

Unemployment and Labor Market Frictions

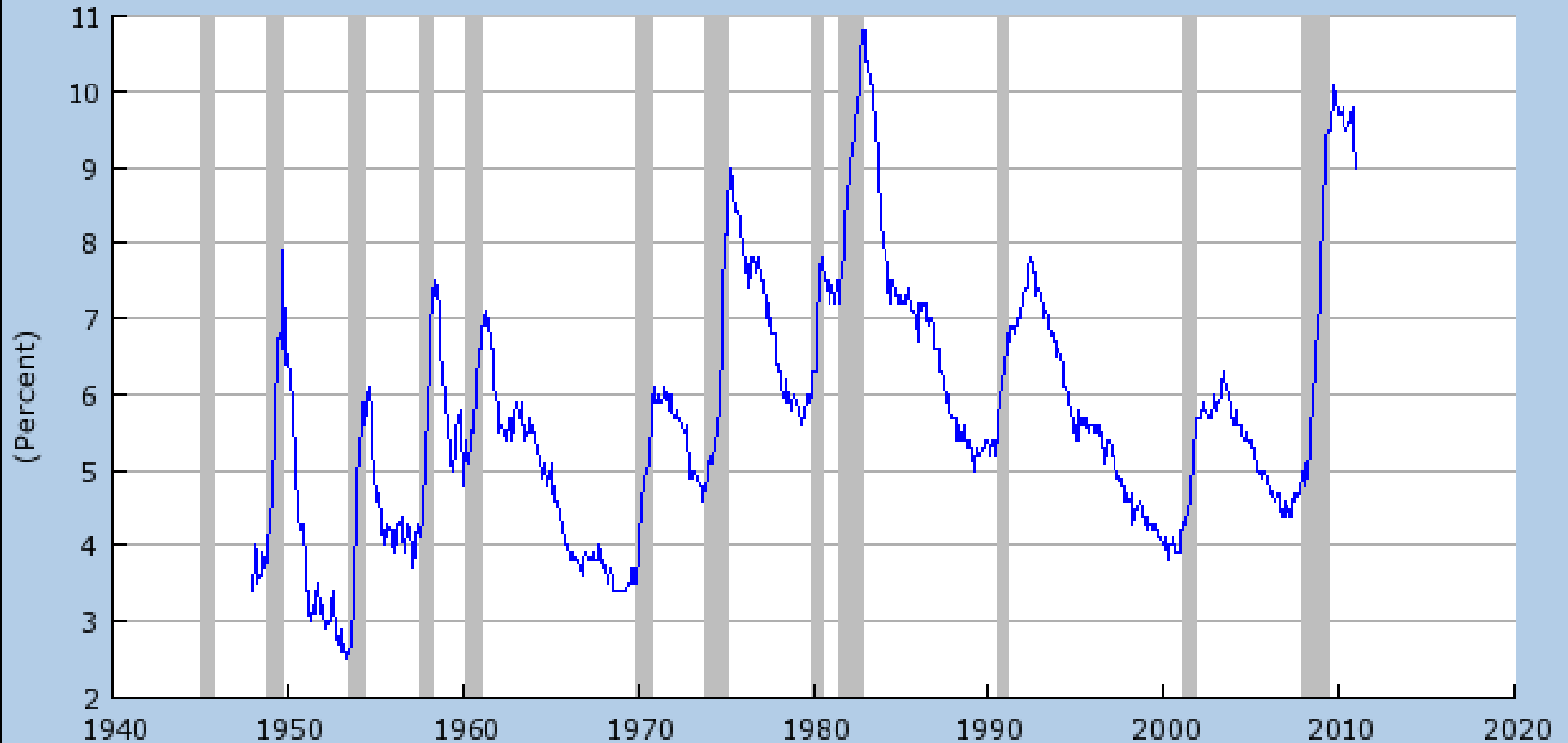
by

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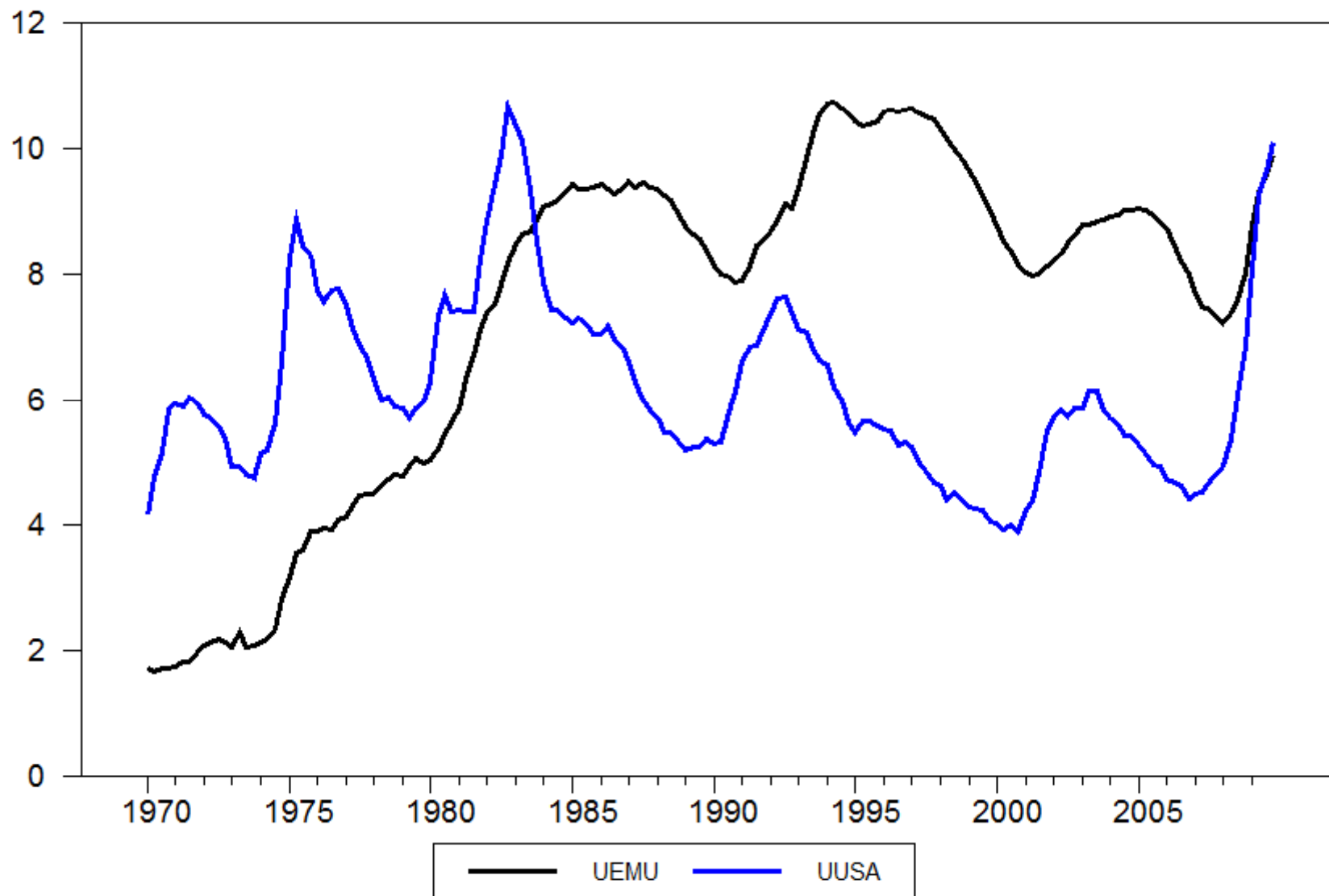
U.S. Unemployment Rate

