namely a luxurious firing compensation and a strong bargaining position. This leads to inefficient bargaining: if the worker and the firm were free to negotiate a current wage without affecting the future bargaining position of the worker, they would agree on a lower wage, thereby making the continuation of the employment relation attractive to both players. However, the firm cannot commit today of not using its stronger bargaining position tomorrow. Therefore, the worker will not give in, and hence, the firm will fire the worker. The inability of the worker and the firm to commit to not using their bargaining power in the future leads to inefficient separations today. Because the worker's firing compensation increases with job tenure, this mechanism becomes stronger over time. Since job tenure is highly correlated with experience (and hence: age), elderly workers are more heavily affected.

4.4 The difference between EPL and UI

The discussion focuses on the effect of EPL till so far. As Table 1 shows many countries that have extensive EPL also have a system of UI. What will be the effect of UI? UI differs from EPL in two aspects.

EPL is a cost to firms, UI is not

First, it offers workers a compensation (like EPL), but without being a cost to firms. Hence, it does not discourage firms from firing, while it strengthens the bargaining position of workers, thereby pushing up wages. Where the net effect of EPL on firing is small, since the direct effect and the indirect effect via wages largely cancel, the net effect of UI is to encourage firing. In fact, unlike EPL, which is just a transfer from the firm to the worker, UI acts as a subsidy to firing, so it is hardly surprising that it has an upward effect on the number of separations. On balance, EPL is therefore less disruptive than UI, which is reflected in the extensive literature on the welfare gains from experience rating UI –that is: shifting part of its cost to firms-.

UI is conditional on remaining unemployed, while EPL is not

The second difference between UI and EPL is that duration of UI is contingent on the worker remaining unemployed while EPL is usually paid out unconditionally. Conditioning UI on unemployment has both benefits and costs. On the benefit side, the compensation is more closely related to the actual damage. This reduces the cost of the system and reduces its

disruptive effect on wage bargaining, since a worker who is laid off can only benefit from UI to the extent she is willing to forego the option of taking a new job. On cost side, the conditioning of UI on unemployment acts as a disincentive for workers to accept a new job. This leads to an inefficiently low employment level.

On all the other aspects, the effect of EPL and UI are largely similar. The worker's entitlement to UI tends to increase with job tenure and experience, leading to a stronger bargaining position for more senior workers, and hence to a steeper experience profile. The fact that UI is related to the last earned income leads to lack of downward flexibility of wages, and hence to inefficient separations. Again, the inflexibility increases with the length of the UI entitlement, and hence with the tenure and experience of the worker.

Institution for wage setting explain the outcome in the United States

What explains the deviating outcome for the United States? I put forward an hypothesis consistent with the empirical evidence. The United States has highly decentralized institutions for wage setting. While in most other countries, there is some form of centralization in wage bargaining, where trade unions or representatives of workers bargain over the wages for all workers simultaneously, wage setting is largely dealt with at the individual level in the United States. This makes that wages are much more sensitive to the profitability of the worker's employer in the United States than in the other countries in our sample, see Teulings and Hartog (1998:175) for evidence on this issue. Workers capture a larger part of the quasi-rents in the United States. This explains why the returns to tenure in United States are much higher than in the other countries in our sample, see Teulings and Hartog (1998:37). So where EPL and UI yield experience profiles in wages in France, the Netherlands, and Portugal, there rent extraction by individual wage bargaining achieves the partly same in the United States, though the experience profile in the United States is much flatter than in France and the Netherlands.

5 The political economy of EPL and UI

5.1 If EPL and UI are so bad, why do so many countries have them?

The conclusion of the previous analysis is unequivocal: EPL and UI that are related to the job tenure and the last pay of the worker disrupt the labour market, and in particular the labour market for elderly. If this disruptive effect is so clear, then why are countries like France, the Netherlands, and Portugal trapped in a bad equilibrium with extensive EPL and UI for elderly? The answer is twofold.

