

# Session 3: Minimum Wage & EPL

Jan C. van Ours – Tilburg University

Capetown – 20 February 2015

# 1. MINIMUM WAGE

# Minimum Wages: What are We Talking About?

- Unlike other institutions, MW acts on minimum. It sets a wage floor.
- The first minimum wage was introduced in the United States in 1938 and paid 25 cents per hour. In 2010 the federal minimum wage was \$7.25, in nominal terms 30 times larger, but, in real terms, less than twice as high as 70 years ago.

# Types of Minimum Wages & Measures

## Types of Minimum Wage

- 1 National, government-legislated (perhaps after consultations with trade unions and employers associations).
- 2 National, outcome of collective bargaining agreements and extended to all workers.
- 3 Industry-level minimum resulting from industry-level collective bargaining and extended to all workers in that industry.

## Measures

- Ratio of the MW to the median (or average) wage.
- Coverage of the MW: share of workers occupying jobs eligible for the MW.
- Kaitz Index: minimum wage as a proportion of the average wage adjusted by the industry-level coverage of the MW.

# Minimum wages in OECD countries

	Ratio minimum wage to median wage (%)			Monthly MW in (2010)	Taxonomy System	MW Type	Percentage earning MW (2005)	Youth subminimum
	1990	2010	Diff					
Denmark	–	–	–	–	S	3	–	yes
France	52	60	8	1344	N	1	17	limited
Germany	–	–	0	–	S	3	–	some
Italy	–	–	–	–	S	3	–	some
Netherlands	56	47	-9	1416	N	1	2.2	yes
Spain	47	44	-3	739	N	1	0.8	no
UK	–	46	–	1169	N	1	1.8	yes
US	36	39	3	949	N-s	1	1.3	limited

Note:  
 System: N = national; N-s = National-state; S = sectoral collective; R = regional; P = provincial  
 Type: 1 = National, government-legislated; 2 = National; 3 = Industry-level

# Ratio Minimum to Median Wage; 1971-2010

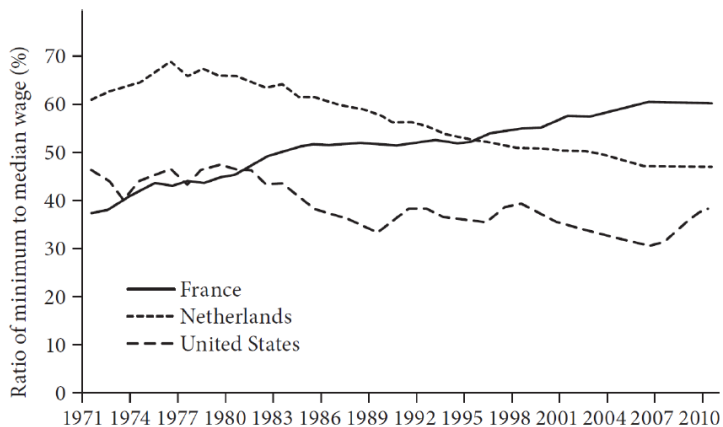
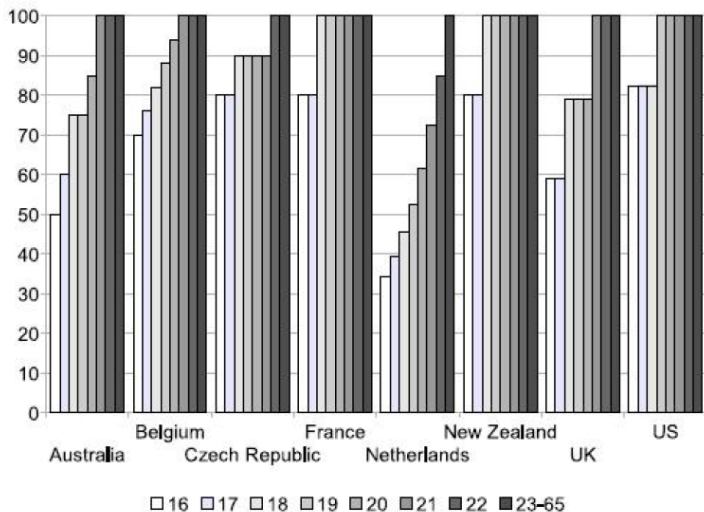


FIGURE 2.1 Ratio of minimum to median wage, 1971–2010

Source: OECD minimum wage database.