Civilian Unemployment Rate (UNRATE)
Source: U.S. Department of Labor: Bureau of Labor Statistics

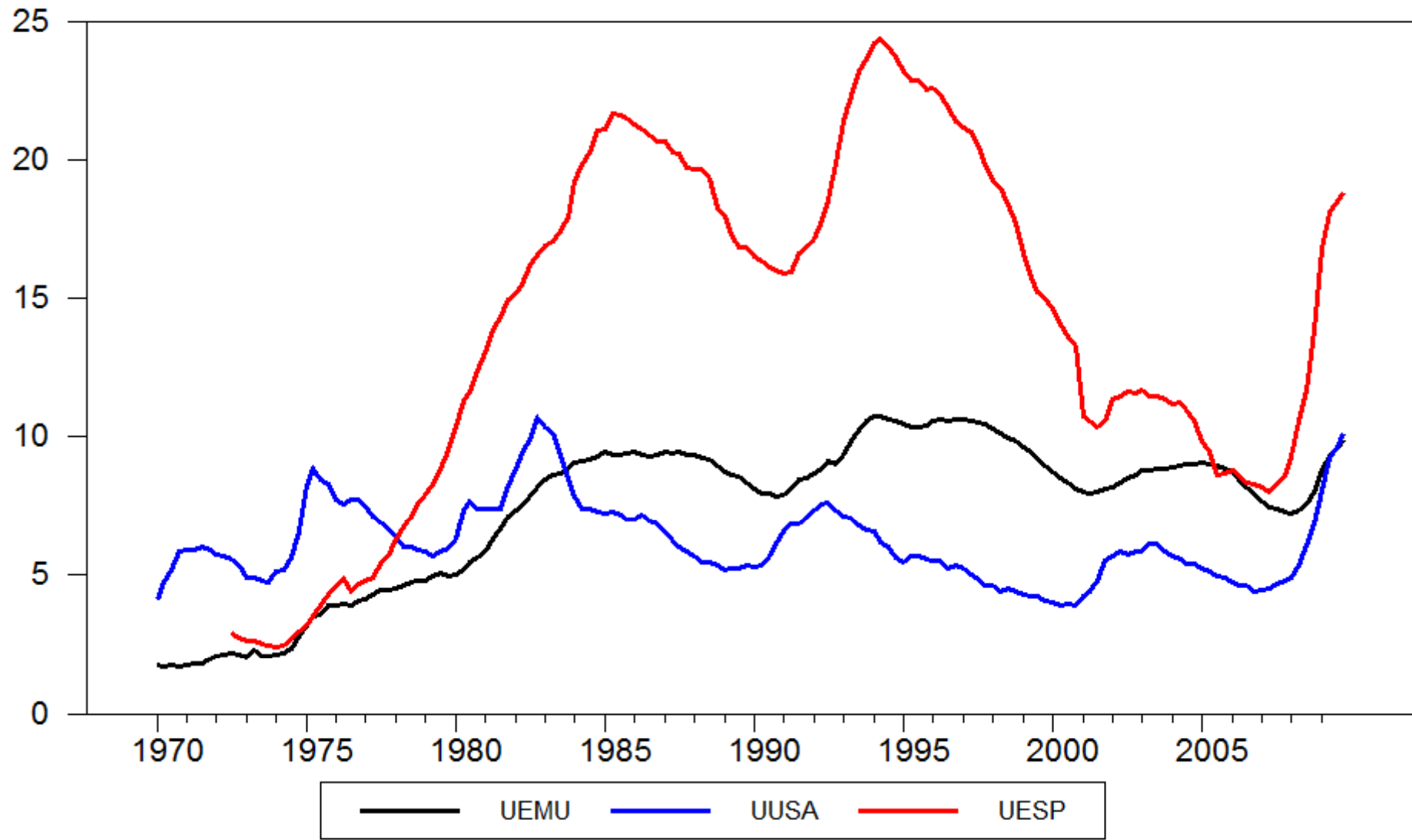


Shaded areas indicate US recessions.
2011 research.stlouisfed.org

Unemployment: U.S. vs Euro Area



Unemployment: U.S., Euro Area and Spain



Unemployment and Labor Market Distortions

- Perfectly competitive labor market

$$w_t = \sigma c_t + \varphi n_t$$

⇒ no involuntary unemployment

- Imperfect competition or other wage setting distortions

$$w_t = \mu_t^w + \sigma c_t + \varphi n_t$$

where $\mu_t^w > 0$ is the labor market wedge (or wage markup).

