1. Unemployment

April 1, 2007

The effects of state-mandated employment protection

- Why? Institutions and outcomes. Reallocation, unemployment, growth.
- Basic facts.
- Two dimensions: Transfers versus costs (waste); uncertainty.
- Effects on labor costs and wages. When does bargaining take place? Can the firm commit? Bonding.
- Effects on job creation, destruction, and unemployment.
- Evidence. micro/macro.
- Open issues. Pol economy of EP. Optimal EP.

1. Basic facts

- Constructing measures of employment protection. Objective, subjective. Dimensions: Permanent contracts, temporary contracts. OECD Employment Outlook Figure 3.9
- One index fits all?
- No clear cross-country relation between EP and unemployment.
- Clearer relation between EP, u flows and duration. (Blanchard Portugal Figure 4)
- No clear relation EP job flows.
- Relation participation rates and employment protection: causal? (Mediteranean countries).

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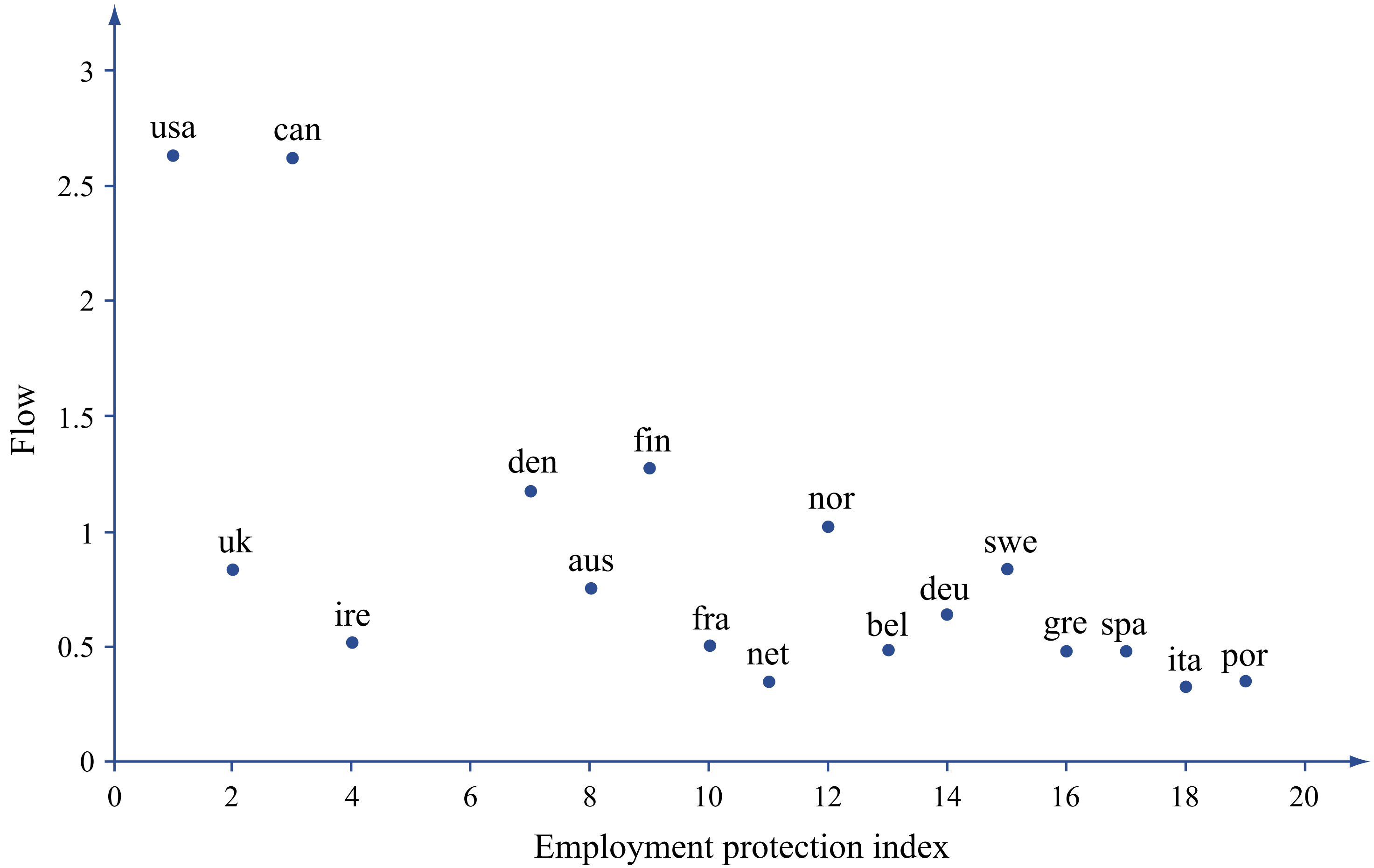
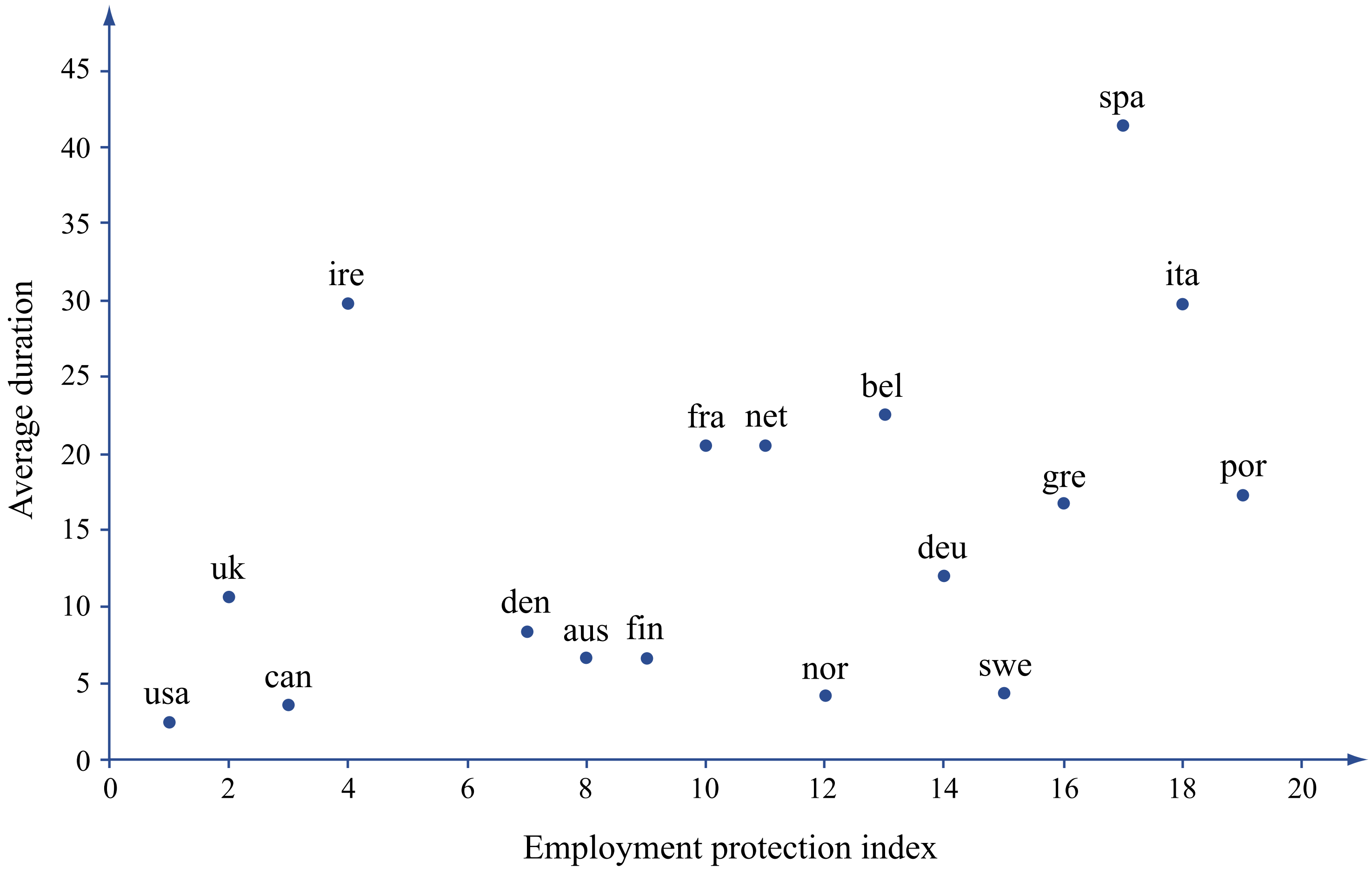
Figure 3.9. Overall summary index of EPL strictness and its three main components, 2003
OECD. OECD Employment Outlook 2006. Paris, France: OECD, 2006. ISBN: 9789264023840.
(http://www.oecd.org/document/59/0,3343,en_2649_34731_36944315_1_1_1_1,00.html)



Flow into unemployment versus EP rank

Figure by MIT OCW.

