

# The Economics of Severance Pay

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# Severance Payments and EPL

- EPL is perhaps the most widely investigated institution in the labour market
- Most countries have legally mandated Severance Payments (SP). Pure transfers for *employer initiated* separation
- SP account for 50 % of cross-country variation in the OECD index of EPL
- and up to 90 per cent of costs of dismissals
- When transfers are not specified by the law, collective bargaining specify transfers for *individual dismissals*

# Basic Results on Severance Payments

SP is either neutral with respect to labour market outcomes or more distortionary in providing insurance

- Under *flexible wages*, SP are neutral on employment and prepaid by workers (Lazear, 1990)
- Under *rigid wages*, SP increase unemployment (Garibaldi-Violante, 1995)
- Under *risk aversion*, SP are less efficient to provide insurance than other instruments e.g. experience rating UI (Blanchard Tirole 2008)

# When do we need Severance Payments

This paper

- General result. SP reduce ex-post inefficient firing with wage deferrals (i.e. back loading)
- SP can be efficient when wages are flexible and workers are risk neutral if
  - workers need to invest in job specific training
  - firms can not commit "not to fire" when productivity is low

# Unexplored Dimensions of EPL

Our Theory rationalizes also neglected feature of EPL

## 1 Stochastic Severance

- Economic versus Disciplinary
- Economic dismissal refers to the behaviour of employers
- Disciplinary refers to the behaviour of the worker
- Why important?

2 Each type can be defined as *fair* or *unfair*

## 3 Severance payments and worker's tenure.

Severance is increasing with tenure. Why?

4 Most countries allow for reductions of severance for small firms. Why?

# Position of the paper in the Literature

- Huge literature on EPL
- Often treats severance as a deterministic transfer to which Lazear (1990) neutrality result applies
- When stochastic severance (Garibaldi, 1998; Malo, 2000), is allowed, the moral hazard associated with economic vs. disciplinary dismissals is not considered
- Galdon-Sanchez and Guell (2003) and Boeri and Jimeno (2005) are partial exceptions, but within reduced form models and there is no normative theory of severance.
- We look at optimal severance like Veracierto (2008)

# This Paper

- 1 Stochastic severance and economic vs. disciplinary layoffs
- 2 Characterising the severance-tenure profile
- 3 A toy model of wage deferrals, severance and tenure
- 4 Basic two periods model on efficient SP
- 5 Multi periods and Contratto Unico
- 6 Endogenous "get away with it" probability
- 7 Conclusions

# Stochastic dismissals

- It is very difficult to distinguish between "fair" or "unfair" dismissal. Ultimately, it is a court ruling
- Although most cases settled before Courts, unavoidable involvement of judges in the legislation, hence in the actual compensations
- The level of the payment is decided by third parties having limited info on the behavior of workers and employers



# Costs of Fair and Unfair Dismissals $T$

- Measure months of wage costs
- $T_U = C_U + \pi(d + C_U)$
- $T_F^J = C_F^J$
- subscripts  $U$  and  $F$  to the unfair or fair nature of the dismissal
- superscript  $J$  denotes either disciplinary ( $D$ ) or economic ( $E$ ) dismissal
- $C_k$  ( $k = U, F$ ) notice period and actual severance
- $\pi$  likelihood that a reinstatement is granted
- $d$  length of the trial period
- $T_F = 0$  if disciplinary dismissals

# Stochastic Severance

$$CV^J = \frac{\sqrt{p(T_U - \bar{T})^2 + (1-p)(T_F^J - \bar{T})^2}}{\bar{T}}$$

Where

- $p$  represents the probability that a dismissal is ruled unfair, according whether the burden of proof is on the employer ( $p = 0.5$ ) or on the worker ( $p = 0.25$ ) or both ( $p = 0.37$ ).
- $\bar{T}$  weighted average of the compensation when the dismissal is considered as unfair ( $T_U$ ) or fair ( $T_F^J$ ) respectively