- Perfectly competitive labor supply

$$w_t = \sigma c_t + \varphi l_t$$

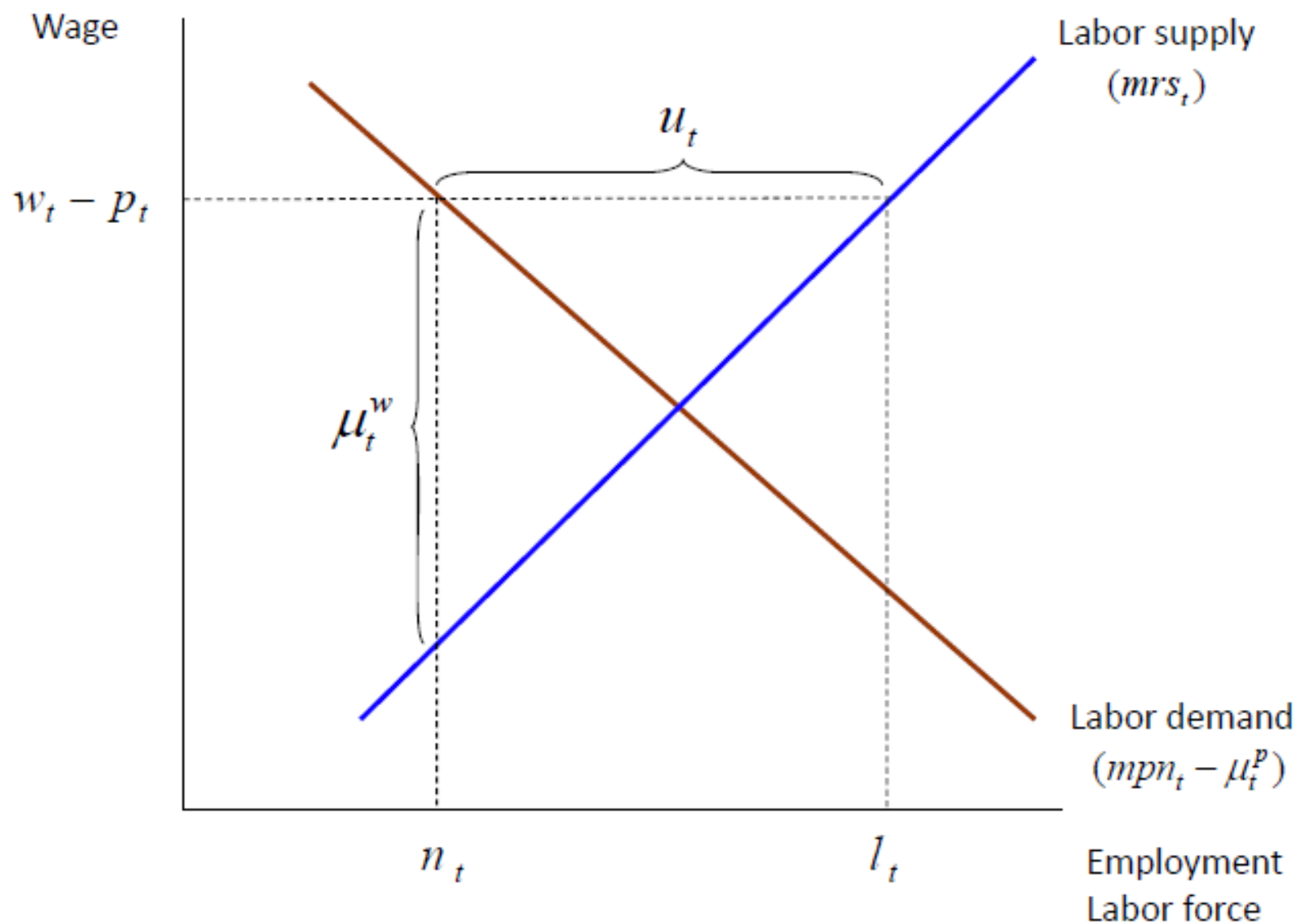
- Unemployment

$$u_t \equiv l_t - n_t$$

- Unemployment and the labor market wedge

$$\mu_t^w = \varphi u_t$$

Figure 1. The Wage Markup and the Unemployment Rate



Example (I): Efficiency Wages

Production function:

$$Y_t = F(E(W_t)N_t)$$

Firm's problem:

$$\max_{W_t, N_t} F(E(W_t)N_t) - W_t N_t$$

Optimality conditions:

$$\frac{E'(W_t)}{E(W_t)} W_t = 1 \quad \implies \quad W^*, E(W^*)$$

$$F'(E(W^*)N_t) E(W^*) = W^* \quad \implies \quad N_t$$

independently of labor supply

Example: $E(W_t) = \log(1 + W_t)$

Example (II): Monopolistic Union

$$\max_{W_t} U(C_t, N_t)$$

where $U(C_t, N_t) \equiv \frac{C_t^{1-\sigma}}{1-\sigma} - \frac{N_t^{1+\varphi}}{1+\varphi}$, subject to

$$C_t = W_t N_t + \Pi_t$$

$$N_t = W_t^{-\epsilon_w} Q_t$$

Optimality condition:

$$W_t = \frac{\epsilon_w}{\epsilon_w - 1} MRS_t$$

where $MRS_t \equiv -\frac{U_{n,t}}{U_{c,t}} = C_t^\sigma N_t^\varphi$

Letting $\mu^w \equiv \log \frac{\epsilon_w}{\epsilon_w - 1}$

$$w_t = \mu^w + \sigma c_t + \varphi n_t$$

$$u_t = u = \frac{\mu^w}{\varphi}$$

Example (III): Real Wage Rigidities

$$w_t^* = \mu^w + \sigma c_t + \varphi n_t$$

$$w_t = \gamma w_{t-1} + (1 - \gamma) w_t^*$$

Implication:

$$\Delta w_t = - \left(\frac{1 - \gamma}{\gamma} \right) \varphi (u_t - u^*)$$

where $u^* = \frac{\mu^w}{\varphi}$ ("natural rate")

\Rightarrow gradual adjustment of unemployment.

