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The effects of introducing a single employment contract in Spain

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Question

What are the **effects** of introducing a **single contract** for new hires with severance payments growing with seniority as an alternative to the dual market prevailing in Spain?

We **focus** on

- Unemployment
- Job destruction
- Tenure distribution.

Why is this question relevant?

Features of the Spanish labor market:

- Huge employment volatility.

- Labor market segmentation between permanent (PCs) and temporary contracts (TCs).

- Gap in severance payments of PCs vs. TCs: 45 vs. 8 days of wages p.y.o.s.

Labor market reforms

- 1997: PEPCs (33 days of wages p.y.o.s.). Strengthening of causality principle for TCs.

- 2001: PEPCs coverage extension. Subsidized Job conversion. Severance pay of 8 days of wages p.y.o.s in some temporary contracts.

- May 2002: Elimination of procedural wages when the dismissal is acknowledged as unfair by the employer and severance pay deposited in court.

- September 2006: PEPCs coverage extension. New tax deductions for PCs. Restriction on continuation of TCs to same employee.

- June 2010: PEPCs coverage extension. TCs severance payments increase from 8 to 12 days of wages p.y.o.s. Redefinition of fair dismissals.

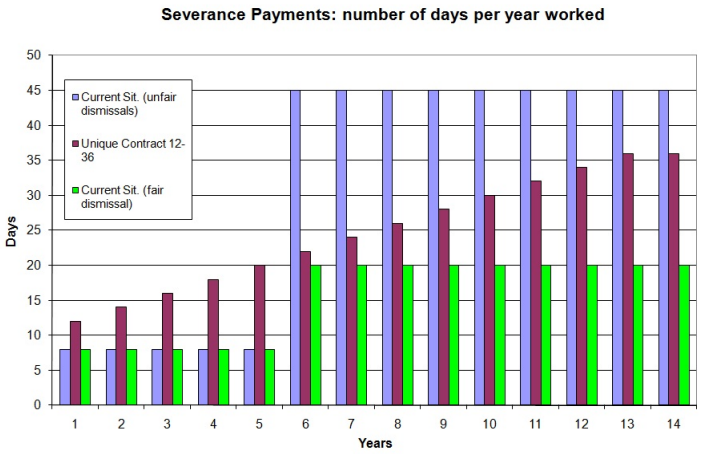
The need to eliminate the duality

• Inefficiencies: lower productivity, experience acquisition and human capital accumulation.

• Bad implications for: emancipation, birth rates, sustainability of the pension system.

Proposal: the single contract (OCDE, "Propuesta para la Reactivación Laboral en España" (2009)).

Example: **"SC 12-36" :** indemnity starts being 12 days of wages and grows at a moderate rate (2 additional days p.y.o.s) until 36 days p.y.o.s



What kind of model do we need?

A JC-JD model of the search and matching type.

Standard ingredients:

- Heterogeneity (idiosyncratic shocks)
- Persistency (Markov processes)
- Frictions in the matching process
- Endogenous job destruction

New ingredients:

- Dual labor market: two types of contracts (PCs and TCs) differing in maximun length and in firing costs
- Endogenous job conversion from TC's into PC's
- Firing costs modeled as transfer and being a function of wages and seniority
- Downward wage rigidity (minimum wage)
- Seniority as a state variable

Previous literature

• **EPL-Models**: Effects on JC, JD, u: matching (MP (1994,1999), Garibaldi (1998), Cahuc and Zylberberg (1999), Garibaldi and Violante (2002)); real business cycle Hopenhayn and Rogerson (1993), Alvarez and Veracierto (2001); efficiency wage (Saint-Paul (1996), Guell (1999).

• **TC-Models**: Effects on turnover, employment, productivity and wages: matching, Wasmer (1999); collective bargaining, Bentolila and Dolado (1994) and Jimeno and Toharia (1993); efficiency wage, Guell (2000); dynamic partial equilibrium demand (Bentolila and Saint-Paul (1992), Cabrales and Hopenhayn (1997)); and general equilibrium real business cycle models, Alonso-Fernández-Galdón (2002).

• **Closest papers**: Costain, Jimeno and Thomas (C-J-T), 2010; Bentolila, Cahuc, Dolado and Le Barbanchon (B-C-D-B), 2010.