# Youth MW; percentages of adult MW



# Employment at the minimum wage

## Example – the Netherland (2006)

Age	Employment (%)	Minimum wage (%)
15-22	10	9.1
23-29	15	2.8
30-39	28	0.6
40-49	26	0.9
50-59	19	0.9
60+	2	1.1
Total	100	1.9



# A Competitive Labor Market

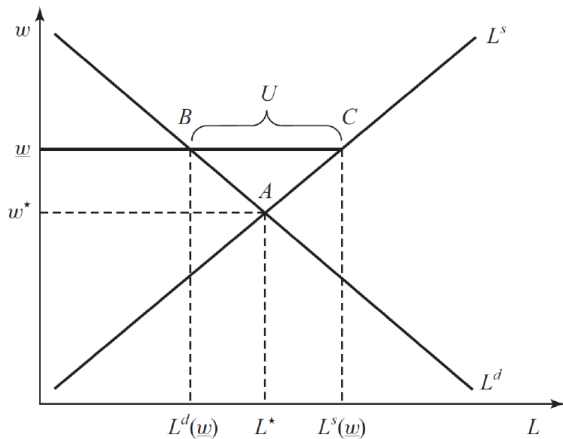


FIGURE 2.2 The minimum wage in a competitive labor market

# Pure monopsonist

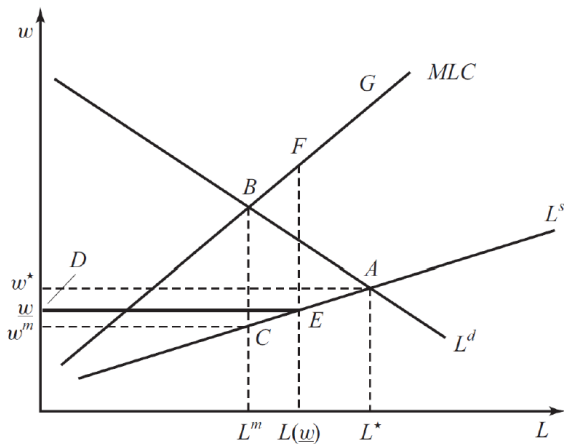


FIGURE 2.3 Monopsony and the minimum wage

# Competitive labor market – Labor demand

- Labor Demand:  $L^d = L = \left(\frac{A}{w}\right)^{\frac{1}{\eta}}$
- where  $A$  indexes labor productivity and  $0 < \eta < 1$  (inverse) labor demand elasticity
- Labor Supply:  $L^s = G(w) = w^{\frac{1}{\epsilon}}$
- where  $G(\cdot)$  is cumulative distribution of reservation wages and (inverse) elasticity of labor supply is indexed by ( $0 < \epsilon < +\infty$ )
- Equating labor demand to labor supply we obtain the competitive equilibrium wage

$$w^* = A^{\frac{\epsilon}{\epsilon+\eta}}$$

- With competitive employment  $L^* = A^{\frac{1}{\epsilon+\eta}}$

# Monopsony – I

- Surplus of employers:  $S^f = \int_0^L Ax^{-\eta} dx - wL = \frac{AL^{1-\eta}}{1-\eta} - wL$
- Monopsonist: maximizes surplus conditional on being on the supply curve:  $w = L^\epsilon$
- Monopsonist maximizes  $S^f = \frac{AL^{1-\eta}}{1-\eta} - L^{1+\epsilon}$ . So,
- $\frac{dS^f}{dL} = 0 \rightarrow AL^{-\eta} - (1 + \epsilon)L^\epsilon = 0$
- Monopsony employment  $L^m = \left(\frac{A}{1+\epsilon}\right)^{\frac{1}{\epsilon+\eta}} < L^*(= A^{\frac{1}{\epsilon+\eta}})$
- Monopsony wage  $w^m = \left(\frac{A}{1+\epsilon}\right)^{\frac{\epsilon}{\epsilon+\eta}} < w^*(= A^{\frac{\epsilon}{\epsilon+\eta}})$

# Monopsony – II

- Degree of monopsony power:
- $M = \frac{y(w^m) - w^m}{w^m} = \frac{y(w^m)}{w^m} - 1$
- $y(w^m) = A(L^m)^{-\eta} = A\left(\frac{A}{1+\epsilon}\right)^{-\frac{\eta}{\epsilon+\eta}}$
- $w^m = \left(\frac{A}{1+\epsilon}\right)^{\frac{\epsilon}{\epsilon+\eta}}$
- $M = \epsilon$
- Monopsony power depends on the slope of the supply curve.
- Classical example: mining company in remote area
- Another example: couple of which the spouse is a “tied stayer”
- Modern monopsony: many employers, but few vacancies to apply for.

