Lecture 6: Labour economics

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Co-ordinated wage bargaining and monetary policy

- **In many European countries wage bargaining is highly co-ordinated**
  - **sectoral bargaining**
  - **nation-wide bargaining**
- **Internalisation of the effects of wage setting**
- **Interaction with monetary policy**
- **A conservative central bank – aiming for price stability – can act as a deterrent to wage increases and promote employment**
- **Neutrality of money but non-neutrality of the monetary regime.**

Soskice-Iversen model

- ***N*** **identical sectors**
- **Bertrand competition within each sector so that *p* = *MC***
- ***n*** **workers in each sector; all are union members**
- **No labour mobility**
- **Monopoly unions**
- **Nash equilibrium**
- **CRS w.r.t. labour**
- **One union in each sector**

Stages of the game

(1) **The central bank commits to a monetary policy rule of leaning against the wind**

$$M = P^{\alpha} \qquad 0 \leq \alpha \leq 1$$

A price rise causes a reduction in real money supply M/*P* if $\alpha < 1$.

(2) **Unions set wages simultaneously and independently taking all other nominal wages as given (Nash equilibrium).**

(3) **Producers decide employment E_i and price P_i simultaneously and independently (Nash equilibrium).**

(4) **The central bank sets *M* contingent on *P* according to its policy rule.**

Solve model by backward induction

<u>Stage 4</u>

$$M = P^{\alpha}$$

<u>Stage 3</u>

Bertrand competition: $P_i = W_i$

<u>Stage 2</u>

Union utility function:

$$U_i = w_i E_i - (d/\beta)E_i^{\beta} + m/N$$

$$w_i = \frac{W_i}{P_i} = \text{real consumption wage}$$

$$m = \frac{M}{P} = \text{real money supply}$$

$$E_i = \text{hours worked}$$

$$P = \left[\frac{1}{N}\sum_N P_i^{1-\eta}\right]^{\frac{1}{1-\eta}} = \text{price index}$$

Derivation of union utility function

Direct utility function of consumer *s* in sector *i*:

$$U_{is} = \left(\frac{C_{is}}{g}\right)^{g}\left(\frac{M_{is}/P}{1-g}\right)^{1-g} - \frac{d'}{\beta}\left(\frac{E_i}{n}\right)^{\beta} \qquad \text{(A1)}$$

$$C_{is} = N^{1/(1-\eta)}\left[\sum_{j}^{N} C_{jis}^{(\eta-1)/\eta}\right]^{\eta/(\eta-1)}$$

Budget constraint

$$\sum_{j}^{N} P_j C_{jis} + M_{is} = W_i \frac{E_i}{n} + \bar{M}_{is} = I_{is}$$

Optimisation on the part of the consumers

$$C_{jis} = \left(\frac{P_j}{P}\right)^{-\eta} \cdot \frac{g}{N} \cdot \frac{I_{is}}{P}$$

$$P = \left[\frac{1}{N}\sum_i P_i^{1-\eta}\right]^{\frac{1}{1-\eta}}$$

$$\frac{C_{is}}{g} = \frac{M_{is}/P}{1-g} = \frac{I_{is}}{P} \qquad \text{(A2)}$$

Substitute (A2) into (A1)

$$U_{is} = \left(\frac{I_{is}}{P}\right)^{g}\left(\frac{I_{is}}{P}\right)^{1-g} - \frac{d'}{\beta}\left(\frac{E_i}{n}\right)^{\beta}$$

$$U_{is} = \left(\frac{I_{is}}{P}\right) - \frac{d'}{\beta}\left(\frac{E_i}{n}\right)^{\beta} = \frac{w_i E_i}{n} + \frac{\bar{M}_{is}}{P} - \frac{d'}{\beta}\left(\frac{E_i}{\beta}\right)^{\beta}$$

Multiply by *n* and use that $M = \overline{M} = nN\overline{M}_{is}$

Define $d = d'/n^{\beta-1}$

Hence $U_i = w_i E_i + m/N - \frac{d}{\beta} E_i^{\beta}$

Goods demand

$$C_{jis} = \left(\frac{P_j}{P}\right)^{-\eta} \cdot \frac{I_{is}}{P} \cdot \frac{g}{N} = \left(\frac{P_j}{P}\right)^{-\eta} \cdot \frac{g}{N} \cdot \frac{M_{is}}{P} \cdot \frac{1}{1-g} =$$

$$= \left(P_j\right)^{-\eta} \cdot \frac{m_{is}}{N} \cdot \frac{g}{1-g}$$

Normalise *g*/(1-*g*) to unity and aggregate over all consumers:

$$C_j = \left(m/N\right)\left(P_j\right)^{-\eta}$$

$$p_j = \frac{P_j}{P}$$

Trade union optimisation (continued)