Closest papers

• **C-J-T**: to what extent the coexistence of permanent and temporary jobs account for the the volatility of employment.

• **B-C-D-L**: how much of the larger increase in unemployment in Spain versus France during the ongoing recession can be accounted for the difference in EPL between the two countries.

Our model **differs**:

- Firing costs are modeled as a transfer.
- Minimum wage constraints
- Keep track of contracts and compute distributions of wages, tenure, JC and JD by type of contract, and distributions of employment loss by reason of separation.
- Detailed calibration exercise allow us to use the model to perform quantitative policy evaluations.

The model

Population

- Workers: employed or unemployed.
- Firms-Jobs: occupied or vacant.

State Space

$S = \{\{0, 1\} \times \mathcal{E} \times D\}$, where

$\mathcal{E} = \{\epsilon_1, ..., \epsilon_n\}$

$D = \{d_1, ..., d_N\}$

Preferences

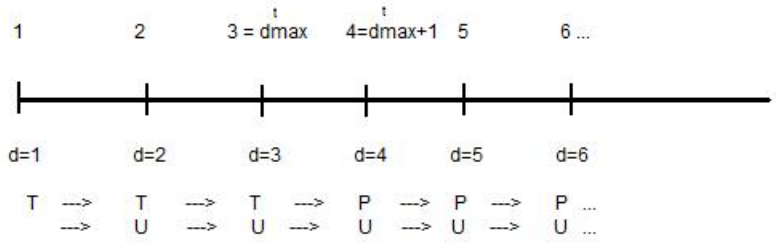
- Identical and linear in consumption.
- Work is offered inelastically.

Production Technology

- $y(\epsilon_t)$
- Entry level ϵ_e
- $\{\epsilon_t\}$ is Markov chain, $\epsilon' \in \mathcal{E} = \{1, 2, ..., n_\epsilon\}$,
  $\Gamma(\epsilon'|\epsilon) = Pr\{\epsilon_{t+1}|\epsilon_t\}$

Matching Technology

- c : cost of posting a vacancy
- $m = m(u_t, v_t)$ matching function
- Transition rates:
  $q(\nu) = \frac{m(v,u)}{v} = m\left(1, \frac{u}{v}\right)$
  $\alpha(\nu) = \frac{m(v,u)}{u} = m\left(\frac{v}{u}, 1\right)$



Problem of a firm with a permanent job

$$
\begin{aligned}
J^p(\epsilon, d) \;=\; & max\{y(\epsilon) - w(\epsilon, d) \\
& + \beta \sum_{\epsilon\prime} \Gamma(\epsilon\prime|\epsilon) J^p(\epsilon\prime, d\prime), \\
& - f(\epsilon, d) - c + \beta(1 - q(\nu)) J^0 \\
& + \beta q(\nu) J^t(\epsilon_e, 1)\}
\end{aligned}
$$

$$
g^p(\epsilon, d) = \begin{cases} 1 & \text{if the match continues} \\ 0 & \text{if the worker is fired} \end{cases}
$$

Problem of a firm with a permanent job (first period)

$$
\begin{aligned}
J^p(\epsilon, d^t_{max}+1) \;=\; & max\{y(\epsilon) - w(\epsilon, d^t_{max}+1) \\
& +\beta \sum_{\epsilon\prime} \Gamma(\epsilon\prime|\epsilon) J^p(\epsilon\prime, d\prime), \\
& -f(\epsilon, d^t_{max}+1) - c + \beta(1-q(\nu))J^0 \\
& +\beta q(\nu) J^t(\epsilon_e, 1)\}
\end{aligned}
$$

$$
g^p(\epsilon, d^t_{max}+1) = \begin{cases} 1 & \text{if the firm promotes the worker} \\ 0 & \text{if the worker is fired} \end{cases}
$$