## Seminal study: Card & Krueger (AER 1994)

### “Natural experiment”

- Impact of increases in the minimum wage in New Jersey (treatment group) in April 1992 from \$4.25 to \$5.05: increase by 80 dollar-cents.
- Control group: Pennsylvania, where the minimum wage remained at \$4.25 throughout this period.
- New Jersey and Pennsylvania are bordering states with similar economic structures
- Data on employment in 410 fast-foods in the two states in March 1992 (before the MW hike) and in December (after).

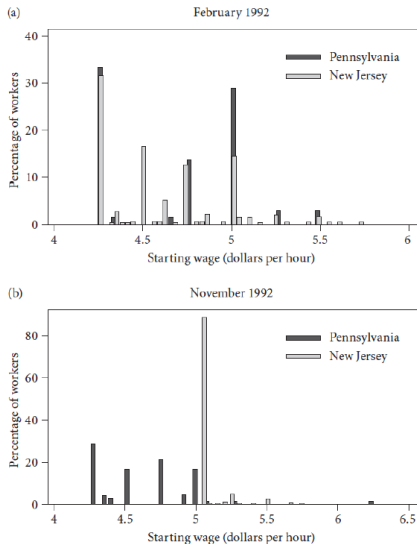


FIGURE 2.5 The wage distribution (a) before and (b) after an increase in the minimum wage

# Difference-in-Difference estimators

- Two differences; usually:
  - 1 Before – After: April 1992 – December 1992
  - 2 Treatment group – Control group: New Jersey – Pennsylvania
- Treatment group and control group have to be sufficiently similar
- All changing characteristics & economy have a similar effect on both groups
- The policy intervention is the only difference between the two



# Employment effects and price effects – competitive market or monopsony?

	Employment		Price	
	New Jersey	Pennsylv	New Jersey	Pennsylv
Mar 1992	20.4	23.3	3.35	3.04
Dec 1992	21.0	21.2	3.41	3.03
$\Delta$	0.6	-2.1	0.06	-0.01
$\Delta\Delta$	2.7		0.07	

Note: Employment = Number of full-time equivalents working in a fast-food restaurant;  
 Price = Price of a full fast-food meal in U.S. dollars

# Draca, Machin and Van Reenen (AEJ-AE 2011)

## UK National Minimum Wage

- National Minimum Wage (NMW) introduced in 1999 in the UK
- Using firm level data
- Low-wage firms are more likely to be affected by the NMW
- Before = April 1 1996-1999 – After = April 1 1999-2002
- **Difference-in-differences**

## Minimum wages and firm profitability

Comparing low-wage firms & non low-wage firms:

	Log(average wage)		Profit margin	
	Low	Non low	Low	Non low
Pre-NMW	2.149	2.775	0.128	0.070
Post-NMW	2.378	2.893	0.089	0.058
$\Delta$	0.229	0.118	-0.039	-0.012
$\Delta\Delta$	0.111		-0.027	

Note: NMW = National Minimum Wage; Profit margin = Ratio of profits to sales

- 1 Findings consistent with “no behavioral response”
- 2 Firms do not adjust employment
- 3 Wage gains from minimum wages map into profit reductions

## Giuliano (JoLE 2013)

- October 1, 1996 Increase Federal MW from \$4.25 to \$4.75
- Large US retail firm – 700 stores across the country
- Some states MW higher than \$4.75, other states below \$4.75
- Two sources of variation: across states – across stores (high wage - low wage stores)
- Increase in average wage – negative but statistically insignificant effect
- Increases in the relative wage of teenagers – increases their relative employment
- More (productive) teenagers enter the labor market