Nr. 5



Unemployment duration versus EP rank

Figure by MIT OCW.

Nr. 6

2. Introducing employment protection in the DMP model

- Same assumptions as before. y from cdf $G(y)$, and Poisson parameter λ.
- Two types of state-imposed costs. Severance payments, T. Pure firing costs, F (administrative/legal steps, waste).
- Assume labor contracts now include the wage $w(y)$ and—clear why later—, potential payment of workers to firms contingent on separation, X.
- Effects of T and F on wages and the threshold. thus on job creation, destruction, and unemployment?

The value equations:

$$rV = -c + q(\theta)(J(\bar{y}) - V)$$

$$rJ(y) = (y - w(y)) + \lambda[G(y^*)(V - F - T + X) + \int_{y^*}^{1} J(y')dG(y') - J(y)]$$

$$rU = b + \theta q(\theta)(E(\bar{y}) - U)$$

$$rE(y) = w(y) + \lambda[G(y^*)(U + T - X) + \int_{y^*}^{1} E(y')dG(y') - E(y)]$$

3. Wage bargaining

If firm and worker do not agree, does the firm have to pay the severance payments, and the firing costs?

- If not: Can think of ex-ante wage setting, with commitment by the worker not to renegotiate.
- If yes: Then can think of ex-post wage setting.
- Maybe, ex-ante first time around, then ex-post when renegotiate after a shock. (Pissarides version).

If ex-ante, with symmetric Nash:

$$(J(y) - V) = (E(y) - U)$$

If ex-post:

$$J(y) - (V - T - F) = E(y) - (U + T)$$

Deriving the wage under ex-ante bargaining

As before:

$$V = 0 \;\Rightarrow\; J(\bar{y}) = c/q(\theta)$$

$$rU = b + \theta q(\theta)(E(\bar{y}) - U) = b + c\theta$$

$$\begin{aligned}(r+\lambda)(J(y) - E(y)) \quad &= \quad (y - 2w(y)) \\ & \quad + \lambda[G(y^*)((V - T - F + X) - (U + T - X)) \\ & \quad + \int_{y^*}^{1} (J(y') - E(y'))dG(y')]\end{aligned}$$

Use $(J(y) - E(y)) = (V - U) = -U$ to get:

$$(r+\lambda)(-U) = (y-2w(y))+\lambda G(y^*)(-U-F-2T+2X)+\lambda(1-G(y^*))(-U)$$

Simplify and use rU from above to get:

$$w(y) = \frac{1}{2}(y + b + c\theta) + \lambda G(y^*)(X - T - \frac{F}{2})$$

Many ways of achieving it: different combinations of $w(y)$ and X.

- If $X = 0$, wage lower by $-\lambda G(y^*)(T + F/2)$.
- Or if $X = T + F/2$, pay the same wage as before: $w(y) = (1/2)(y + b + c\theta)$. In case of separations, workers pay back severance and half of firing costs.
- Payment upfront? "Bonding". Realistic? Realistic approximations: Steep wage contracts.

4. Job creation with ex-ante wage bargaining.

Assume (for convenience, as the division between $w(y)$ and X does not matter for job creation), $w(y) = (1/2)(y + b + c\theta)$, and $X = T + F/2$.

$$J(\bar{y}) = c/q(\theta)$$

$$(r + \lambda)(J(\bar{y}) - J(y^*)) = \frac{1}{2}(\bar{y} - y^*)$$

$$J(y^*) + T + F - X = J(y^*) + F/2 = 0$$

This implies

$$\frac{c}{q(\theta)} = \frac{1}{2(r + \lambda)}(\bar{y} - y^*) - F/2$$

Interpretation (remember $\beta = 1/2$). Sharp distinction between transfers (legally imposed severance payments) and other costs.