Problem of a firm with a temporary job

$$
\begin{aligned}
J^t(\epsilon, d) \;=\; & max\{y(\epsilon) - w(\epsilon, d) \\
& + \beta \sum_{\epsilon\prime} \Gamma(\epsilon\prime|\epsilon) J^t(\epsilon\prime, d\prime), \\
& - f(\epsilon, d) - c + \beta(1 - q(\nu)) J^0 \\
& + \beta q(\nu) J^t(\epsilon_e, 1)\}
\end{aligned}
$$

$$
g^t(\epsilon, d) = \begin{cases} 1 & \text{if the match continues} \\ 0 & \text{if the worker is fired} \end{cases}
$$

Problem of a firm with a temporary job (last period)

$$
\begin{aligned}
J^t(\epsilon, d^t_{max}) \;=\; & max\{y(\epsilon) - w(\epsilon, d^t_{max}) \\
& +\beta \sum_{\epsilon\prime} \Gamma(\epsilon\prime|\epsilon) J^p(\epsilon\prime, d^t_{max}), \\
& -f(\epsilon, d^t_{max}) - c + \beta(1 - q(\nu)) J^0 \\
& +\beta q(\nu) J^t(\epsilon_e, 1)\}
\end{aligned}
$$

$$
g^t(\epsilon, d^t_{max}) = \begin{cases} 1 & \text{if the match continues} \\ 0 & \text{if the worker is fired} \end{cases}
$$

Problem of a worker in a PC and a TC

$$\begin{aligned} V^p(\epsilon, d) &= \tilde{\Phi}(g^p = 1)[w(\epsilon, d) \\ &\quad + \beta \sum_{\epsilon\prime} \Gamma(\epsilon\prime|\epsilon) V^p(\epsilon\prime, d\prime)] \\ &\quad + \tilde{\Phi}(g^p = 0)[V^0 + f(\epsilon, d)] \end{aligned}$$

$$\begin{aligned} V^t(\epsilon, d) &= \tilde{\Phi}(g^t = 1)[w(\epsilon, d) \\ &\quad + \beta \sum_{\epsilon\prime} \Gamma(\epsilon\prime|\epsilon) V^t(\epsilon\prime, d\prime)] \\ &\quad + \tilde{\Phi}(g^t = 0)[V^0 + f(\epsilon, d)] \end{aligned}$$

Problem of an unemployed worker

$$V^0 = b + \beta\alpha(\nu) V^t(\epsilon_e, 1) + \beta(1 - \alpha(\nu)) V^0$$

Wage determination

$$\begin{aligned} S^p(\epsilon,d) &= J^p(\epsilon,d) - (J^0 - f(\epsilon,d)) + \\ & \quad V^p(\epsilon,d) - (V^0 + f(\epsilon,d)) \end{aligned}$$

Wages maximize

$$[J^p - (J^0 - f(\epsilon,d))]^{1-\theta}[V^p - (V^0 + f(\epsilon,d))]^{\theta}$$

In equilibrium

$$(1-\theta)S^p(\epsilon,d) = J^p(\epsilon,d) + f(\epsilon,d)$$

$$\theta S^p(\epsilon,d) = V^p(\epsilon,d) - (V^0 + f(\epsilon,d))$$

$$\begin{aligned} w(\epsilon,d) &= max\{w_{min}, \theta y(\epsilon) + (1-\theta)V^0 + f(\epsilon,d) + \\ & \quad \theta\beta \sum_{\epsilon\prime} \Gamma(\epsilon\prime|\epsilon) J^p(\epsilon\prime,d\prime) \\ & \quad -\beta(1-\theta) \sum_{\epsilon\prime} \Gamma(\epsilon\prime|\epsilon) V^p(\epsilon\prime,d\prime)\} \end{aligned}$$

Equilibrium

A recursive equilibrium is a list of value functions $J^p(\epsilon, d)$, $J^t(\epsilon, d)$, $V^p(\epsilon, d)$, $V^t(\epsilon, d)$, J^0, V^0, transition rates $q(\nu)$, $\alpha(\nu)$, prices $w(\epsilon, d)$ and decision rules $g^p(\epsilon, d)$, $g^t(\epsilon, d)$ such that

1. *Optimality*: Given functions $q(\nu)$, $\alpha(\nu)$ and $w(\epsilon, d)$, the value functions $J^p(\epsilon, d)$, $J^t(\epsilon, d)$, $V^p(\epsilon, d)$ and $V^t(\epsilon, d)$ satisfy the Bellman equations.