The cost of EPL are only felt in the long run

The first mechanism that makes the introduction of UI and in particular EPL a tempting perspective for politicians is that its introduction feels like free lunch in the short run. EPL

protects workers from being fired, thereby strengthening their bargaining position *vis-à-vis* their current employer. In fact, the introduction of EPL is equivalent to a transfer of part of the quasi-rents from past investment in firm specific human capital from the firm to its workers. This transfer comes at zero cost for the government. So, firms are expropriated to the benefit of workers. Free lunches almost never exist. After the EPL is introduced, firms realize that the quasi-rents of future investments in specific human capital will be partly expropriated by their workers, so firms reduce job creation to weaken the bargaining position of workers, offsetting the effect of the introduction of EPL. Hence, outsiders loose. In that sense, EPL is a transfer not so much from capital to labour, but a transfer between generations, from the future to the present, just as running a large government deficit tends to be a transfer from future generations to generations currently living. However, these intergenerational effects become only transparent in the course of time. Moreover, part of the outsiders –future generations- do not vote. Hence, their interests have a lower weight in the competition of politicians for the support of the electorate. Only a broad public discussion on these effects can help to establish a general awareness of these long term cost of EPL. The example of Denmark shows that this road can be travelled in practice.

Extensive EPL and UI is self-reinforcing

The second mechanism is that systems of EPL and UI are self-reinforcing. These systems raise the pay of older workers above youngsters. Since this high pay for elderly applies in particular to workers with a long job tenure –because EPL is usually related to job tenure- losing the current job is much more threatening in economies with such systems than in economies without, the temptation for politicians is to take further measures to avoid older workers to loose their job. The fact that elderly workers find it more difficult to find a new job in countries where such systems are in place only adds to this problem.

5.2 How to get back to a well functioning labour market for older workers?

The fact that a system with extensive EPL and UI for elderly is self-reinforcing suggests that is difficult to get out of the bad equilibrium of EPL and UI. The Dutch policy debate shows that that is indeed the case. The experience profiles in wages are seen as a state of nature and as untouchable right. Demotion (lower pay at the end of the career) has been a taboo topic for many years. A reform of the current system of EPL was put on the political agenda in 2007, to no avail. This opposition is not solely based on the simple calculation of their private interest. It is also based on a strong feeling that the current situation represents a natural state of affairs, a modern version of a divine order, backed by absolute rights. With that mindset it is hard to even think of another system, let alone to conceive that this system would actually be implemented.

Contrary to the standard division between the legislative and judiciary power, part of the “legislation” on employment protection was not installed by politicians but by judges. They have somewhat trimmed down the system recently. Their standard argument for maintaining the current system of EPL -that EPL is a proper compensation for the cost of job loss- underscores the argument that the system is self-reinforcing: it is extremely difficult to get through the notion that EPL is also the main cause for job loss being so costly.

Strategies that do not respect the interests of insiders have little chance of success

A political feasible strategy to get out of the bad equilibrium should benefit from the fact that a reform is Pareto improving, or more precisely, it increases total wealth. Hence, it is possible to design a reform path where nobody loses and there are only winners, at least in theory. A strategy based on heroic attack on the institutions that allow current generation of insiders to capture the rents seems to have little chance of success. They generate their own opposition.

A successful strategy must be based on four principles:

1. Common understanding of the drawbacks of EPL

A successful strategy must be based on a common understanding of the drawbacks of the current system of EPL and UI, so that current generations understand why everybody can benefit from a reform of the system and so that future generations of politicians do not fall into the temptation to reinstall the system, just because nobody remembers the drawbacks that led to the abolishment of the system in the first place.

2. Diverging interest of generations: older workers

The strategy must respect to diverging interest of generations. The current generation of older workers, let say these of age between 55 and 65, fears the abolishment of the system, both because it takes away their protection in case of job loss, and because it undermines their bargaining position *vis-à-vis* their employer. Hence, in exchange for this reduction in rights they get both specific and general tax deductions. The specific tax deductions are targeted to older workers who lose their job and who are willing to accept a new job at a much lower pay. This tax relief compensates these workers for the lower pay in their new job and for the fact that they did not receive firing compensation for the loss of their previous job. The difference between EPL and this tax deduction is that this tax relief is contingent on the worker accepting a new job, while EPL is not. The general tax deduction for working elderly compensates them for the fact that even if they are not laid off, they suffer from the reduction of EPL and UI since their bargaining position deteriorates, and hence their wages will go down gradually. Since firms benefit from this reduction in EPL, it is reasonable to let them pay part of this reform by a temporary increase in the tax rate for corporate profits. Furthermore, since the abolishment of

EPL and UI is a transfer from current to future generations, it reasonable to offset this intergenerational transfer by a temporary increase in the government budget deficit.