## 2. EMPLOYMENT PROTECTION LEGISLATION

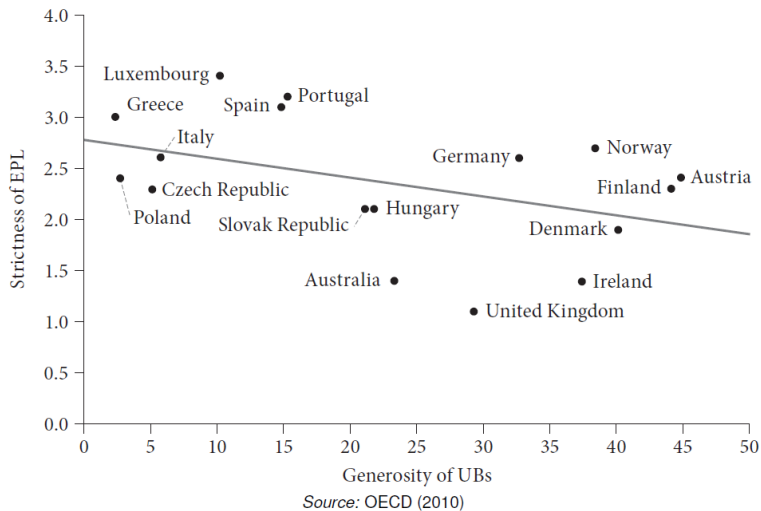
## Different roles for EPL & UB

- EPL provides protection from wage fluctuations to employed workers
- UB provide protection from wage fluctuations to workers who lose their job

There are two key differences between EPL and UB:

- 1 EPL protects only those who already have a job, acting as a deterrent to layoffs, while UBs protect the working-age population at large (although some work experience is generally required to receive UBs).
  - 2 EPL does not impose any tax burden on workers, while UBs are financed by a payroll tax levied on those who have jobs.
- ALMP may counteract disincentives – moral hazard – from UB

## Interactions with other institutions



# EPL – What are we talking about?

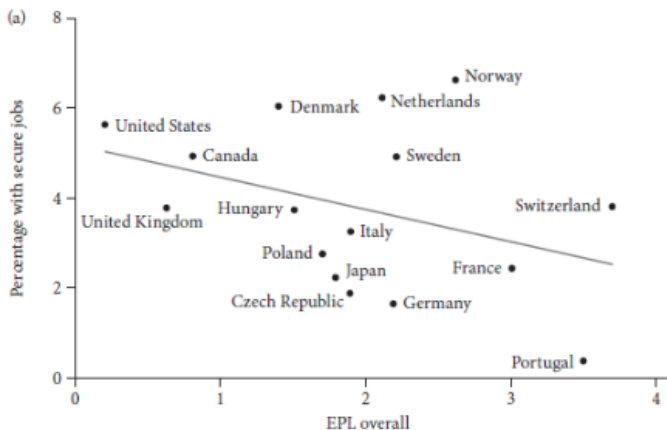
- Set of norms and procedures followed in case of dismissal of redundant workers.
- Act as deterrent: protect workers with permanent contracts from the risk of early termination of their employment contract
- Decisions involve also third parties: legitimacy of a layoff ultimately depends on court ruling



# EPL – Measures

- Surveys of employers (possibly personnel managers of multinational firms) and workers (perceptions of security)
- Expert evaluations
- Country rankings of Employment Protection compiled by OECD, providing quantitative measures of qualitative features – two step procedure
  - ① Conversion of 18 indicators in 0-6 scores
  - ② Calculation of weighted averages of the scores in different areas
    - ① I. Individual dismissals of regular worker
    - ② II. Temporary work
    - ③ III. Collective dismissals

## Objective measures &amp; subjective measures



# I. Individual dismissals of regular workers

- A. Regular procedural inconveniences
  - ① Notification procedures (0-3): 0 = oral statement, 1 = written statement, 2 = notify third party, 3 = permission from third party
  - ② Delay to start of notice: some countries 1 day; others 1 month
- B. Difficulty of dismissal
  - ① Definition unfair dismissal (0-3): 0 = capability of worker or redundancy of job – 3 = capability cannot be the ground
  - ② Trial period before eligibility: 0 – 1 year
  - ③ Compensation after 20 years (if unfair dismissal – months of pay; 0 - 18 months)
  - ④ Extent of reinstatement (if unfair dismissal, right to return to job)
- C. Notice period and severance pay

# I. EPL indicator regular employment

$$I = (A+B+C)$$

	1980s	1990s	2003	2008
Denmark	1.5	1.5	1.5	1.5
France	2.3	2.3	2.5	2.6
Germany	2.6	2.7	2.7	2.9
Italy	1.8	1.8	1.8	1.7
Netherlands	3.1	3.1	3.1	2.7
Spain	3.9	2.9	2.9	2.4
UK	0.9	0.9	1.1	1.2
US	0.2	0.2	0.2	0.6