2. *Free entry:* $J^0 = 0$, implying $c = \beta q(\nu) J^t(\epsilon_e, 1)$.

3. *Wage bargaining:*

$$(1 - \theta) S^p(\epsilon, d) = J^p(\epsilon, d) + f(\epsilon, d)$$

$$\theta S^p(\epsilon, d) = V^p(\epsilon, d) - (V^0 + f(\epsilon, d))$$

   In TCs similar conditions hold.

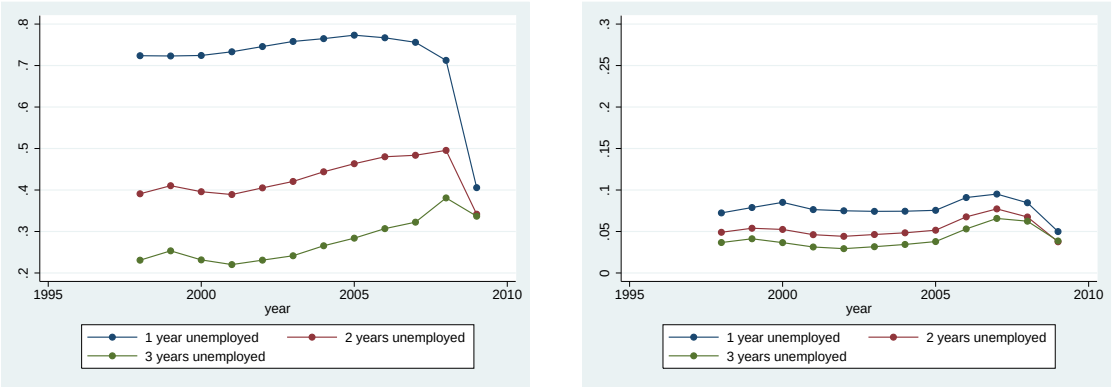
4. *Rational expectations*

Calibration

Data set: "Muestra continua de vidas laborales" (MCVL) 2009 : random draw from the Social Security archives.

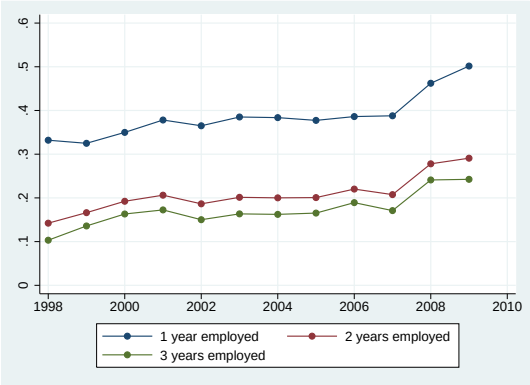
Info on: personal characteristics and employment and unemployment spells throughout worker's entire labour history.

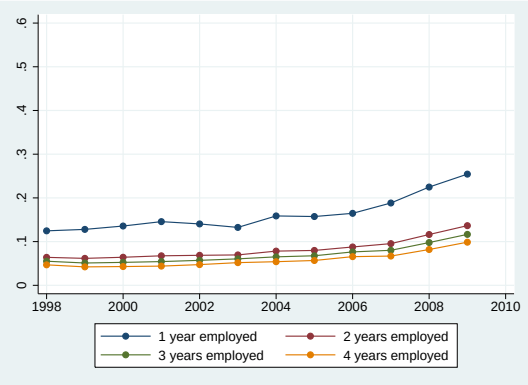
Graph 1: Exit rates from unemployment to temporary (left) and permanent (right) employment, by unemployment duration



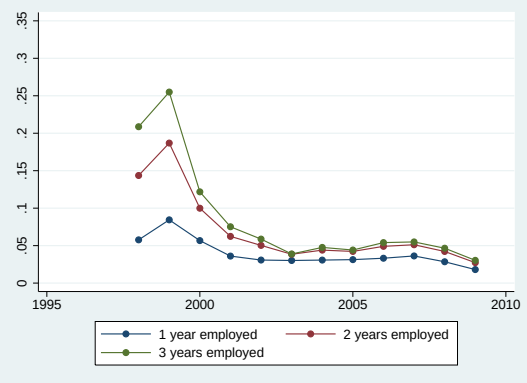
Calibration

Graph 2: Exit rates from temporary (left) and permanent (right) employment to unemployment, by employment duration





Graph 3: Transition from a temporary to a permanent contract, by employment duration



Parameters to calibrate:

- β, μ, σ and ρ: empirical counterparts.