Goods demand:

$$Q_i = (m/N)P_i^{-\eta}$$

$$p_i = \frac{P_i}{P}$$

CRS

$$p_i = w_i$$

Labour demand

$$E_i = Q_i = (m/N)w_i^{-\eta} \qquad (2)$$

$$\max_{w_i} \quad U_i = w_i E_i - (d/\beta)E_i^{\beta} + m/N$$

$$\text{s.t.} \quad E_i = (m/N)w_i^{-\eta}$$

$$p_i = w_i$$

$$m = f(w_i ......)$$

Use that the equilibrium is symmetric, i.e. impose $p_i = w_i = 1$ **after differentiation.**

$$E^* = \text{sectoral employment}$$

$$E^* = \left[\frac{\eta - 1 - 2\partial \ell nm / \partial \ell nw_i}{d\eta - \partial \ell nm / \partial \ell nw_i} \right]^{\frac{1}{\beta - 1}} \tag{3}$$

Compute $\partial \ell nm / \partial \ell nw_i$

Use that:

$$\frac{\partial \ell nm}{\partial \ell nw_i} = \frac{\partial \ell nm}{\partial \ell np_i} = \frac{\partial \ell nm}{\partial \ell nP} \cdot \frac{\partial \ell nP}{\partial \ell nP_i} \cdot \frac{\partial \ell nP_i}{\partial \ell np_i} \tag{4}$$

Computation of $\partial \ell nm / \partial \ell nP$

$$M = P^{\alpha}$$

$$\frac{M}{P} = P^{\alpha - 1}$$

$$m = P^{\alpha - 1}$$

$$\frac{\partial \ell nm}{\partial \ell nP} = \alpha - 1$$

Computation of $\partial \ell n P / \partial \ell n P_i$

$$P = \left[\frac{1}{N} \sum_N P_i^{1-\eta} \right]^{1/(1-\eta)}$$

$$\frac{dP}{dP_i} = \frac{1}{N} \cdot P \left[\frac{1}{N} \sum_N P_i^{1-\eta} \right]^{-1} P_i^{-\eta}$$

$$\frac{d\ell nP}{d\ell nP_i} = \frac{dP}{dP_i} \cdot \frac{P_i}{P} = \frac{1}{N} \cdot \frac{P_i^{1-\eta}}{\frac{1}{N} \sum_N P_i^{1-\eta}}$$

But as:

$$P = \left[\frac{1}{N} \sum P_i^{1-\eta} \right]^{1/(1-\eta)} \quad \text{we get}$$

$$\frac{1}{N} \sum_N P_i^{1-\eta} = P^{1-\eta}$$

Hence:

$$\frac{\partial \ell nP}{\partial \ell nP_i} = \frac{1}{N} \cdot \frac{P_i^{1-\eta}}{P^{1-\eta}}$$

In a symmetric equilibrium:

$$P_i = \overline{P} \qquad \text{for all } i$$

$$P = \left[\frac{1}{N}\sum_{N} P_i^{1-\eta}\right]^{\frac{1}{1-\eta}} = \left[\frac{1}{N}\cdot N\overline{P}^{1-\eta}\right]^{\frac{1}{1-\eta}} = \overline{P} = P_i$$

Hence:

$$\frac{\partial \ell n P}{\partial \ell n P_i} = \frac{1}{N}$$

Computation of $\partial \ell n P_i / \partial \ell n p_i$

$$\frac{\partial \ell n p_i}{\partial \ell n P_i} = \frac{\partial \ell n\left[P_i - P\right]}{\partial \ell n P_i} = \frac{\partial \ell n P_i}{\partial \ell n P_i} - \frac{\partial \ell n P}{\partial \ell n P_i} =$$

$$= 1 - \frac{1}{N} = \frac{N-1}{N}$$

Hence:

$$\frac{\partial \ell n P_i}{\partial \ell n p_i} = \frac{N}{N-1}$$

Thus:

$$\frac{\partial \ell nm}{\partial \ell nw_i} = \frac{\partial \ell nm}{\partial \ell nP} \cdot \frac{\partial \ell nP}{\partial \ell nP_i} \cdot \frac{\partial \ell nP_i}{\partial \ell np_i} =$$

$$= (\alpha - 1) \cdot \frac{1}{N} \cdot \frac{N}{N-1} = \frac{\alpha - 1}{N-1} < 0 \qquad (5)$$

- **A rise in the real consumption wage of union *i* reduces the real money supply if α < 1 (because it requires a nominal wage and a nominal price rise).**
- **Insert (5) into (3)!**

$$E^* = \left[\frac{\eta - 1 + 2(1-\alpha)/(N-1)}{d\eta + d(1-\alpha)/(N-1)} \right]^{\frac{1}{\beta - 1}} \qquad (6)$$