Example (IV): Hysteresis (Blanchard-Summers)

Assume labor demand is given by $w_t = a_t - \alpha n_t$

Wage-setting in advance by union, given target employment n_t^* :

$$w_t = E_{t-1}\{a_t\} - \alpha E_{t-1}\{n_t^*\}$$

"Insiders model": $n_t^* = n_{t-1}$

Implication:

$$n_t = n_{t-1} + \frac{1}{\alpha} \varepsilon_t^a$$

where $\varepsilon_t^a \equiv a_t - E_{t-1}\{a_t\}$.

Using $w_t = c_t + \varphi l_t$:

$$u_t = -\frac{1 + \varphi}{\varphi} n_t$$
$$u_t = u_{t-1} - \frac{1 + \varphi}{\alpha\varphi} \varepsilon_t^a$$

\implies permanent effects of temporary shocks!

The Search and Matching Model

- Mortensen-Pissarides (RES 94), Pissarides (2000)
- Employment Dynamics

$$N_{t+1} = (1 - \delta)N_t + H_t$$

- Unemployment

$$U_t = 1 - N_t$$

- New Hiring

$$H_t = M(V_t, U_t)$$

- Vacancies posted at a fixed cost k

- Job Finding Rate

$$\frac{H_t}{U_t} = M \left(\frac{V_t}{U_t}, 1 \right) \equiv \phi(x_t)$$

where $x_t \equiv V_t/U_t$ is an index of labor market tightness, and $\phi'(x_t) > 0$

- Vacancy Filling Rate

$$\frac{H_t}{V_t} = M \left(1, \frac{U_t}{V_t} \right) \equiv \rho(x_t)$$

where $\rho'(x_t) < 0$.

- *Beveridge Curve*

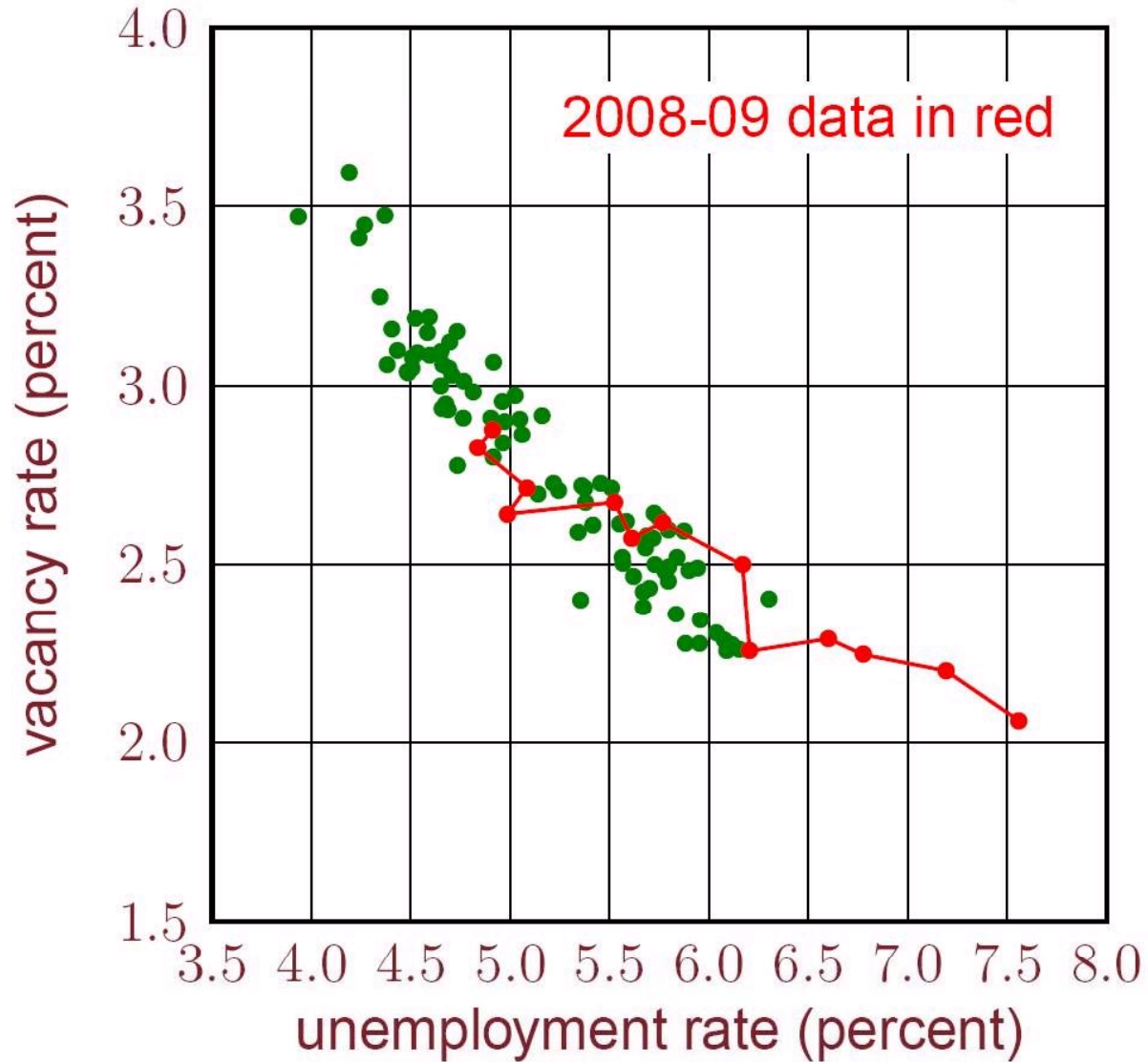
$$\begin{aligned} M(V_t, U_t) &= \delta N_t + \Delta N_{t+1} \\ &= \delta(1 - U_t) - \Delta U_{t+1} \end{aligned}$$