- η and θ: estimated empirical values.

- y_{gap}, exp, b, w_{min}, A and c: simulated method of moments.

Statistics to match:

- The permanent job destruction rate, $JDp = 6{,}19\,\%$.

- The temporary job destruction rate, $JDt = 23{,}95\,\%$.

- The distribution of permanent job destruction by reason of separation: $JD_{prod} = 93{,}36\,\%$ due to productivity and the rest due to retirement.

- The ratio b/w_{min} is $35{,}11\,\%$.

- The wage share, w/y, is $70\,\%$.

- Unemployment duration, u_{dur}, is 10.38 months.

Calibration

- *Preferences:* $r = 3\,\%$ implies $\beta = 0{,}97$.

- *Idiosyncratic shocks:* Tauchen's procedure: μ, σ, ρ of GDP implies $\mathcal{E} = \{\epsilon_1, ..., \epsilon_5\}$ and $\Gamma(\epsilon'|\epsilon)$

- $y_{gap} = 0{,}18$ and $exp = 0{,}008$

- *Unemployment benefits:* $b = 0{,}1$.

- *Minimum wage*: $w_{min} = 0{,}3$

- *Matching technology:*

$m = m(v, u) = A * v^{\eta}(u)^{1-\eta}$
$\eta = 0{,}51$ and $A = 0{,}5$

- *Hiring costs:* $c = 0{,}05$

- *Bargaining power:* $\theta = 0{,}3$

Firing cost function

• Legal indemnities in fair dismissals (20 days of wages p.y.o.s. with a maximum of 12 monthly wages)

• Legal indemnities in unfair dismissals (45 days of wages p.y.o.s. with a maximum of 42 monthly wages)

• Procedural wages of around two monthly wages

• 73,2 % of all firing processes were declared unfair in the period 2006-08

• Dismissal distribution: 4,3 % collective dismissals, 18,7 % agreed at UM, 67 % Law 45/2002 and 10 % judged.

The firing cost function is: $f = 0{,}12 * w * d + 0{,}05 * w$

Calibration results

Statistics to match

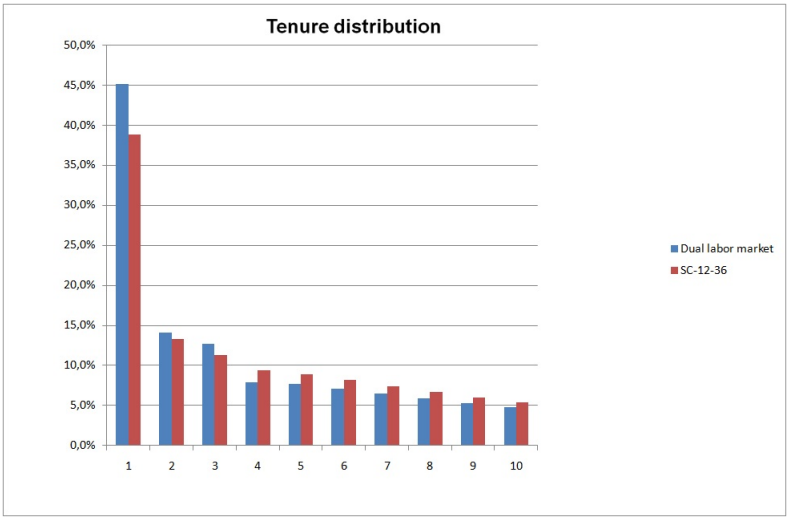
Statistics	Simulated Model	Spanish Data
JDp	5.6	6.2
JDt	23.0	24.0
JDp_{prod}	92.8	93.4
b/w_{min}	33.3	35.1
w/y	75.0	70.0
u_{dur}	10.9	10.4