# Uncertainty and the nature of dismissals

Country	$T_U$	$T_F^E$	$T_F^D$	$T_F^E - T_F^D$	$CV^E$	$CV^D$	$\rho$
Australia	11.3	3.8	1.0	2.8	1.4	2.0	0.5
Austria	25.9	4.0	4.0	0.0	1.8	1.8	0.5
Belgium	31.3	21.0	21.0	0.0	1.1	1.1	0.5
Czech Republic	22.0	3.5	2.0	1.5	2.2	2.7	0.25
Denmark	19.8	9.0	6.0	3.0	1.3	1.6	0.25
Finland	20.0	6.0	6.0	0.0	1.5	1.5	0.5
France	23.2	7.4	2.0	5.4	1.6	2.7	0.25
Germany	35.4	17.0	7.0	10.0	1.2	1.7	0.5
Ireland	38.7	6.0	2.0	4.0	1.8	2.1	0.5
Italy	42.9	6.0	6.0	0.0	1.8	1.8	0.5
Japan	10.3	1.0	1.0	0.0	2.2	2.2	0.375
Netherlands	14.9	16.0	4.0	12.0	1.0	1.5	0.5
Norway	34.0	6.0	6.0	0.0	1.7	1.7	0.5
Portugal	49.6	14.5	2.5	12.0	1.5	2.1	0.5
Spain	10.5	12.5	0.5	12.0	1.0	2.1	0.5
Sweden	38.0	6.0	6.0	0.0	1.8	1.8	0.5
United Kingdom	19.3	7.6	3.0	4.6	1.3	1.8	0.5

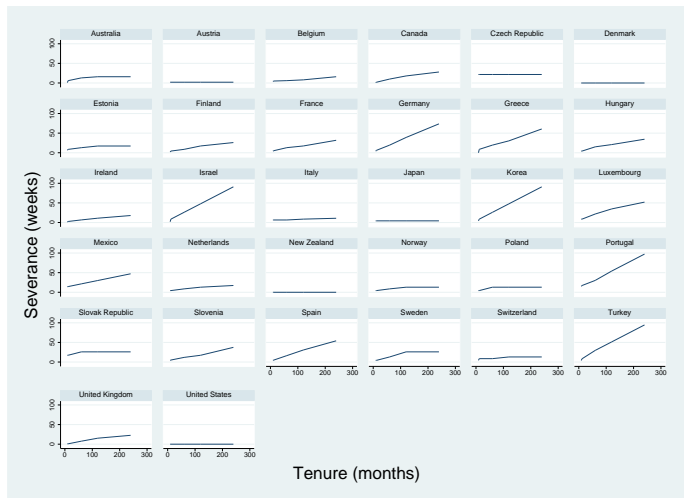
Sources: EPLex; OECD (2013);

See equations 2 and 3 in the main text and table A2 in annex for details.

Time is expressed in months.

► Details

# Severance Payments for Fair Economic Dismissals and Tenure



# An index of Graded Security

$$GS = \sum_{t=0}^5 \frac{\Delta C_t}{\Delta \tau_t} \times \frac{\tau_t}{C_t} \times \frac{(\tau_t - \tau_{t-1})}{240} \quad (1)$$

- weighted average of of severance pay/tenure elasticity
- $C$  months of mandatory severance (and compulsory notice period)
- $\tau$  months of tenure ( $t = 0$  beginning of the tenured contract;  $t = 1$  nine months of tenure;  $t = 2$  one year of tenure;  $t = 3$  five years;  $t = 4$  ten years;  $t = 5$  to twenty years of tenure.

# GS Index and Severance

**Table:** Min and max apparent elasticity and related tenure and GS Index

	Minimum Elasticity	Related Tenure (months)	Maximum Elasticity	Related Tenure (months)	Elasticity Range	GS Index
Australia	0.0	240	3.3	12	3.3	0.31
Belgium	0.2	60	1.0	9	0.8	0.70
Canada	0.7	240	1.0	9, 60	0.3	0.84
Denmark	*	*	*	*	-	-
Finland	0.6	60	1.0	9	0.4	0.77
France	0.0	9	0.9	240	0.9	0.74
Germany	0.0	9	1.4	12	1.4	0.91
Italy	0.0	9, 12,60	0.5	120	0.5	0.33
Japan	0.0	each tenure lenght	0.0	each tenure lenght	0.0	0.00
Netherlands	0.0	9, 12	0.7	120	0.7	0.54
Norway	0.0	9, 12, 240	0.7	120	0.7	0.29
Portugal	0.5	9, 12	1.0	9	0.5	0.82
Spain	0.5	9	0.9	60, 120, 240	0.4	0.87
Sweden	0.0	9, 12, 240	1.0	120	1.0	0.42
Switzerland	0.0	60, 240	1.0	9	1.0	0.23
United Kingdom	0.0	9, 12	1.1	60	1.1	0.79
United States	*	*	*	*	-	-

Source: OECD (2012), World Bank Data (2012)

Notes: \* : No mandatory severance

# Exemptions for Small Firms

Most countries allow for lower severance for small firms in case of unfair dismissals.