- **Straightforward to show that** $dE^*/d\alpha < 0$
  - **a more conservative central bank is associated with higher employment**
  - **because wage restraint is induced through fear of larger employment reduction if wages are raised**

Fully accommodating central bank : α = 1

$$E^* = \left[\frac{\eta - 1}{d\eta}\right]^{\frac{1}{\beta-1}} \qquad (6a)$$

- **Real money supply is held constant**

$$m = \frac{M}{P} = P^{\alpha-1} = P^{0} = 1$$

- **The only disincentive to a wage rise is product demand substitution**
- **No aggregate demand effect**

Compare employment with full accommodation, E_F^*, with employment with only partial accommodation, E_P^*.

$$E_F^* = \left[\frac{\eta - 1}{d\eta}\right]^{\frac{1}{\beta-1}}$$

$$E_P^* = \left[\frac{\eta - 1 + 2(1-\alpha)/(N-1)}{d\eta + d(1-\alpha)/(N-1)}\right]^{\frac{1}{\beta-1}}$$

$$E_P^* < E_F^* \quad \text{if} \quad \frac{\eta - 1 + 2(1-\alpha)/(N-1)}{d\eta + d(1-\alpha)/(N-1)} < \frac{\eta - 1}{d\eta}$$

This can be shown to hold.

The above inequality implies: $d + d\eta > 0$, which always holds.

Lower employment with <u>full accommodation</u> than with only <u>partial accommodation</u> if

$$\left[\frac{\eta-1}{d\eta}\right]^{\frac{1}{\beta-1}} < \left[\frac{\eta-1 \,+\, 2(1-\alpha)/(N-1)}{d\eta \,+\, d(1-\alpha)/(N-1)}\right]^{\frac{1}{\beta-1}}$$

$$\Leftrightarrow$$

$$(\eta-1)d\eta \,+\, \frac{(\eta-1)d(1-\alpha)}{N-1} \,<\, (\eta-1)d\eta \,+\, \frac{2(1-\alpha)d\eta}{N-1}$$

$$(\eta-1)d(1-\alpha) \,<\, 2(1-\alpha)d\eta$$

$$0 \,<\, d \,+\, d\eta$$

Non-neutrality of the monetary regime

- **Strategic wage setting**
- **Money supply rule has real implications**
- **A large trade union takes into account that a wage rise affects both the relative wage and the aggregate demand (via real money supply)**
- **Aggregate demand effect presupposes that *N* is not too large.**

Large number of unions

$$E^{*} = \left[\frac{\eta - 1 + 2(1-\alpha)/(N-1)}{d\eta + d(1-\alpha)/(N-1)}\right]^{\frac{1}{\beta-1}}$$

$$\lim_{N\to\infty} E^{*} = \frac{\eta - 1}{d\eta}$$

- **Degree of accommodation α does not matter then.**
- **Same employment as with fully accommodating central bank (α=1).**
- **A small union perceives zero effect of its wage decision on real money supply (as if it is held constant).**

<u>Only one union (N= 1)</u>

$$U \;=\; w_i E_i - (d/\beta)E_i^{\beta} \;+\; m/N \;=\; w_i E_i - (d/\beta)E_i^{\beta} \;+\; m$$

$$w_i \;=\; \frac{W_i}{P} \;=\; 1$$

$$E_i \;=\; \left[m/N\right] w_i^{-\eta} \;=\; m$$

Drop subscripts:

$$U \;=\; E - (d/\beta)E^{\beta} \;+\; E \;=\; 2E - (d/\beta)E^{\beta}$$

<u>Optimisation problem</u>

$$\underset{E}{\text{Max}} \quad 2E \;-\; (d/\beta)E^{\beta}$$

$$2 \;-\; (d/\beta)\cdot \beta E^{\beta-1} = 0$$

$$E^{*}_{N=1} \;=\; \left(\frac{2}{d}\right)^{\frac{1}{\beta-1}}$$

- **Straightforward to show that employment with *N* = 1 is higher than with *N* > 1.**
- **The union fully internalises the aggregate demand effects (real money supply effects) of its wage decision.**
- **The degree of accommodation no longer matters.**