Statistics of interest

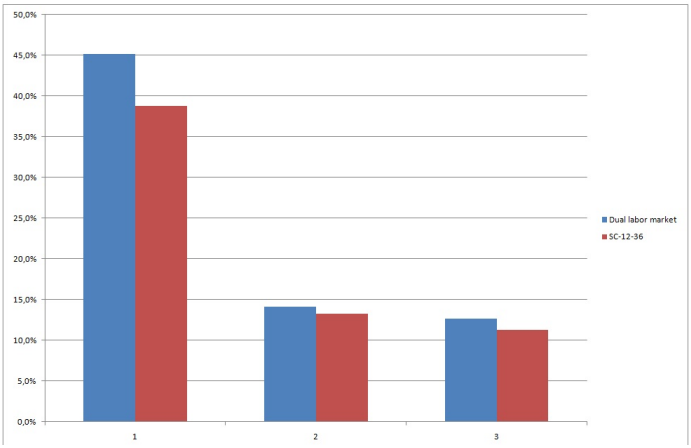
Statistics	Simulated Model	Spanish Data
JD	13.4	10.5
u	14.4	11.0
$Av.Tenure_{d<=3}$	1.1	1.0
$Av.Tenure_{d<=6}$	2.2	1.9
$Av.Tenure_{d<=10}$	4.1	2.8

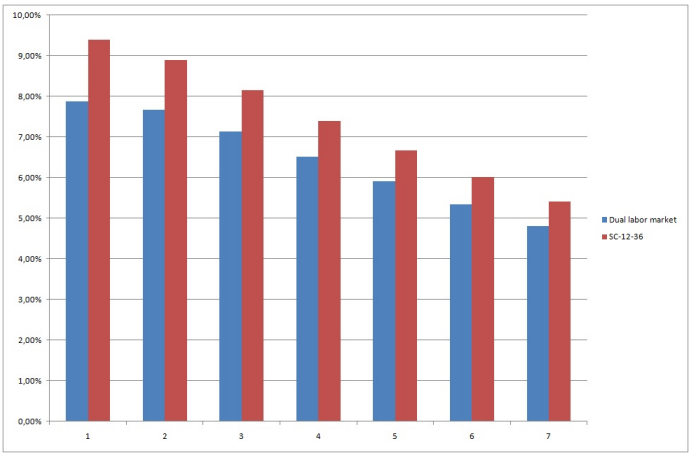
The Effects of the Single Contract

Statistics	$DualL.M.$	$12-36-S.C.$
u	14.4	11.8
JD	10.5	9.4
$JD_{d<=3}$	23.0	12.4
$JD_{d>3}$	5.6	8.2
$Av.Tenure_{d<=3}$	1.1	1.0
$Av.Tenure_{d<=6}$	2.2	2.3
$Av.Tenure_{d<=10}$	4.1	4.4



Changes in the Tenure distribution





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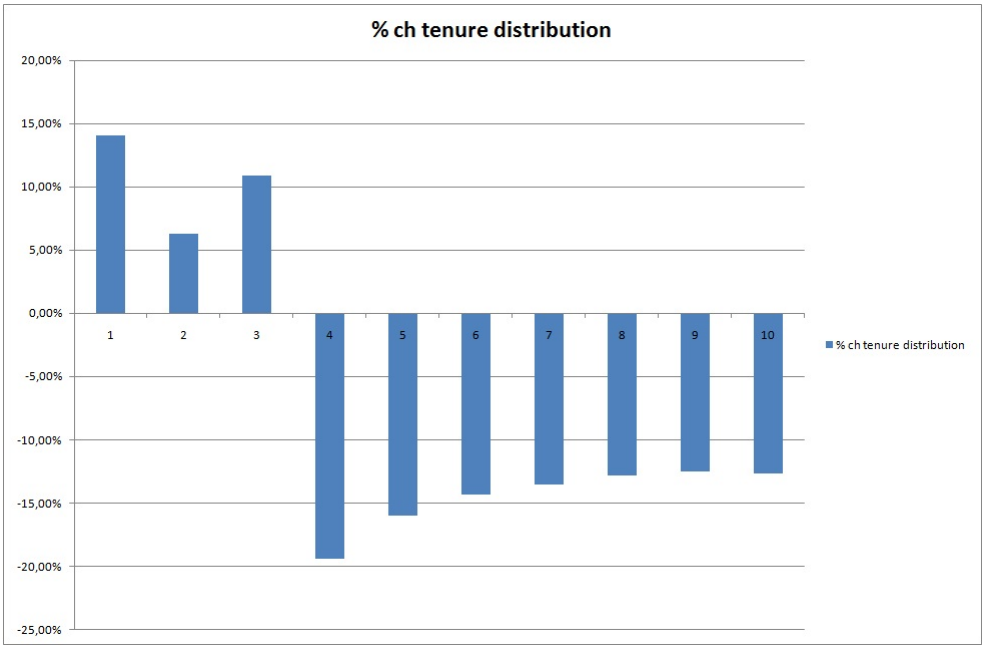