3. Diverging interest of generations: youngsters

For youngsters, these tax deductions should not apply. Youngsters reap both the benefits and the cost of the reform. The benefits come from a smaller hold up problem for firms, and therefore more job creation, lower unemployment, and higher wages for youngsters early in their career. The drawbacks for youngsters come from the fact that they cannot benefit from the advantages of EPL and UI when they are old. Hence, they will not benefit from the large experience profile in wages when they become elderly workers. We know that the net effect of these two partial effects on their lifetime wealth is positive. Hence, abolishing the tax deductions for older workers by the time that they enter that age category is just reasonable.

4. Trade unions and employer federations should bargain for flatter wage profiles

A final ingredient of a successful strategy is that trade unions and employer federations realize that wage profiles should become flatter. In theory, the weakening of older workers' bargaining position due to the abolishment of EPL and UI should achieve that automatically. That theory is likely to apply in the United States, where wage bargaining is decentralized up till the level of the individual contract, but it does not apply to most European countries where various degrees centralization in wage setting introduces large rigidities in the adjustment of the structure of relative wages. A common understanding of the necessity of adjustment, and of the degree to which negative income effects are offset by tax policies, is crucial for an implementation that is broadly accepted.

References

Autor, D.H., W.R. Kerr and A.D. Kugler (2007) Does employment protection reduce productivity? Evidence from US states, *The Economic Journal*, vol. 117, pp. 189-217.

Becker, G.S. (1964), *Human capital, A theoretical and empirical analysis, with special reference to education*, Chicago University Press, Chicago.

Bovenberg, A.L. and C.N. Teulings (2008), *Rhineland exit*, CESifo Working Paper No. 2186.

Bentolila, S. and G. Bertola (1990), Firings costs and labour demands: how bad is eurosclerosis?, *Review of Economic Studies*,. vol. 57, pp. 381-402.

Bentolila, S. and G. Saint-Paul (1992), The macroeconomic impact of flexible labor contracts, with an application to Spain, *European Economic Review*, vol. 36, pp. 1013-1047.

Bertrand, M. and S. Mullanaithan (2003), Enjoying the quit life? Corporate governance and managerial preferences, *Journal of Political Economy*, III(5), pp. 1043-1075.

Blanchard, O. and P. Portugal (2001), What hides behind an unemployment rate: comparing Portuguese and US labor markets, *American Economic Review*, vol. 91, pp. 187-207.

Buhai, S., M. Portela, C.N. Teulings and A. van Vuuren (2008), *Returns to tenure or to seniority?*, Discussion paper 08-010/3, Tinbergen Institute.

Burdett, K. and Coles, M. (2003), Equilibrium Wage-Tenure Contracts, *Econometrica*, vol. 71, no. 5, pp. 1377-1404.

Clark, A. and F. Postel-Vinay (2006), *Job Security and Job Protection*, internal paper, University of Bristol.

Deelen, A., E. Jongen and S. Visser (2006), Employment protection legislation. Lessons from theoretical and empirical studies for the Dutch case. *CPB document*, 135.

Hartog, J. and C.N. Teulings (1998), *Corporatism or competition*, Cambridge: Cambridge University Press.

Hosios, A.J. (1990), On the efficiency of matching and related models of search and unemployment, *Review of Economic Studies*, vol. 57, pp. 279-98.

Kuhn, P. (1988), A nonuniform pricing model of union wages and employment, *Journal of Political Economy*, vol. 96, pp. 473-508.

Kuhn, P. and J. Robert (1989), Seniority and distribution in a two-worker trade union, *Quarterly Journal of Economics*, pp. 485-505.

Lazear, E. P. and S. Rosen (1981), Rank-Order Tournaments as Optimum Labor Contracts, *The Journal of Political Economy*, vol. 89, no. 5, pp. 841-864.

Lindbeck, A. and D. Snower (1990), Do cooperation and harassment explain involuntary unemployment?, *American Economic Review*, vol. 80, pp. 167-188.

OECD (2004), *Benefits and Wages*, Paris.

Postel-Vinay, F. and Jean-Marc Robin (2002), Equilibrium Wage Dispersion with Worker and Employer Heterogeneity, *Econometrica*, vol. 70, no. 6, pp. 2295-2350.

Topel, R.H. (1991), Specific capital, mobility and wages: wages rise with job seniority, *Journal of Political Economy*, vol. 99, pp. 145-176.