<u>Conclusion</u>

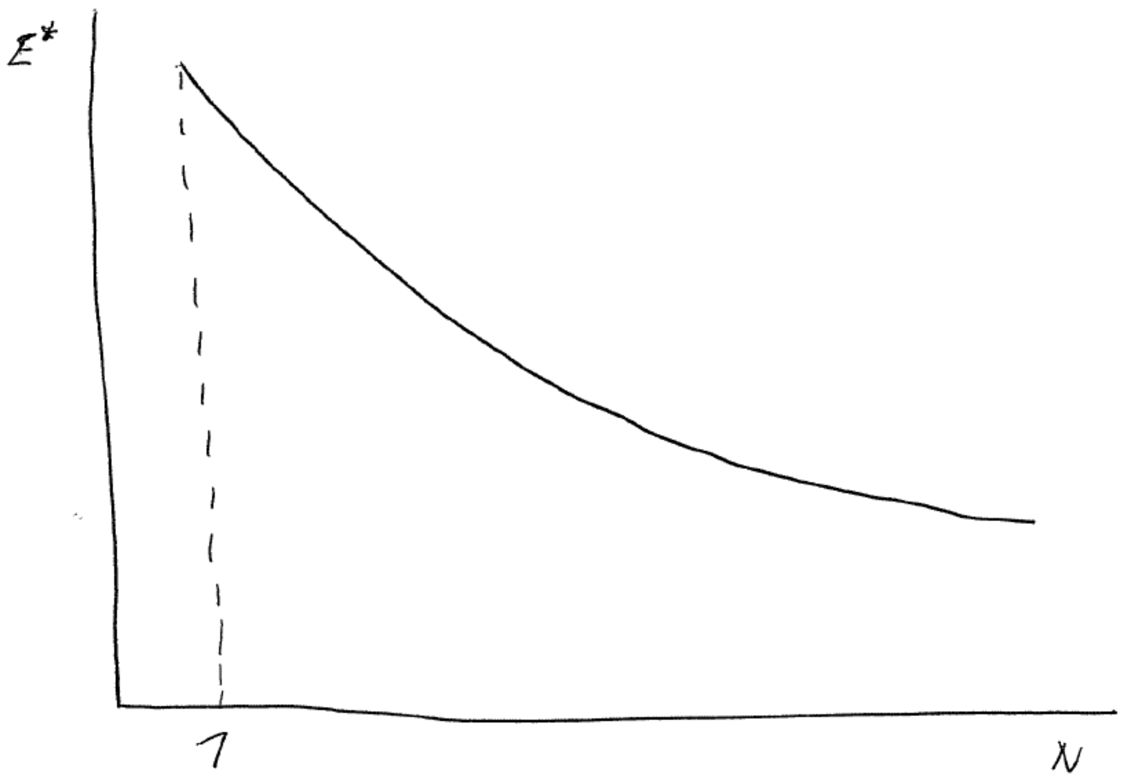
- **Higher employment with complete centralisation.**
- **Degree of central bank conservativeness does not matter with complete centralisation.**
- **Lower employment the lower is the degree of centralisation.**
- **A more conservative central bank raises employment with an intermediate degree of centralisation**