5. Job destruction with ex-ante bargaining

Assume first that the worker and the firm take the privately efficient decision. Separate if surplus of match is equal to zero. So y^* given by:

$$S(y^*) = J(y^*) + F + E(y^*) - U$$

From the value equations for $J(y)$ and $E(y)$, adding and subtracting $\lambda(1 - G(y^*))(J(y^*) - E(y^*))$ on the right:

$$\begin{aligned} r(J(y)+E(y)) \quad &= \quad y + \lambda G(y^*)(U-F) + \lambda \int_{y^*}^{1} (J(y')+E(y')-J(y^*)-E(y^*))dG(y') \\ &\quad +\lambda(1-G(y^*))(J(y^*)+E(y^*)) - \lambda(J(y)+E(y)) \end{aligned}$$

Apply to $y = y^*$, and use the Nash bargaining equation, to get:

$$y^* = rU - rF - \frac{\lambda}{r+\lambda} \int_{y^*}^{1} (y' - y)dG(y')$$

From above, $rU = b + c\theta$, so the threshold y^* is given by:

$$y^* = b + c\theta - \frac{\lambda}{r+\lambda}\int_{y^*}^{1}(y' - y^*)dG(y') - rF$$

- Interpretation. Effect of F, T.
- What if the firm takes the decision unilaterally? If it does, then y^* is given by:

$$J(y^*) = -F - T + X$$

From Nash bargaining, $E(y^*) - U = J(y^*)$, so

$$S(y^*) = -2F - 2T + 2X + F$$

For $S(y^*) = 0$, it must be that $X = T + F/2$

- Do we observe such transfers? What if not?

Verify that $J(y^*) = -F - T + X = -F/2$ gives the same threshold:

$$\begin{aligned} rJ(y^*) &= \frac{1}{2}(y^* - b - c\theta) + \lambda[-G(y^*)F \\ &+ \frac{1}{2}(r+\lambda)\int_{y^*}^{1}(y' - y^*)dG(y') + (1 - G(y^*))J(y^*) - J(y^*)] \end{aligned}$$

where we added and subtracted $(1 - G(y^*))J(y^*)$. Simplifying gives the same expression for y^* as above.

6. Equilibrium

- Job creation.

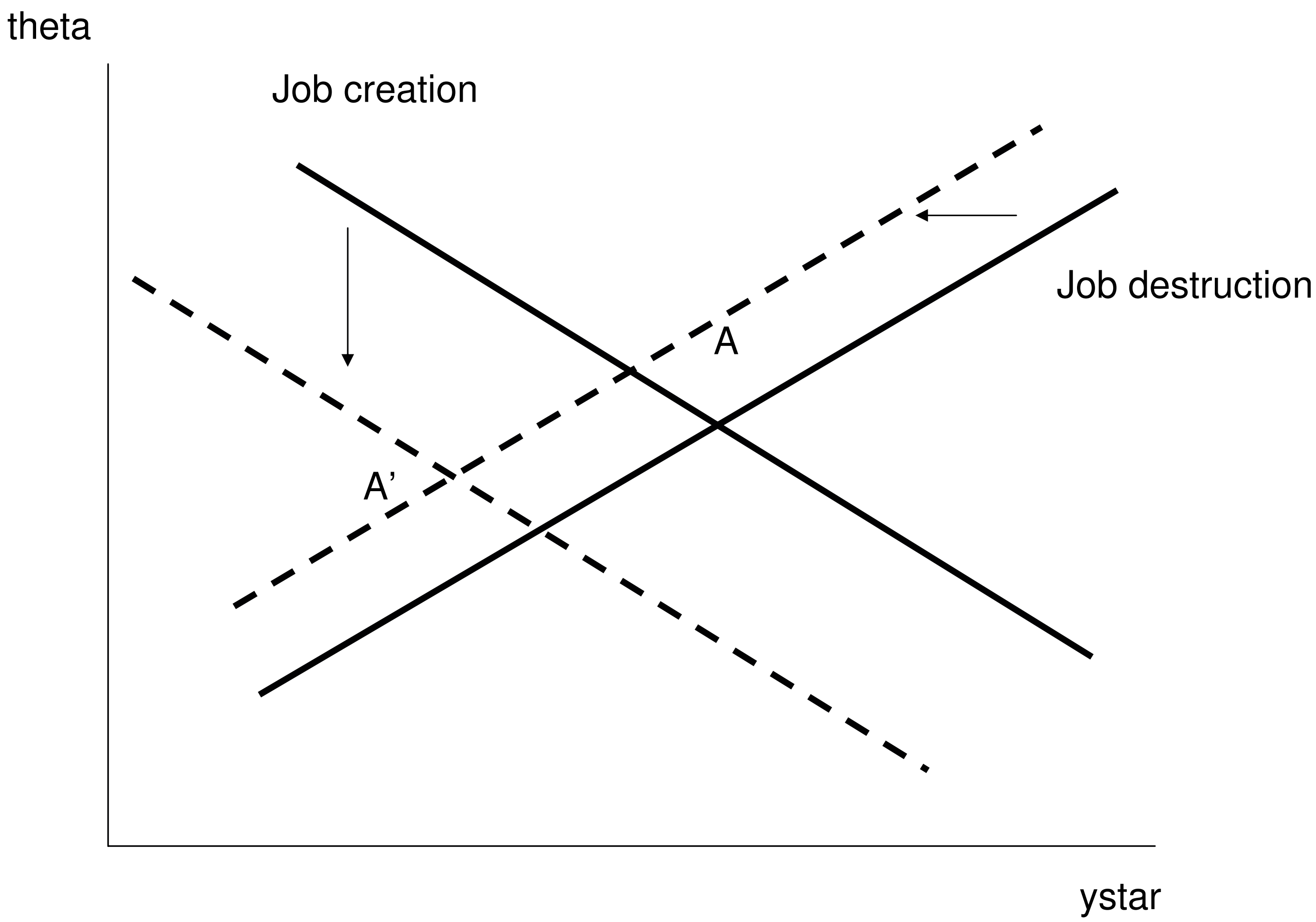
$$\frac{c}{q(\theta)} = \frac{1}{2(r+\lambda)}(\bar{y} - y^*) - \frac{F}{2}$$