Steady State

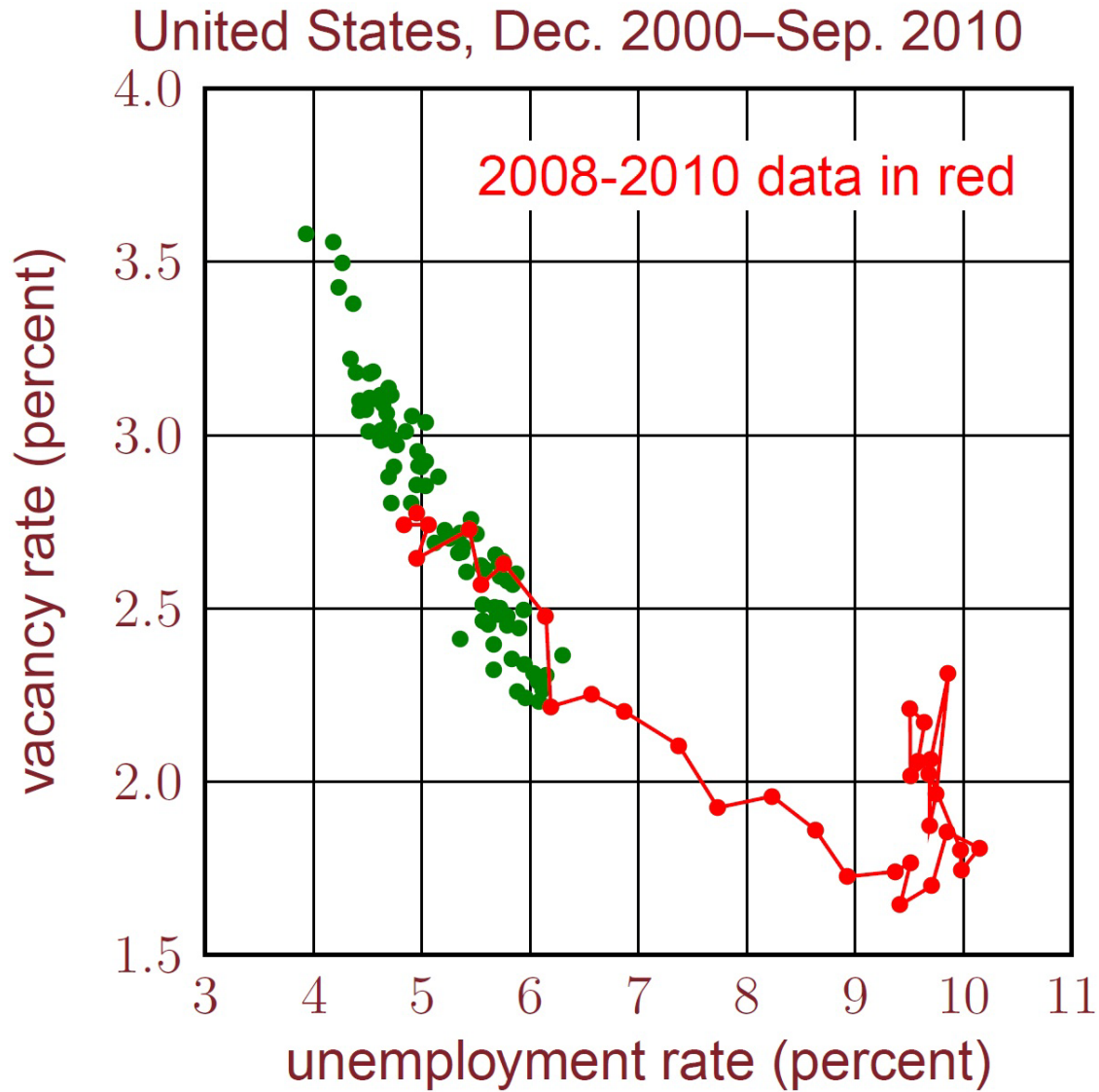
$$M(V, U) = \delta(1 - U)$$

The Beveridge Curve

United States, December 2000–January 2009



The Beveridge Curve



- Unemployment Dynamics and Labor Market Tightness

$$N_{t+1} = (1 - \delta)N_t + \phi(x_t)U_t$$

$$U_{t+1} = (1 - \delta - \phi(x_t)) U_t + \delta$$

- Firm's surplus from *existing* employment relation

$$\begin{aligned} \mathcal{S}_t^F &= A_t - W_t + \beta(1 - \delta)E_t\{\mathcal{S}_{t+1}^F\} \\ &= E_t \left\{ \sum_{k=0}^{\infty} (\beta(1 - \delta))^k (A_{t+k} - W_{t+k}) \right\} \end{aligned}$$