Conclusions

The single contract:

• Decreases unemployment and job destruction.

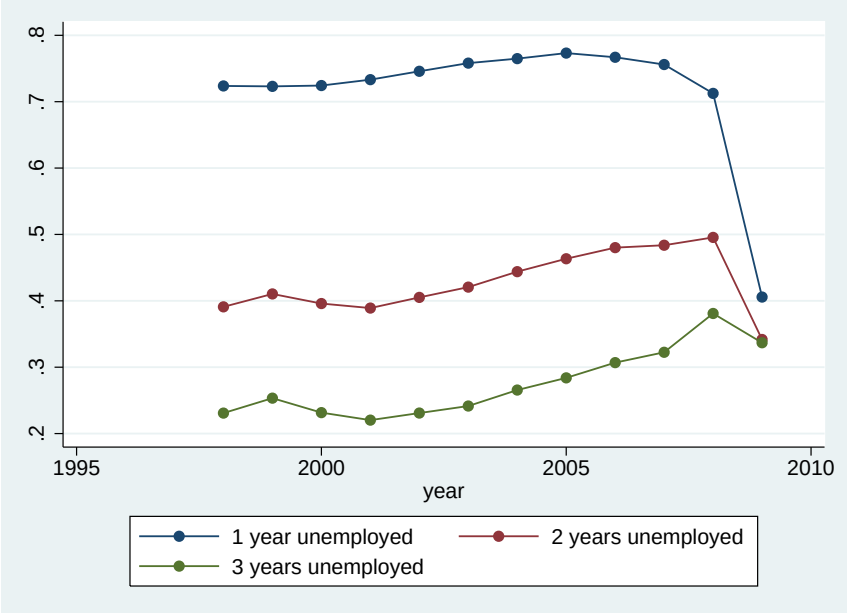
• Smoothes the probability of being fired as severance payments are smoothed: JD in contracts with tenure less than three years is **halved**.

• Smoothes the tenure distribution: the number of workers with tenure higher than 6 six years **doubles**.

• Changes **important for**: job stability and better future perspectives for the unemployed and for temporary workers, human capital accumulation, experience acquisition, emancipation, birth rates and the sustainability of the pension system.

• Was the last labor market reform a **lost opportunity** to reduce labor market segmentation?

Figure 1: Exit rates from unemployment to temporary and permanent employment, by unemployment duration