- Job destruction

$$y^* = b + c\theta - \frac{\lambda}{r+\lambda}\int_{y^*}^{1}(y' - y^*)dG(y') - rF$$

- Effect of an increase in F? Shifts JC down, JD to the left. y^* decreases: lower reallocation. θ ambiguous ; unemployment duration may increase or decrease.

Effects of an increase in F on job creation and job destruction



Renegotiations, inefficient separations. Open issues

Renegotiation. After hiring, workers may want to renegotiate. In this case, if breakdown, firm has to pay $T + F$, workers receive F, so, under Nash bargaining:

$$J(y) - (V - T - F) = E(y) - (U + T) \Rightarrow E(y) - U = J(y) + 2T + F$$

Different formalizations:

- Renegotiation right after hiring. so ex-post from start (notes at the end of the slides. a number of ambiguities)
- Ex-ante at hiring, ex-post when new productivity draw and renegotiation (Mortensen-Pissarides). Leads to insider/outsider wages. Actually easier analytically.
- Special case with no matching frictions (for example my notes on unemployment, book part of web site).

- Implications. In general, both T and F increase wages, and lead to lower JC and thus lower equilibrium θ. Longer unemployment duration.

Efficient separations?

- Efficient separations, and Coasian bargains. We do not see X being paid. (Bonding does not do it per se.) Then, both T and F likely to decrease y^*.

  Two issues conceptually separate (but related). can have ex-ante or ex-post wage setting, and efficient/inefficient separations.

- If ex-ante wage setting $E(y^*) - U = J(y^*)$, $X = 0$, and separation left to the firm, and $J(y^*) = -F - T$, then

$$E(y^*) - U - T = -F - T + T = -F - 2T$$

- So will workers quit before? Even if no severance payments, $E(y^*) - U = -F - T < 0$

Quits versus layoffs. Does the distinction make sense? What does it capture?

- Efficient versus inefficient separations?
- Even if separations are efficient, origin of the shock (b or y?)
- Asymmetric information (b and y private information). (Hall and Lazear). Some inefficient layoffs/quits.

Some micro-evidence

- EP and flows across countries. Hard/impossible to convincingly control for other variables.

- Differences in EP across sectors/types of firms within a country. (Typically large or small firms) Better but still hard to control for sectoral differences.