## II. Temporary employment

### 1 Fixed term contracts

- 1 Valid cases other than the usual objective reasons
- 2 Maximum number of successive contracts
- 3 Maximum cumulated duration

### 2 Temporary work agencies

- 1 Types of work for which TWA is legal
- 2 Restrictions on number of renewals
- 3 Maximum cumulative duration of TWA contracts

	1980s	1990s	2003	2008
Denmark	3.1	1.4	1.4	1.8
France	3.1	3.6	3.6	3.8
Germany	3.8	2.3	1.8	2.0
Italy	5.4	3.6	2.1	2.5
Netherlands	2.4	1.2	1.2	1.4
Spain	3.8	3.3	3.5	3.8
UK	0.3	0.3	0.4	0.3
US	0.3	0.3	0.3	0.3

### III. Collective dismissals

- ① Definition of collective dismissal (number of workers involved: 0, below 10 – more than 50)
- ② Additional notification requirements
- ③ Additional delays involve
- ④ Other special costs to employers (social compensation plans)

	1980s	1990s	2003	2008
Denmark		3.9	3.9	3.1
France		2.1	2.1	2.1
Germany		3.5	3.8	3.8
Italy		4.9	4.9	4.9
Netherlands		3.0	3.0	3.0
Spain		3.1	3.1	3.1
UK		2.9	2.9	2.9
US		2.9	2.9	2.9

Overall EPL indicator:  $\frac{5*I+5*II+2*III}{12}$

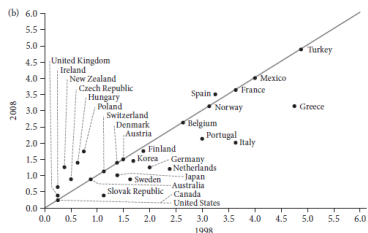
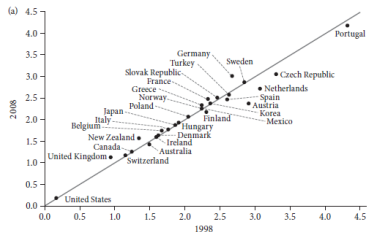
	1980s	1990s	2003	2008
Denmark	–	1.8	1.8	1.9
France	–	2.8	2.9	3.0
Germany	–	2.6	2.5	2.6
Italy	–	3.1	2.4	2.6
Netherlands	–	2.3	2.3	2.2
Spain	–	3.0	3.1	3.1
UK	–	1.0	1.1	1.1
US	–	0.7	0.7	0.9

# Shortcomings of this index

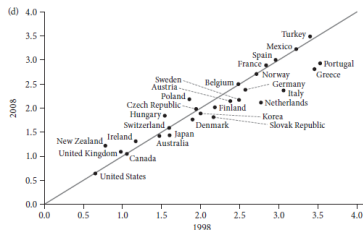
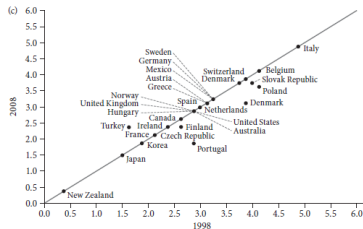
- Arbitrary weighting of the different components
- Interactions: stricter regular contracts → more temporary contracts
- Nothing on enforcement
  - Conciliation practices, length of the judicial procedure, percentage of rulings favorable to workers act as a threat to dismissals
  - We measure at best EPL, Employment Protection *Legislation*



# Country rankings and evolution – Regular contract & temporary employment



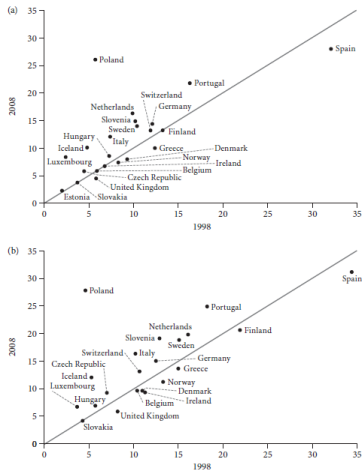
# Country rankings and evolution – Collective dismissals & overall EPL index



# Stylized facts about reforms

- Some convergence in overall EPL
- Driven almost entirely by reforms of temporary contracts
- Dual track reforms: reforms at the margin – for new hires while position of incumbent workers remains unchanged
- However inertia in country rankings