- Australia: no redundancy has to be paid by enterprises with fewer than 15 employees
- Italy: art.18 does not apply to firms with less than 15 employees.
- Germany: reinstatement in case of unfair dismissal cannot be imposed by the judge in firms with less than 5 employees
- Luxembourg: firms with less than 15 employees have more flexibility in setting severance and notice periods

# The Economics

- Workers undertake a costly (private) investment with uncertain return to the firm
- Whenever there are wage deferrals and productivity shocks, firms initiated dismissals for senior workers may be inefficient
- Distinction between disciplinary and economic very relevant
- **Economic Dismissal:** firms will always fire when productivity is too low, even when the worker invests. Firms can not commit "not to fire".
- **Disciplinary Dismissal:** shirking workers (those who do not invest) can be dismissed without severance payments (fair disciplinary dismissal).
- Moral Hazard: A fair disciplinary dismissal must be proved in court and a shirking worker "can get away with it".



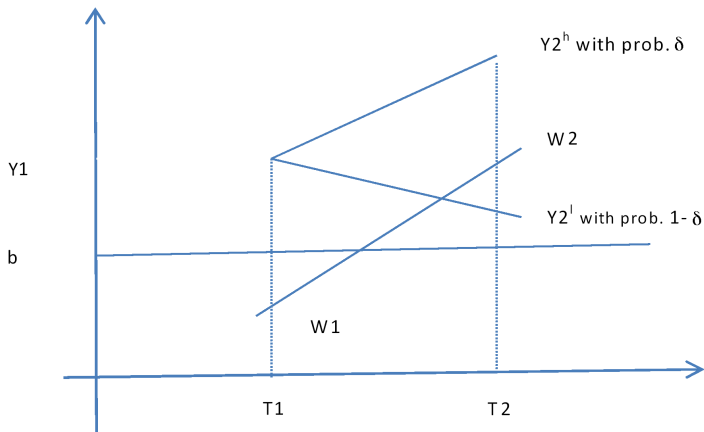
# Baseline Results

- When there are wage deferrals, severance payments can prevent inefficient firing for senior workers
- In the baseline model with moral hazard in disciplinary dismissals, firing is ex-post too high vis-a-vis efficient separations
- Severance Payments are not neutral, can reduce firing and induce workers investment.

# Results on Contratto Unico

- Extension to 3 periods:
  - If workers need to repeatedly invest on the job
  - Severance payments increasing over time are efficient
- Policy proposal for Contratto Unico (SP increasing with tenure to reduce dualism) should be taken seriously!
- Extension to endogenous probability that a shirker can "get away with it" receiving severance or even being retained

# Exogenous Wage Deferral, Tenure and Severance Payments



# The role of Severance

- Assume  $w_2 > y_2' > b$

Firms can fire conditional on the realization of  $y_2'$ . Firing requires a severance payment  $T \geq 0$

$$\Pi = y_1 - w_1 + (1 - \delta)[y_2^y - w_2] + \delta \text{Max}[y_2' - w_2, -T]$$

Since  $y_2' > b$  the joint surplus is positive in the second period and- for efficiency reasons- production should take place