- Optimal hiring policy

$$k = \rho(x_t)\beta E_t\{\mathcal{S}_{t+1}^F\}$$

- Steady state:

$$U = \frac{\delta}{\delta + \phi(x)}$$

$$S^F = \frac{A - W}{1 - \beta(1 - \delta)}$$

$$\frac{k}{\rho(x)} = \frac{\beta(A - W)}{1 - \beta(1 - \delta)}$$

- Comparative statics:

$$\uparrow A \implies \uparrow x \implies \downarrow U$$

$$\uparrow W \implies \downarrow x \implies \uparrow U$$

$$\uparrow k \implies \downarrow x \implies \uparrow U$$

$$\uparrow \delta \implies \downarrow x \implies \uparrow U$$

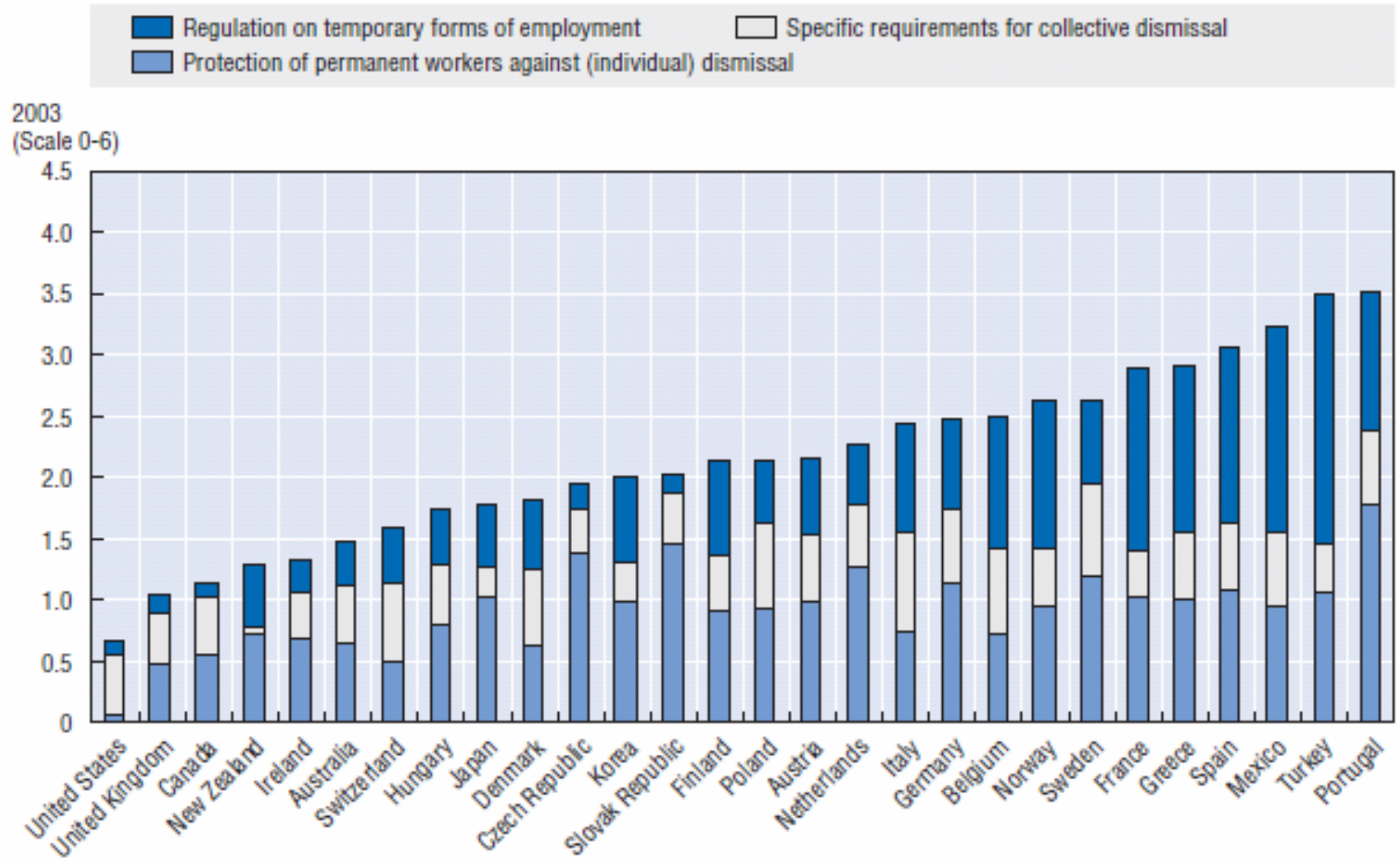
El Sistema de Protecció a l'Ocupació

- Lleis + Negociació col.lectiva + Pràctiques judicials
- Protecció treballadors “regulars” (amb contracte indefinit)
 - condicions acomiadament “justificat”
 - dificultats de procediment
 - periode d'avís + indemnitzacions
- Protecció addicional acomiadaments col.lectius
- Regulació contractes temporals i agències de treball temporal.

L'index de la OCDE (Employment Outlook 2004)

Chart 2.1. The overall summary index and its three main components

Panel A. Overall strictness of EPL in 2003 (version 2)^a



Efectes Teòrics

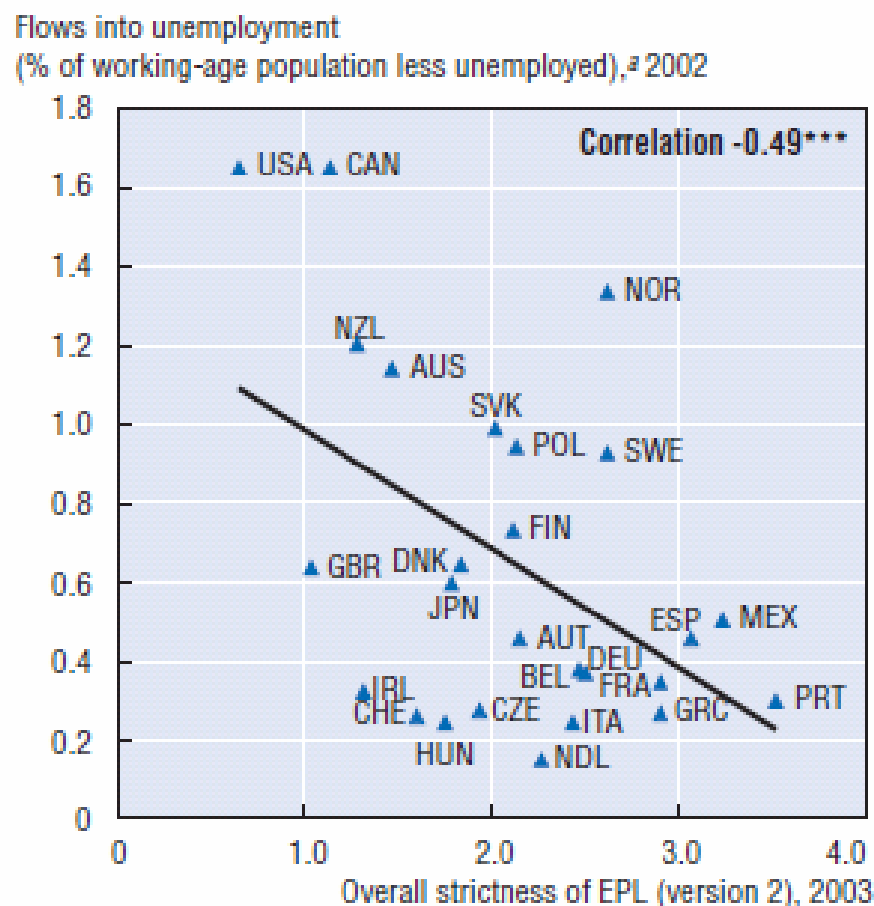
- Efectes sobre fluxos d'entrada i sortida de l'atur
→ efecte ambigu sobre la taxa d'atur