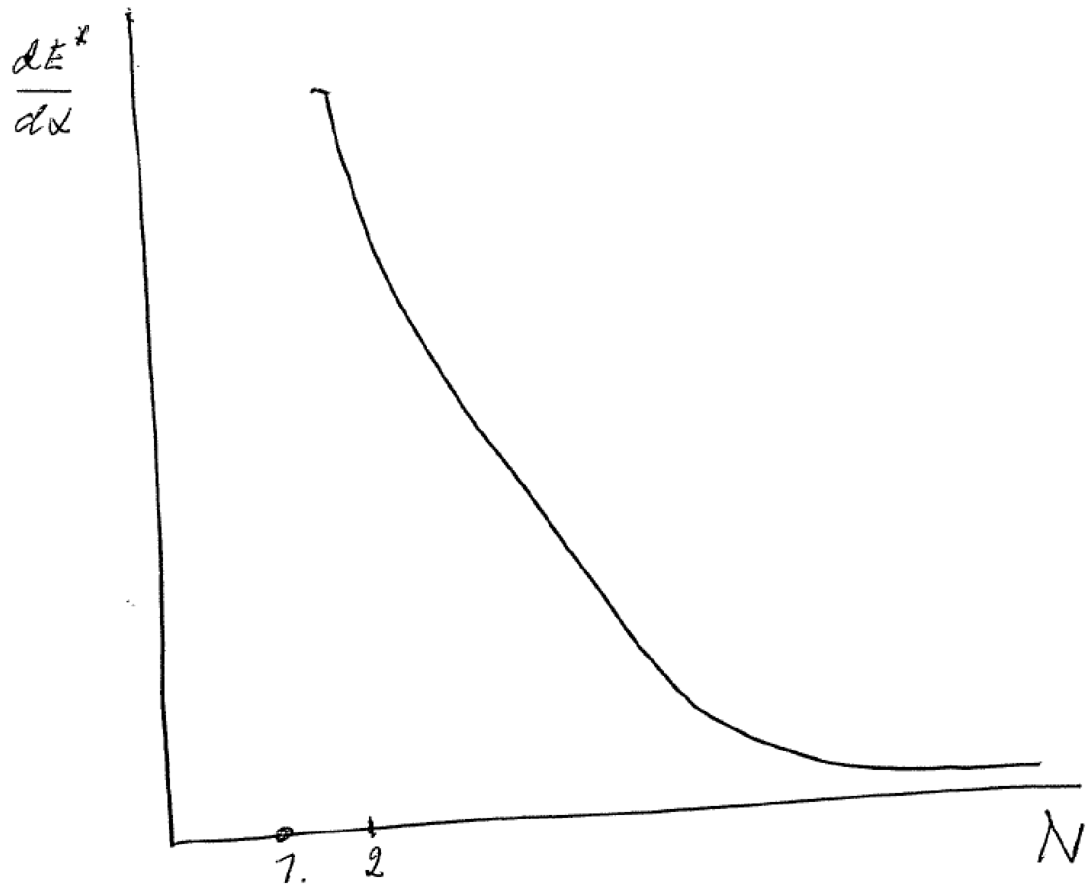
  largest effect if $N = 2$

$$\frac{d\left|\frac{\partial E^*}{\partial \alpha}\right|}{dN} < 0 \quad \text{for} \quad N \geq 2$$

  zero effect with complete decentralisation ($N \to \infty$).

- **Complete centralisation and central bank conservativeness are (imperfect) substitutes when it comes to promoting wage restraint.**


E*
1
N


dE*
dα
1.
2
N

Bargaining over hours

- **Real-world bargaining appears often to be about both wages and working time**

Ω = wage income
***T* = time allocation**
***H* = hours worked**

Ω = *wH*
Utility function of a worker is υ(Ω, *H*)
***e* (*H*) = productivity of a worker**
***L* = number of workers**

Revenue of the firm

$$R\left[e(H)L\right] \; = \; \left[e(H)L\right]^{\alpha} / \alpha \qquad\qquad \alpha \in \left[0,\, 1\right]$$

$\eta_H^e \; = \; He'(H)/e(H) \; > \; 0$ **is the elasticity of worker productivity w.r.t. hours.**

$e(H)/(H) \; =$ **the productivity per hour. It increases with the number of hours if** $\eta_H^e \; > \; 1.$

- **Bargaining about the hourly wage and hours only**

Union utility

$$V_s \; = \; \ell\left[\nu(\Omega, T-H)\right] \; + \; (1-\ell)\nu(\overline{w}, T) \qquad \ell = \text{Min}\,(1,\, \text{L/N})$$

<u>Firm profit</u>

$$\pi \;=\; \frac{1}{\alpha}\left[e(H)L\right]^{a} - \Omega L \qquad (24)$$

<u>Right-to-manage assumption</u>

Firm determines employment from profit maximisation.

w **and** ***H*** **or equivalently Ω and** ***h*** **are taken as given.**

Set $\partial\pi / \partial L \;=\; 0$ **and solve for** ***L*****:**

$$L(\Omega, H) \;=\; \left[e(H)\right]^{\alpha/(1-\alpha)}\,\Omega^{1/(\alpha-1)} \qquad (25)$$

If $L(\Omega,\; H) \;<\; N$, **we can plug (25) into profit equation (24).**

$$\pi(\Omega, H) \;=\; \left(\frac{1\text{-}\alpha}{\alpha}\right)\left[\frac{e(H)}{\Omega}\right]^{\alpha/(1-\alpha)}$$

<u>Nash bargaining solution</u>

If no agreement:
Employee gets $\nu(\overline{w}, T)$

Firm gets zero profit

$$\underset{\Omega,\,H}{\text{Max}} \quad \left[\frac{L(\Omega, H)}{N}\right]^{\gamma}\left[\nu(\Omega,\; T-H) - \nu(\overline{w},\; T)\right]^{\gamma}\left[\pi(\Omega, H)\right]$$

s.t. $\quad L(\Omega, H) \;\leq\; N \quad \text{and} \quad H \;\leq\; \overline{H}$

$\overline{H}$ **is <u>legal constraint</u> on hours (maximum hours allowed by legislation).**

Interior solution

Take logs and differentiate w.r.t. Ω and *H*.