  Looking across sectors and countries. (US sectors as no EP benchmarks. not quite true: Experience rating)

  Haltiwanger-Scarpetta-Schweiger. World Bank WPS 4070, 2006

- Changes in EP across time affecting sectors/types of firms differently.

  Differences across US states in the adoption of employment-at-will exceptions. Autor-Kerr-Kugler 2006 (look at flows, and productivity)

  Kugler-Jimeno-Hernanz on Spanish labor market reforms, 2005

  Kugler-Pica on Italian labor market reforms, 2006.

Kugler and Pica on Italy

The 1990 reform:

- In case of layoffs, can take employers to court, and argue dismissal is unfair. If unfair, payments range between 5 and 14 months.
- Until 1990, firms under 15 workers exempt for these rules. In 1990, now subject to rules, with payments from 2.5 to 6 months.

The data set

- Matched firm-employee data set, from Social Security Administration. 1986-1995. Random sample of workers. Original sample: 1/90. Sample for paper 1/10 of this.

  Information for each worker about characteristics, current employment status, firm identifier.

  For firms, location, sector, number of employees, number of employees, date of incorporation and termination.

Regressions

For workers, 2 regressions (linear or probit): Separations and accessions.

$$m_{ijt} = D_t + D_k + D_r + X_{ijt}\beta + \delta_1 D + \delta_2(D * Post_t) + \epsilon_{ijt}$$

where i is worker, j is firm, t is time, m_{ijt} is a dummy, 1 if move (separation, or accession), D_t, D_k, D_r are time, sectoral, and regional dummies. D is 1 if worker employed in small firm, 0 otherwise. $Post_t$ is 1 post-1990.

For firms: volatility of employment.

$$\|\Delta L_{jt}\| = D_t + D_k + D_r + Z_{jt}\beta + \delta_1 D + \delta_2(D * Post_t) + \epsilon_{ijt}$$

And probability of entry and exit:

$$e_{jt} = D_t + D_k + D_r + W_{jt}\beta + \delta_1 D + \delta_2(D * Post_t) + \epsilon_{ijt}$$

where e_{jt} is a dummy equal to 1, if entry—or if exit.

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Figure 1: Yearly Accession Probabilities by Firm Size.
Figure 2: Yearly Separation Probabilities Conditional on Firm Size.

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Table 3. Effects of the 1990 Reform on Accessions and Separations.

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Table 4. Effects of the 1990 Reform on the Change in Firm-level Employment.

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Table 5. Effects of the 1990 Reform on Firms' Entry and Exit.

Two issues. I. Political economy of employment protection. Notes

- Protect insiders at the expense of new entrants. Median voter is the insider, by a large margin.

- Introduction of fixed-term contracts at the margin. Example of France. Can be perverse (Blanchard-Landier):

  Larger protection for insiders, so higher wages.

  Higher threshold productivity to keep outsiders, so more turnover, less training.

- Emergence of a dual market. For the young, sequence of bad (no training) jobs and unemployment, for the old, good (permanent contract) jobs.

Is reform politically feasible? (Saint-Paul, in particular NBER Macroeconomics, 1993)

- Median voter: insider. So introduce fixed-term contracts for new workers. Both types of workers may be for it: Insiders still protected. If become unemployed, easier to get a job.

- Time consistency problem. Proportion of workers with permanent contracts decreases over time. At some t^*, median voter becomes a fixed-term contract worker.

  May vote to eliminate permanent contracts

  Anticipation of this change leads permanent contract workers to be less willing to accept reform at $t = 0$.

- Can reform be implemented? If t^* high enough. If reform is slow enough. If conversion clauses are tough enough. (Not the end. Renegotiation at $t < t^*$?)

- Example of Spain. Example of France.

II. Optimal employment protection? Notes.

- Taken up in Chapter 9 of Pissarides. But under linear preferences, and lump sum taxation. Best then is $b = 0$, and $T = F = 0$.

- If workers are risk averse, role for unemployment insurance.

- Could be provided by (risk neutral) firms, but monitoring of status and search effort may be difficult.

- Maybe more efficiently provided by the state. Status, and to some extent, monitoring.

- Then, need to have firms internalize this cost. Firms should pay an amount equal, in expectation or in realization, to the unemployment benefits paid to the worker. Layoff tax.

- US solution: Experience rating: Paying of unemployment contributions proportional to costs of unemployment benefits, up to some ceiling.