$$U = \frac{\delta}{\delta + \phi}$$

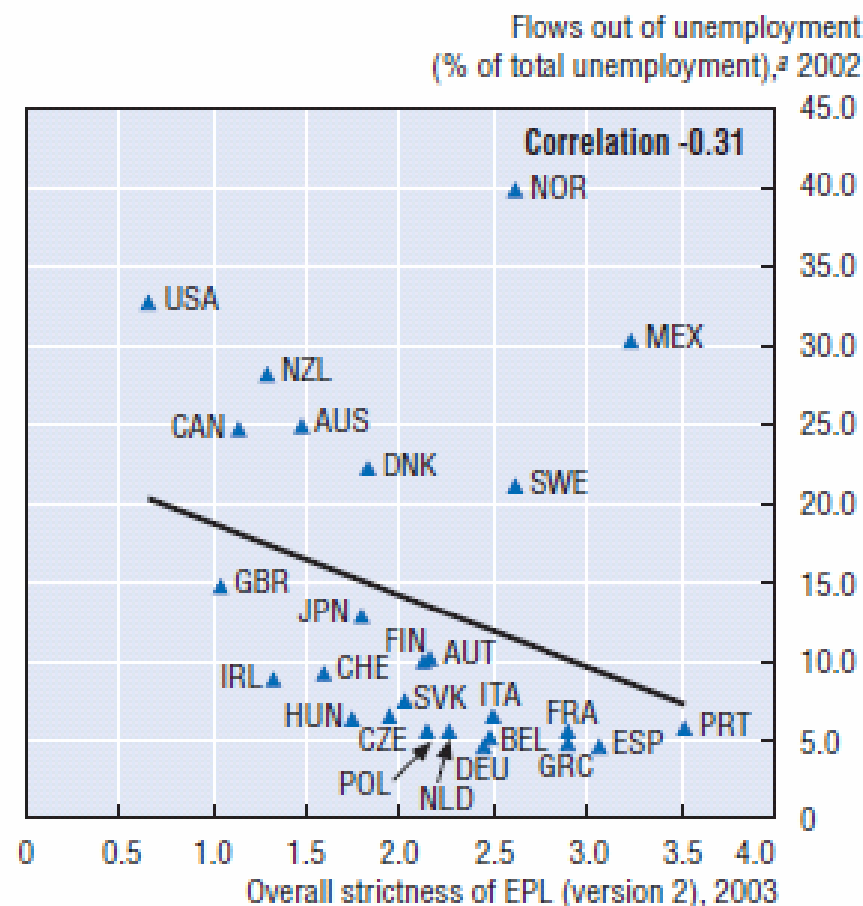
- Augment del poder de mercat dels treballadors “regulars” → ↑ W → ↑ U
- Efectes sobre productivitat ambigus
 - ↑ inversió capital humà “específic”
 - ↓ incentius per a evitar baix rendiment

Chart 2.4. Simple correlations between EPL, labour market dynamics, and the incidence of long term unemployment