FOCs

$$\frac{\gamma \nu_1(\Omega,\ T-H)}{\nu(\Omega,\ T-H)-\nu(\overline{w},\ T)} = \frac{\alpha(1-\gamma)\ +\ \gamma}{(1-\alpha)\Omega} \tag{26}$$

$$\frac{\gamma \nu_2(\Omega,\ T-H)}{\nu(\Omega,\ T-H)-\nu(\overline{w},\ T)} = \frac{\alpha}{(1-\alpha)}\ \frac{e'(H)}{e(H)} \tag{27}$$

Divide (26) by (27):

$$\frac{\nu_1(\Omega,\ T-H)}{\nu_2(\Omega,\ T-H)} = \frac{\left[\alpha(1-\gamma)\ +\ \gamma\right]}{(1-\alpha)\Omega} \cdot \frac{(1\text{-}\alpha)}{\alpha} \cdot \frac{e(H)}{e'(H)} =$$

$$= \frac{\left[\alpha(1-\gamma)+\gamma\right]}{\alpha} \cdot \frac{e(H)}{e'(H)\cdot H} \cdot \frac{H}{\Omega} = \frac{H}{\Omega}\frac{\left[\alpha(1-\gamma)+\gamma\right]}{\alpha\eta_H^e} \tag{28}$$

$$\eta_H^e = He'(H)/e(H)$$

Equation (28) defines the MRS between income and leisure as a function of the wage $w = \Omega/H$ and the elasticity of employee productivity w.r.t. *h*, η_h^e.

Assume Cobb-Douglas utility function:

$$\nu(\Omega,\ T-H) \ = \ (\Omega)^{\mu}(T-H)^{1-\mu} \qquad \mu \in \ (0,1)$$

Then:

$$\nu_1 \ = \ \mu\Omega^{\mu-1}(T-H)^{1-\mu}$$

$$\nu_2 \ = \ (1\text{-}\mu)(T-H)^{-\mu}\Omega^{\mu}$$

$$\frac{\nu_1}{\nu_2} \ = \ \frac{\mu}{1\text{-}\mu}\Omega^{-1}(T-H) \ = \ \frac{\mu}{1\text{-}\mu}\frac{(T-H)}{\Omega} \qquad (28)$$

Assume that *e*(*H*) = *H*, then

$$e'(H) \ = \ 1 \ \text{ and } \ \eta_H^e \ = \ e'(H)\cdot H / e(H) \ = \ 1.$$

(28) then simplifies to:

$$\frac{\mu}{1-\mu}\frac{(T-H)}{\Omega} \ = \ \frac{H}{\Omega}\left[\frac{\alpha(1-\gamma) \ + \ \gamma}{\alpha}\right]$$

$$H^{*} = \frac{\mu\alpha}{(1\text{-}\mu)\left[\gamma + \alpha(1-\gamma)\ \right] + \mu\alpha} \qquad (29A)$$

<u>Optimal number of hours</u>

- **is increasing in μ (the importance of income relative to leisure)**
- **is decreasing in union bargaining power γ**
  - **unions want low working time to get leisure and more workers employed**
  - **explanation of work sharing: reduction in hours to boost employment**

<u>Legal maximum of hours</u> $\overline{H} < H^{*}$

Negotiated wage is then given by (26) with $H = \overline{H}$

With Cobb-Douglas preferences one obtains:

$$\Omega^{\mu}(T - \overline{H})^{1-\mu} = \frac{\gamma(1-\alpha) + \alpha}{\gamma(1-\mu)(1-\alpha) + \alpha} \; \nu(\overline{w}, T) \qquad \text{(A)}$$

RHS of (A) is a constant. Hence:

$$\Omega^{\mu}(T - \overline{H})^{1-\mu} = \textbf{constant}$$

$$\mu \ell n \Omega + (1-\mu)\ell n(T - \overline{H}) = \textbf{constant}$$

Differentiate w.r.t. *dℓnH*

$$\mu \cdot \frac{d\ell n\Omega}{d\ell n\overline{H}} + (1-\mu)\frac{d\ell n(T-\overline{H})}{d\ell n\overline{H}} = 0$$

$$\mu \cdot \frac{d\ell n\Omega}{d\ell n\overline{H}} + (1-\mu)\frac{d\ell n(T-\overline{H})}{d\overline{H}} \cdot \frac{d\overline{H}}{d\ell n\overline{H}} = 0$$

$$\mu \cdot \frac{d\ell n\Omega}{d\ell n\overline{H}} + (1-\mu) \cdot \frac{(-1)}{T-\overline{H}} \cdot \overline{H} = 0$$

$$\frac{d\ell n\Omega}{d\ell n\overline{H}} = \eta_h^{\Omega} = \frac{\overline{H}(1-\mu)}{(T-\overline{H})\cdot\mu}$$