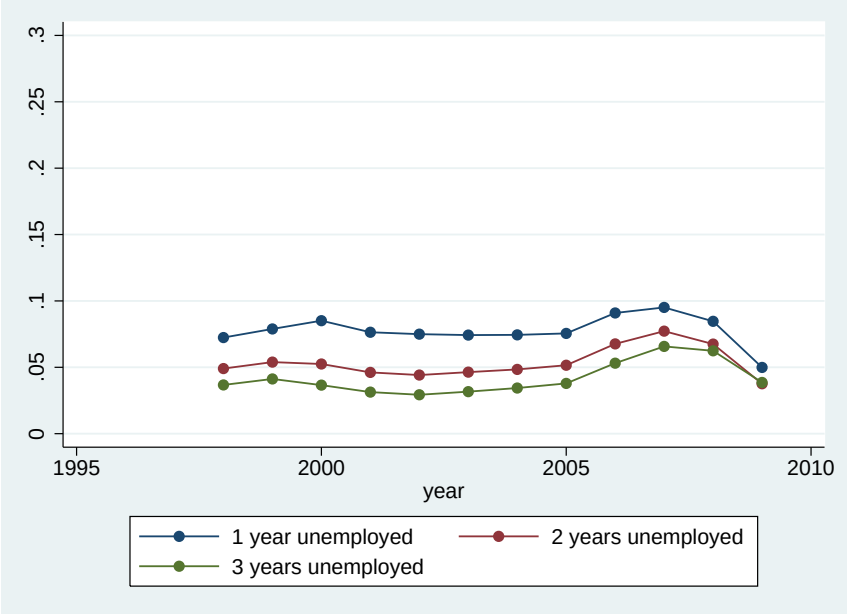
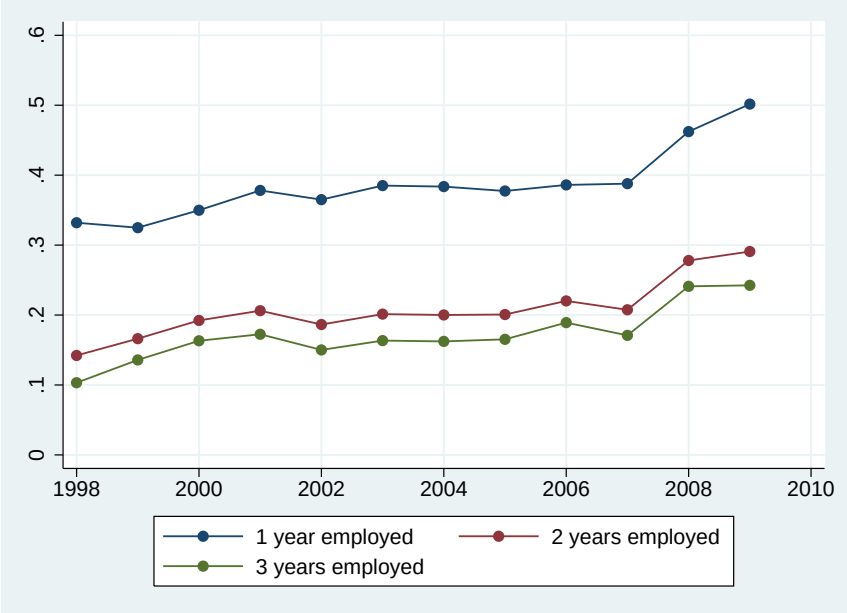


Figure 2: Exit rates from temporary (left) and permanent (right) employment to unemployment, by employment duration



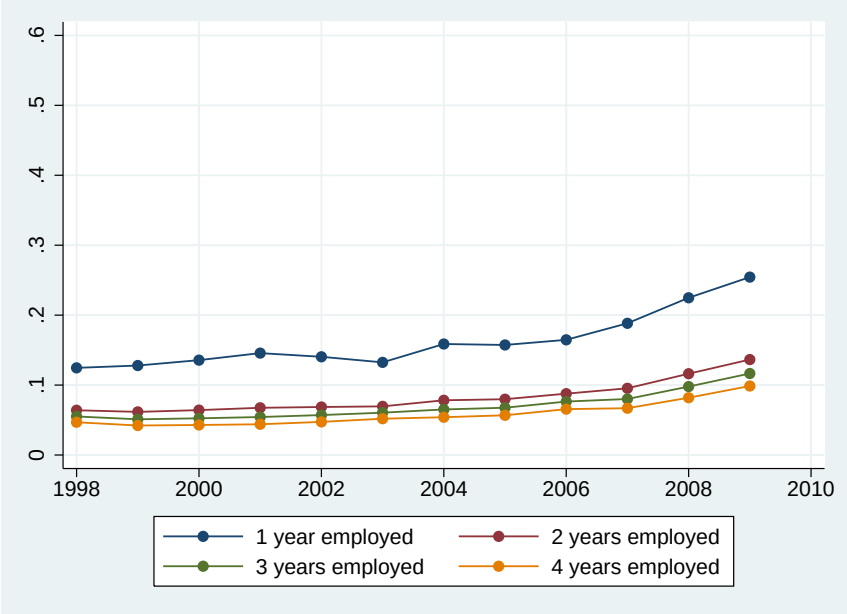


Figure 3: Transition from a temporary to a permanent contract, by employment duration