- Complications. Moral hazard in search, so limits on unemployment insurance. Then, justified to distort separation decision. Higher employment protection. Layoff tax.

- Complications. Ex-post wage setting. Firm may not be able to get a lower wage in exchange for insurance. Then, lower layoff tax.

- A first pass: Blanchard-Tirole. But much remains to be done. Integration with moral hazard-search-saving models (Werning, Hopenhayn-Nicolini)

- Relevant reference: Alvarez-Veracierto.

Taking stock.

- EP affects reallocation/unemployment/nature of unemployment.
- How much? Not sure.
- Does it affect growth? Combining with the evidence on productivity growth and reallocation (Foster et al 2002, for retail trade in the US: 90% of productivity growth due to reallocation): probably.

  But no direct evidence yet.
- Some EP is desirable. How much? In what form? Layoff tax, or more administrative protection?
- How to go from current institutions to better ones. At the center of the current French elections...

Additional slides. Use with care

Wage setting with ex-post wage bargaining

Assume $X = 0$ (cannot commit to payments from workers in case of lay-off). Then same steps. Start with equation for $J(y) - E(y)$, and use Nash bargaining relation to get:

$$\begin{aligned}(r+\lambda)(V-U-F-2T) &= y - 2w(y) + \lambda[G(y^*)(V-U-F-2T)] \\ &\quad +(1-G(y^*))(V-U-F-2T)\end{aligned}$$

Derive the equation for rU and replace:

$$-b - c\theta - \theta q(\theta)(2T+F) = (y - 2w(y))$$

Rewrite as:

$$w(y) = (1/2)(y + b + c\theta) + (r + \theta q(\theta))(T + \frac{F}{2}))$$

Interpretation. Why is there now an effect of T?

Job creation under ex-post wage bargaining

Same steps as before:

$$J(\bar{y}) = c/q(\theta)$$

$$(r+\lambda)(J(\bar{y}) - J(y^*)) = \frac{1}{2}(\bar{y} - y^*)$$

$$J(y^*) + T + F = 0$$

This implies

$$\frac{c}{q(\theta)} = \frac{1}{2(r+\lambda)}(\bar{y} - y^*) - F - T$$

Both severance payments and firing costs decrease the profitability of new jobs.

Job destruction under ex-post wage bargaining

Again, take the same approach as before. Assume that separations are privately efficient.

$$S(y^*) = J(y^*) + F + E(y^*) - U = 0$$

Following the same steps as before gives:

$$y^* = rU - rF - \frac{\lambda}{r+\lambda}\int_{y^*}^{1}(y' - y)dG(y')$$

This is the same expression as before (no surprise as separations are privately efficient). rU however is given by:

$$rU = b + \theta q(\theta)(E(\bar{y} - U) = b + c\theta + \theta q(\theta)(2T + F)$$

Replacing gives:

$$y^* = b + c\theta + -rF - \frac{\lambda}{r+\lambda}\int_{y^*}^{1}(y' - y)dG(y') + \theta q(\theta)(2T + F)$$

In Pissarides (Chapter 9), given the two-wage structure, rU is still given by

$$rU = b + c\theta$$

.

This simplifies things a lot, for the wage equation, for job destruction, and eliminates some ambiguities (which may however be relevant: Higher wages, higher threshold, higher destruction).

- Two effects of F: directly, through rF, decreases separations. indirectly, through the increase in rU, which increases increases separations.
- Under efficient separations, the effect of T is only to increase rU and thus to increase separations.

What if the firm chooses unilaterally to layoff the worker? It will choose y^* so

$$J(y^*) = -F - T$$

This implies:

$$S(y^*) = J(y^*) + F + E(y^*) - U = 2(J(y^*) + F + T) = 0$$

So the separation decision can be left to the firm; the firm will layoff the worker when the surplus from the match is equal to zero.

Job creation, job destruction, and equilibrium

- Job creation

$$\frac{c}{q(\theta)} = \frac{1}{2(r+\lambda)}(\bar{y} - y^*) - F - T$$

- Job destruction

$$y^* = b + c\theta + -rF - \frac{\lambda}{r+\lambda}\int_{y^*}^{1}(y' - y)dG(y') + \theta q(\theta)(2T + F)$$

- The effects of an increase in F, T. The sources of ambiguity.