Panel A



Panel B



Panel C

Incidence of long-term unemployment
(% of total unemployment), 2002

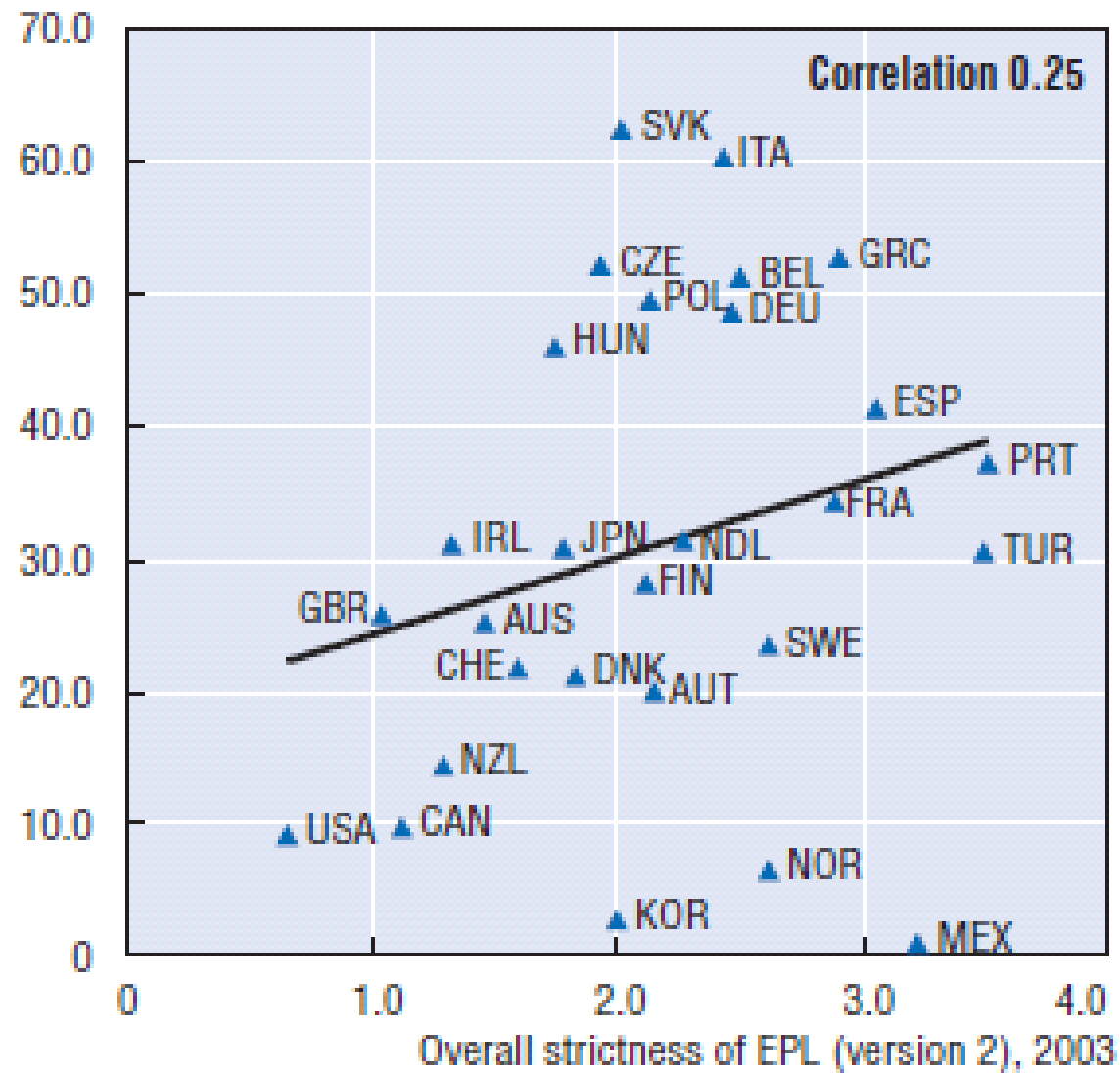


Table 2.2. EPL reduces labour market dynamics^a

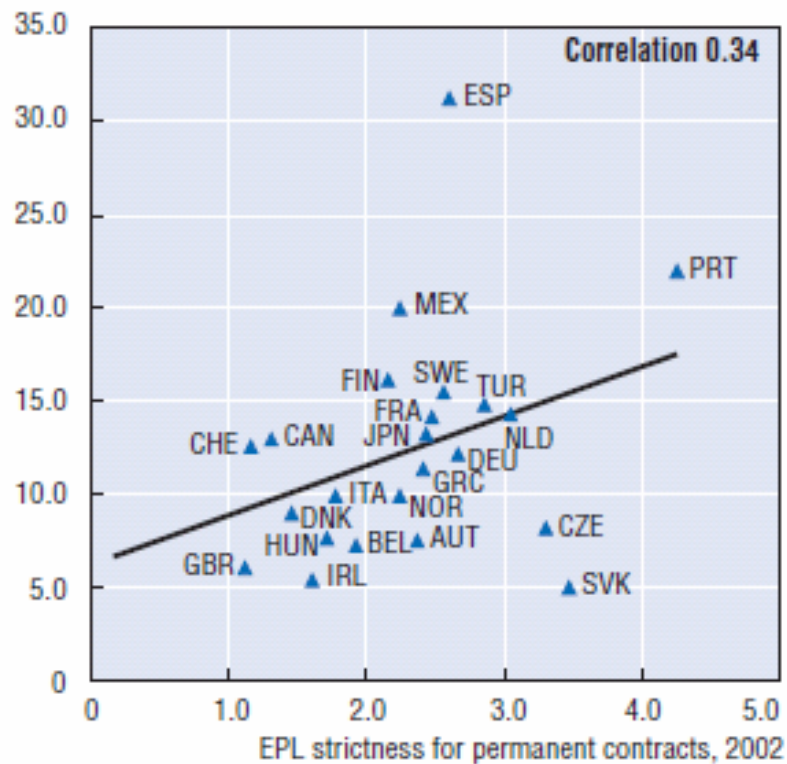
Random effects, GLS

	Flows into unemployment ^b	Flows out of unemployment ^b	Incidence of long-term unemployment
EPL	-0.165*** (0.05)	-5.030*** (1.07)	3.271*** (1.26)
Centralisation/co-ordination index	-0.015 (0.04)	0.003 (0.94)	-0.904 (1.10)
Bargaining coverage	0.001 (0.00)	-0.053 (0.06)	0.105 (0.08)
ALMP ^c		0.761** (0.31)	-1.327*** (0.43)
Tax wedge	0.002 (0.01)	-0.143 (0.14)	0.980*** (0.15)
Unemployment benefits			0.187** (0.09)
Output gap	-0.037*** (0.01)	1.064*** (0.14)	-0.574*** (0.16)
F-test ^d	36.4***	41.8***	59.8***
B-P LM test ^d	892.3***	838.8***	1 117.0***
Hausman test ^d	10.6*	5.6	0.9
Coefficients on EPL estimated using other methods			
Fixed effects	-0.092* (0.05)	-3.106** (1.27)	1.763 (1.53)
Pooled OLS	-0.390*** (0.03)	-6.558*** (0.76)	5.992*** (1.04)
No. of observations	295	276	270
No. of countries ^e	19	19	19

***, **, * means statistically significant at 1%, 5% and 10% levels, respectively. All regressions include a constant term; standard errors in italics.

Chart 2.6. Strictness of employment protection and the incidence of temporary work

Incidence of temporary work
(% of total employment), 2002



Transition rate from fixed-term contract to permanent
employment between 1998 and 2000 (%)^a