- **The elasticity of wage income w.r.t. hours, η_h^{Ω}, is positive.**
- **Hence wage income falls if hours fall.**
- **It falls more if hours are long to begin with.**

$$L(\Omega,\ H) \ = \ \left[e(H)\right]^{\alpha/(1-\alpha)}\,\Omega^{1/(\alpha-1)} \qquad (25)$$

Assume again $e(H) \ = \ H$

$$L(\Omega,\ H) \ = \ H^{\alpha/(1-\alpha)}\Omega^{1/\alpha-1} \qquad (\text{B})$$

- **We want to know what happens to employment *L* if binding legal maximum $\overline{H}$ is reduced.**
  - **direct effect from change in $\overline{H}$**
  - **indirect effect from induced change in wage income Ω.**

Take logs of (B):

$$\ell n L \ = \ \frac{\alpha}{1-\alpha}\,\ell n\overline{H} \ + \ \frac{1}{\alpha-1}\,\ell n\Omega$$

Differentiate w.r.t. $d\ell n\overline{H}$

$$\frac{d\ell nL}{d\ell nH} \ = \ \frac{\alpha}{1-\alpha} \ + \ \frac{1}{\alpha-1}\,\frac{d\ell n\Omega}{d\ell n\overline{H}}$$

We use:

$$\frac{d\ell n\Omega}{d\ell n\overline{H}} \ = \ \frac{\overline{H}(1-\mu)}{(T-\overline{H})\cdot\mu}$$

$$\frac{d\ell n L}{d\ell n \overline{H}} = \frac{\alpha}{1-\alpha} + \frac{1}{\alpha-1} \cdot \frac{\overline{H}(1-\mu)}{(T-\overline{H})\cdot\mu}$$

$$\frac{d\ell n L}{d\ell n \overline{H}} < 0 \quad \text{if} \quad \frac{\alpha}{1-\alpha} + \frac{1}{\alpha-1} \cdot \frac{\overline{H}(1-\mu)}{(T-\overline{H})\cdot\mu} < 0$$

This is equivalent to $\overline{H} > \hat{H}$

$$\hat{H} = \frac{\mu\alpha}{(1-\mu) + \mu\alpha} T$$

<u>Interpretation</u>

- **A reduction in working time raises employment only if** $\overline{H} > \hat{H}$**.**
- **From (29A) we have that** $\hat{H}$ **is optimal hours for unions.**

$$H^* = \frac{\mu\alpha}{(1-\mu)\left[\gamma + \alpha(1-\gamma)\right] + \mu\alpha} \qquad (29A)$$

$\gamma = 1 \Rightarrow$

$$H^* = \frac{\mu\alpha}{(1-\mu) + \mu\alpha}$$

- **A reduction in $\overline{H}$ increases employment only down to the point where H reaches the trade union optimum.**
- **Further reductions lower employment.**