If  $T = 0$  firms always fire conditional on a adverse shock

$$y_2' - w_2 \geq -T$$

# The role of Severance (II)

**Result: severance payment  $T^* \geq w_2 - y_2'$  prevents inefficient separation.**

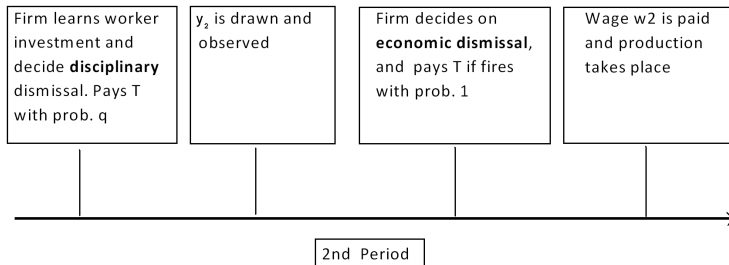
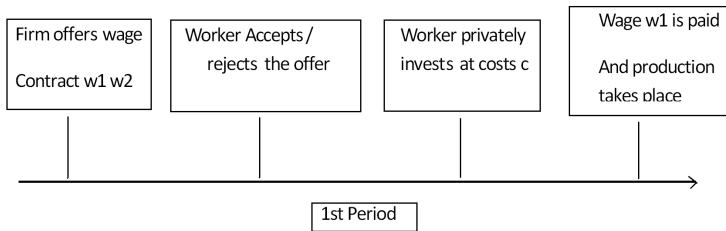
**Result: When there are wage deferrals, a severance payment can prevent inefficient separation for senior workers.**

# Basic Set up with Endogenous Wages

- Partial equilibrium: One worker and one firm (risk neutral) with a two periods job No discounting
- Baseline productivity on the job is  $y > b$  (worker's outside option) in every period
- Wages are unilaterally set by the firm with full commitment and no renegotiation  $w_i, i = \{1, 2\}$
- In period 1 the worker faces a specific investment opportunity  $s = \{0, 1\}$ . at costs to the worker  $C$  in the first period.  $s$  is worker's private information.
- Conditional on  $s = 1$ , productivity in the second period will be  $y + \varepsilon$ , with  $\varepsilon$  stochastic from  $F(\varepsilon)$ ; support  $\varepsilon \in [\varepsilon_l, \varepsilon^u]$  with  $\varepsilon_l < 0$ .
- Wages can not be contingent on productivity.

# Disciplinary versus Economic Dismissal

- **Disciplinary Dismissal.** A shirking worker that did not invest. In principle no severance payment
- **Economic Dismissal.** In period 2, a worker that did invest in period 1; severance  $T$
- The severance  $T$  is set by the government and is a pure transfer. The firm can not commit to a severance payment.
- Disciplinary dismissal must be proved in court.
  - With probability  $1 - q$  the court observes shirking. no  $T$  is due
  - With probability  $q$  a shirking worker "gets away with it" and receives  $T$ .
  - $q$  is observed after the firm has fired the worker. The expected severance to a shirking worker is  $qT$ .





# Efficient Separation

When joint surplus is zero

$$\begin{aligned} S_2 &= [w_2 - (b + T)] + [y + \varepsilon - w_2 - (-T)] \\ &= y + \varepsilon - b \end{aligned}$$

where both wages and severance payments do not enter in the joint surplus. Efficient separation  $\varepsilon^*$

$$\begin{aligned} S_2(\varepsilon^*) &= 0 \\ \varepsilon^* &= b - y \end{aligned} \tag{2}$$

# Baseline Value Functions

- PDV Worker that does not invest and shirks

$$W_{(s=0)} = w_1 + b + qT$$

- PDV Worker that invest

$$W_{(s=1)} = w_1 - C + (1 - F(\varepsilon_d))w_2 + F(\varepsilon_d)[b + T]$$

where  $F(\varepsilon_d)$  is the dismissal probability

- Firms expected profits if the worker invest are

$$\Pi_{1(s=1)} = y - w_1 + \int_x \text{Max}[y + x - w_2; -T] dF(x)$$

# Reservation Productivity

$$\Pi_2(\varepsilon) = \text{Max}[y + \varepsilon - w_2; -T].$$

$$\varepsilon_d = w_2 - y - T \quad (3)$$

Firing increases with wages while it decreases with productivity and severance payment