# Change in percentage of temporary workers – men and women; 1998–2008



## Economically relevant distinction

- 2 components of the EPL tax: Transfers (TR) from employers to employees and Deadweight Costs (C) to third parties, such as legal and procedural costs, jurisprudence, etc.
- $T = TR + C$
- TR can be negotiated, and hence **incorporated** (discounted) **ex-ante in wage contracts**
- while “deadweight costs”, C, cannot

## A neutrality result if EPL is transfer (Lazear 1990)

- competitive product market ( $w=MP$ )
- competitive labor market (no unions)
- flexible wages (no wage floors)
- risk-neutral agents ( $u(w)=w$ ), interested only in average wages over the period

EPL has **no effects** on employment and wages. Contracted away

# EPL as a tax

- Payment to a third party, say a lawyer
- Cannot be undone by bonding agreements
- Effects on both job creation and destruction as employers anticipate these costs when issuing a vacancy
- In general expected decline in both hiring and separations (**flows**) with ambiguous effects on employment/unemployment **stocks**

# Role models

- 1960s – Europe for the US: **high EPL**
- 1980s – US for Europe: **low EPL**
- Swedish model – active labor market policies
- Dutch model – reforming social security, cooperative unions, flexibility (part-time labor)
- Danish model – **flexicurity**; “Golden triangle”
  - ① Hiring and firing rules are flexible (**flexi**)
  - ② Unemployment insurance generous (**curity**)
  - ③ Activating unemployed workers
- OECD Economic Survey Denmark
  - 1990– “The **malfunctioning** of the labor market is at the core of the macroeconomic imbalances in the Danish economy”
  - 2008– “... the flexible labor market, combined with active support for those losing jobs, makes a **good starting point** to benefit from globalization”
  - Neither EPL nor UB changed – it was additional **activation**



## Ichino & Riphahn (JEEA 2005)

- Effect on EPL on worker effort: absenteeism during and after probation
- Italian Bank: for 12 weeks, workers can be fired at will, after that protection from EPL
- EPL: if not sustained by “just cause” firm has to pay wage + penalty of 200%
- 545 men, 1993-1995 observed for 12 months

After 12 weeks: absence more than triples

- 1 Learning about social norms
- 2 Disincentive from EPL

# Absenteeism during and after probation

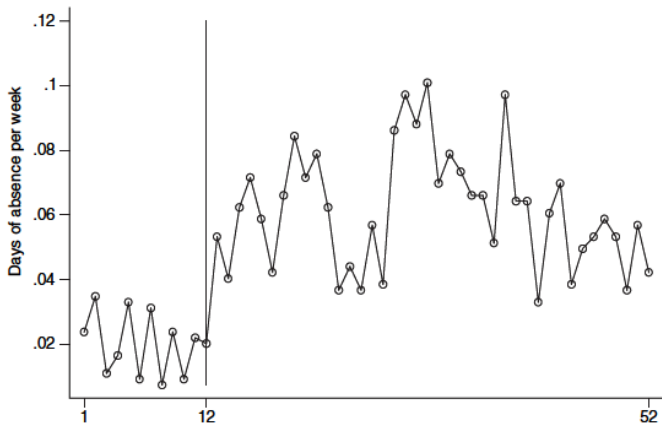


FIGURE 1. Absenteeism during and after probation—Males.

## Olsson (LE 2009)

- EPL and sickness absence in Sweden
- January 2001: exemption in the seniority rule – it made it possible for employers with  $< 10$  employees to exempt 2 workers from seniority rule at times of redundancy
- Workers previously protected put at risk of dismissal
- Increasing risk of redundancy, especially for workers with high sickness absence

## Natural experiment in Sweden

- Before vs after policy implementation (January 2001)
- Firms: Above/below 10 employees.

Probability to be absent (%)

	Treatment group	Control group
Firm size	2-9	12-50
2000	2.8	3.6
2001	2.4	3.6
$\Delta$	-0.4	0.0
$\Delta\Delta$	-0.4	

## Jacob (JoLE 2013)

- In 2004 Chicago Public Schools gave principals flexibility to dismiss probationary teachers
- Annual teacher absences reduces by roughly 10%
- Incidence of frequent absences reduced by 25%
- Changes in the composition of teachers
- Some incentive effects for young teachers
- Small effects on math & reading scores
- Reluctance of many principals to use the new flexibility