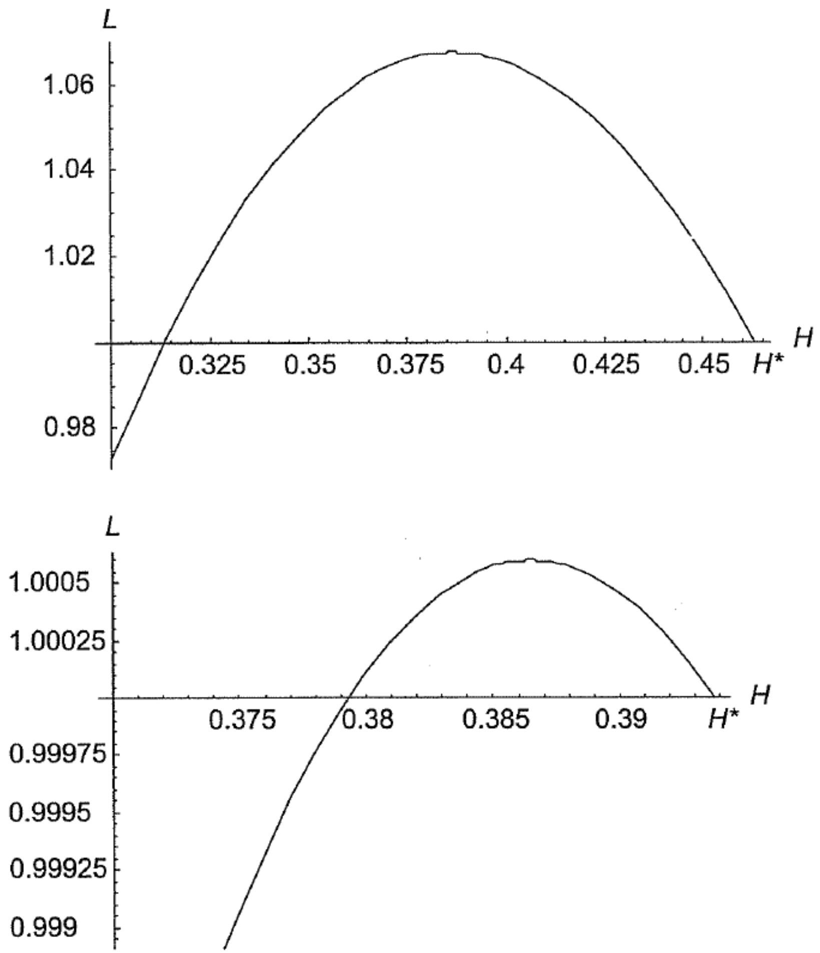


FIGURE 7.9
The impact of a reduction in the number of hours worked. The graph on the top corresponds to a value $\gamma = 0.1$ of bargaining power and the one on the bottom to $\gamma = 0.9$. The number of hours worked is given on the horizontal axis and stops at the negotiated number, H^*, which has a value of 0.463 (on the top) and 0.394 (on the bottom), knowing that the time allocation $T = 1$. The ratio between actual employment and its value for H^* is given on the vertical axis.

Table 3.2

Standard working time for full-time workers according to collective agreements and/or legislation, 2003

	Per year, average for the whole economy	Per week, average for the whole economy	Per week, metal working
US[a)]	1904	40.0	-
Estonia	1840	40.0	-
Hungary	1840	40.0	40.0
Latvia	1840	40.0	-
Poland	1840	40.0	-
Slovenia	1816	40.0	40.0
Japan[a)]	1803	39.2	-
Ireland	1802	39.0	39.0
EU-8 (new EU states)	**1801**	**39.6**	-
Greece	1800	40.0	40.0
Malta	1776	40.0	-
Belgium	1748	38.0	38.0
Portugal	1748	39.0	40.0
Slovakia	1748	38.5	37.5
Germany (east)	1730	39.1	38.0
Spain	1729	38.6	38.5
Luxembourg	1728	39.0	39.0
Austria	1717	38.5	38.5
Cyprus	1710	38.0	38.0
EU-15	**1700**	**38.1**	**37.9**
UK	1693	37.2	37.3
Sweden	1676	38.8	40.0
Finland	1673	37.5	36.5
Italy	1672	38.0	39.1
Germany (west)	1648	37.4	35.0
Netherlands	1648	37.0	35.2
Denmark	1613	37.0	37.0
France	1568	35.0	35.0

Note: [a)] The figure refers to 2002.

Source: All countries except Japan and the US: *Working Time Developments* (2003), EIROnline;
Japan and the US: *Deutschland in Zahlen* (2004), Institut der Wirtschaft, Cologne.

Table 3.4
Major reductions in the standard work week in European economies, 1980–2004

	Year	Change	Legislation	Collective Agreements
Austria	1990	40 → 38,5		x
Belgium[b)]	1999	40 → 39	x	x (inter-industry agreement)
	2003	39 → 38	x	x (inter-industry agreement)
Denmark	1987	39 → 37		x (70% of employees)
France	1982	40 → 39		
	2000	39 → 35	x (large firms)	
	2002	39 → 35	x (all firms)	
Germany[a)]	1984	40 → 38.5		x (metal working and engineering)
	1987	38.5 → 37.5		x (metal working and engineering)
	1989	37.5 → 37		x (metal working and engineering)
	1993	37 → 36		x (metal working and engineering)
	1995	36 → 35		x (metal working and engineering)
Greece				
	1980	45 → 43	x	
	1981	43 → 42	x	
	1983	42 → 40	x	
Hungary	2003	40 → 38	x	
Ireland	1989-90	40 → 39		x (tripartite national framework agreement)
Nether-lands	1982	40 → 38		x (Waasenaar agreement)
	1985	40 → 38	x (government civil servants)	
Norway	1987	40 → 37,5		x (blue-collar-workers in manufacturing)
UK	1979	40 → 39		x (engineering)
	1989-90	39 → 37		x (shipbuilding and engineering)

Notes:[a)] Working time reductions also occurred in other sectors than in the metal and engineering sector during the 1984–98 period, but are not shown in the table. [b)] The entries in the table represent inter-industry agreements involving the government, which have been codified into law. The inter-industry agreements, have, however, only confirmed earlier concluded collective agreements at the sectoral level. For example, the reduction in the standard work week from 40 to 39 hours in such sectoral agreements took place mainly in 1980/81.

Source: EIRO Online; Institut der deutschen Wirtschaft;
http://www.eiro.eurofound.eu.int/2004/03/feature/tn0403108f.html
http://www.reformmonitor.org/downloads/brochure/refmon_e.pdf
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