# Optimal Contract

$$(1 - F(\varepsilon_d))w_2 + F(\varepsilon_d)(b + T) - C \geq b + qT \quad (\text{IC})$$

$$w_2 = b + \frac{C + [q - F(\varepsilon_d)]T}{1 - F(\varepsilon_d)} \quad (4)$$

$$W(s = 1) = w_1 - C + w_2(1 - F(\varepsilon_d)) + F(\varepsilon_d)(b + T) \geq 2 \quad (\text{PC})$$

$$\varepsilon_d = w_2 - y - T \quad (\text{Reservation Rule})$$

# Too much firing in period 2

In general

$$\varepsilon_d = b - y + \frac{C + [q - F(\varepsilon_d)]T}{1 - F(\varepsilon_d)}$$

**RESULT:** If there is no severance payment ( $T = 0$ ) firing is too high in the second period

$$\varepsilon_{d(T=0)} = b - y + \frac{C}{1 - F(\varepsilon_d)} > \varepsilon^* = b - y$$

# Perfect Monitoring ( $q=0$ ): Worker Never gets away with Shirking

With  $q = 0$  shirking is perfectly detected.

$$w_{2(q=0)} - b = \frac{C - F(\varepsilon_d)T}{1 - F(\varepsilon_d)} \quad (5)$$

Severance payments reduce senior wages

*Severance as a discipline device (you get it only if you do not shirk).*

# Severance payment always paid ( $q=1$ ):

*severance payments increase senior wages but are neutral from the allocative standpoint*

$$w_{2(q=1)} - b = \frac{C}{1 - F(\varepsilon_d)} + T \quad (6)$$

$$\varepsilon_{d(q=1)} = b - y + \frac{C}{1 - F(\varepsilon_d)}$$

SP affects the wage profile (they make it steeper)

Lazear neutrality result

# Summarizing SP in the two periods model

- a) If there are no severance payment ( $T = 0$ ), the firm fires workers too frequently ( $\varepsilon_d$  is too high)
- b) In case of perfect court monitoring ( $q = 0$ ), severance payment  $T$  reduces  $w_2$  and hence reduces firing. In other words, severance payments act as discipline device
- c) If workers always get severance payment ( $q = 1$ ), the severance payment increases  $w_2$  but they are neutral in terms of dismissal. It only influences the wage profile by making it steeper (Lazear, 1990).



# Optimal Severance Payment

The optimal  $T$  should restore efficient separation

$$\varepsilon_d = \varepsilon^*$$

$$T = w_2(\varepsilon_d(T)) - b$$

i.e., is equal to the wedge between the inside and the outside wage.

Solving this for  $T^*$  gives

$$T^* = \frac{C}{1 - q} \quad q < 1$$

# To Sum Up on Optimal Severance

- i) If  $q = 1$  (shirkers always get severance pay) the optimal severance pay is undefined and there is no welfare loss of setting  $T = 0$ .**
- ii) For all other values of  $q$ , the optimal severance pay is strictly positive and given by**

$$T^* = \frac{C}{1 - q} > 0$$

# Monitoring, Firm Size and Severance Payment

- Monitoring (documenting) workers behavior is easier in small firms; thus, getting away with it is easier in large firm ( $q_{small\ firms} < q_{large\ firms}$ )
- Larger  $q$  requires larger severance payments

Hence, SP should be larger in larger firms

# Extensions to 3 Periods:

- Workers invest only in period 1
- Workers invest in period 1 and Period 2, and further  
 $C_2 > C_1$  and  $q_2 > q_1$
- $\varepsilon_2, \varepsilon_3$  are iid.

# No Investment in Period 2....No Contratto Unico

$t = 3$  but workers only invest  $t = 1$ . Then the following is true

- The severance pay in period 2,  $T_2$ , is

$$T_2 \geq \frac{C}{1 - q}$$

- Optimal firing decisions in period 3 requires that  $T_3 = w_3 - b$
- The PC gives a constraint on  $w_2 + w_3$ , but not on the wage-tenure profile. The severance pay  $T_2$  is independent of the wage-tenure profile (as long as the participation constraint of the worker is

# Investment in Period 2....Contratto Unico!!

- Worker has to provide effort in both periods.
- Suppose further that the probability of getting away with shirking is higher for senior workers ( $q_2 > q_1$ ) and that there is an increasing marginal cost of effort ( $C_2 > C_1$ ). Then the following holds:
  - The severance pay is increasing with tenure
  - Wages are increasing in tenure,  $w_2 < w_3$ . If  $q_2$  is close to  $q$ , then we know for sure that also  $w_1 < w_2$ .

# Burden of Proof and Endogenous "q"

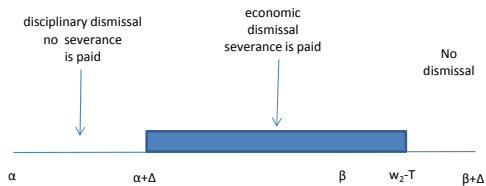
- Court observes productivity at time 2 and knows distribution of productivity with and without investment
- Investment in period 1 shifts the distribution of productivity by  $\Delta$ .
- distribution of productivity in period 2 for a *shirking* worker is uniform between  $\alpha$  and  $\beta$  so that

$$X^S \sim U[\alpha; \beta], \quad (7)$$

where  $X^S$  is actual productivity in period 2 for a shirking worker.

- productivity in period 2 for an *investment* worker is shifted to the right by a factor  $\Delta$  so that

# Court decisions





# Endogenous $q$ and Optimal Severance

- Efficient severance payment requires

$$T = \frac{C}{1 - q} = \frac{C(\beta - \alpha)}{\Delta} \quad (10)$$

- from which it follows that  $q = 1 - \frac{\Delta}{\beta - \alpha}$
- this corresponds exactly to the probability that a shirking worker gets away with it, either because he is fired with severance payments or because he is retained in period 2

# Conclusions

- With wage deferrals, SP can reduce inefficient firing of senior worker
- The weaker the judicial system, the larger SP should be
- With workers' moral hazard, SP can act as a worker's discipline device
- Severance Payments Increasing with tenure should be taken seriously
- Rationalize why SP should be smaller in smaller firms
- With burden of proof on the firm, shirkers can "get away with it"

Table A2. Detailed information used to produce Table 2

Country	Severance Economic at 20y, Fair	Severance Disciplinary at 20y, Fair	Typical Compensation at 20y, Unfair	Maximum Notice	Length of Trial $\tau$	Prob. of Reinstatement $\pi$
Australia	2.8	0.0	6.0	1.0	6.0	0.33
Austria	0.0	0.0	6.0	4.0	5.9	1.00
Belgium	0.0	0.0	10.3	21.0	6.0 <sup>b</sup>	0.00
Denmark	3.0	0.0	6.6	6.0	9.0	0.33
Finland	0.0	0.0	14.0	6.0	9.0 <sup>b</sup>	0.00
France	5.4	0.0	16.0	2.0	13.0 <sup>b</sup>	0.17
Germany	10.0	0.0	15.5	7.0	3.2 <sup>b</sup>	0.50
Italy	0.0	0.0	21.0	6.0	20.6 <sup>b</sup>	0.33
Japan	0.0	0.0	6.0	1.0	3.0	0.33
Netherlands	12.0	0.0	7.0	4.0	0.7 <sup>b</sup>	0.33
Norway	0.0	0.0	12.0	6.0	6.0	0.67
Portugal	12.0	0.0	20.0	2.5	10.0 <sup>b</sup>	0.83
Spain	12.0	0.0	10.0	0.5	3.5 <sup>b</sup>	0.00
Sweden	0.0	0.0	32.0	6.0	6.0	0.00
United Kingdom	4.6	0.0	5.5	3.0	24.0	0.33

Sources: EPLex; OECD (2013); <sup>b</sup>CEPEJ (2012)

Notes: Data are expressed in months. When notice period differs between categories of workers (e.g. white and blue collars) or between reasons of dismissal (e.g. personal and redundancy), the longest period is chosen; Court: Free determination by court. Fair dismissal: severance pay at 20 years of tenure; Unfair dismissal: typical compensation at 20 years of tenure; Length of trial: Data from CEPEJ (2012) represent the average length of proceedings for employment dismissal cases at first instance courts for the latest year available; the other data on length of trial (OECD, 2013), represent the maximum legal length for this type of proceeding.  $\pi$ : probability (0-1) that, in case of unfair dismissal, the judge opts for the reinstatement of the worker. It corresponds to the 0-3 measure given by OECD (2013): 0= no right or practice; 1= rarely or sometimes made available, 2= fairly often made available, 3= almost always made available.