

# 1 Social Dumping in the Transformation Process

- Today we will study the motives for low labor standards in lesser developed countries and the potential justification of harmonization agreements.
- The EU-enlargement can be taken as an example of this problem.
- Business representatives and union leaders often complain about “Social Dumping”, and want international harmonization of social conditions.
- Such agreements, like the EU Social Charter for example, already exist.

- What is Social Dumping?
  
- It can be divided into two types.
  - Wages, working conditions (safety standards, children working, etc.), and wage related fringe benefits.
  
  - Redistribution of resources among different types of individuals, such as tax-financed transfers to the poor. This is perhaps better called “welfare dumping” .
  
- As argued in chapter 3, there are reasons to believe that welfare dumping exists.

- But what about the first type of “social dumping”?
- It is clear that some countries have higher social standards than others.
- Think of safety standards in firms or social insurance contribution.
- In this case, countries like Germany have much higher standards than, say, Portugal or Spain.
- There are large differences even among the richest countries.
- In the US, workers have a much less number holidays than workers in Germany.

- In Germany, on the other hand, workers are eligible for much less maternity (not to mention paternity) leave than workers in Sweden.
- But is this a result of a conscious policy of social dumping by the governments?
- Some people claim that trade is unfair when the social standards differ among some countries.
- The question is whether the transition process brought about jointly by private market forces and the forces of systems competition are efficient.
- If not, agreements such as the EU Social Charter are necessary.

- We will model the transition growth path of a lesser developed country that joins a well-developed economic core area.
- Before joining, the lesser developed country has a low labor productivity, low wages and low social standards.
- After joining it will catch up by sending guest workers to the core region and attracting capital investment.
- It will be argued that due to the existence of frictions in terms of adjustment and migration costs, temporary differences in social standards are natural.
- Today we study the firms', the national and the supranational maximization behavior. Tomorrow we analyze positive aspects of the model, i.e., the transition paths.

## 1.1 A Simple Model of the Economic Catching-up Process

- Three levels of decision problems will be analyzed.
  - (i) Firms' optimization and market equilibrium.
  - (ii) National optimization.
  - (iii) Supra-national optimization.
- Consider a small, lesser developed joining country which opens its borders to a large already developed core area.

- Goods, financial capital and technical knowledge are completely mobile across the country's borders.
- Real capital and labor are mobile only to a limited extent.
- The interest rate,  $r$ , is set in the core area.
- $t$  denotes time where 0 is the time of unification.
- Investments,  $I_t$ , in the joining country result in a convex adjustment cost  $\varphi(I_t)$ , which reduces the speed of capital adjustment.
- We have that  $\varphi(0) = 0$ ,  $\varphi'(I) < 0$  for  $I < 0$ ,  $\varphi'(I_t) > 0$  for  $I_t > 0$  and  $\varphi''(I_t) > 0$ .

- Labor can migrate quickly, but there is a cost involved also here.
- There are  $X_t$  guest workers who have migrated to the core area, each of which face an cost,  $\Psi(X_t)$ , of living and working in the core area. These could be commuting costs, higher payments for rents, homesickness, etc.
- We have that  $\Psi(0) = 0$ ,  $\Psi'(X_t) > 0$ , and  $\Psi''(X_t) > 0$ .
- In other words, people are quick but unwilling to leave. Capital is slow but willing.
- The joining country produces its goods with the production function  $f(K_t, L_t)$ , which is strictly quasi concave. So  $K_t$  and  $L_t$  are capital and labor used in the joining country.

- The effective wage rate at home, which drives the migration decision, is  $w_t$ . It is the workers's subjective money equivalent of a benefit bundle consisting of the pecuniary market wage  $w_{p,t}$  and the benefit resulting from firms' expense per employee  $w_{s,t}$  necessary to meet the government-determined social standard

$$w_t = U(w_{p,t}, w_{s,t}).$$

- The constant labor force potential of the joining country is  $L_t^*$  and the number of guest workers sent abroad is

$$X = L_t^* - L_t. \tag{1}$$

- The wage in the core area is  $w_t^*$ , which is the subjective money equivalent of the direct and indirect wage elements available there.
- Now, workers with a high home-country preference,  $\Psi'(X_t) > w_t^* - w_t$ , will stay at home. Workers with a high core-country preference,  $\Psi'(X_t) < w_t^* - w_t$ , will move to the core area. The indifferent worker is defined by

$$\Psi'(X_t) = w_t^* - w_t. \quad (2)$$

- Also  $U(w_{p,t}, w_{s,t})$  is linearly homogenous and normalised in such a way that

$$U(w_{p,t}, w_{s,t}) = w_{p,t} + w_{s,t},$$

if  $w_{p,t}$  and  $w_{s,t}$  are chosen such that  $U_{w_{p,t}} = U_{w_{s,t}} = 1$ .

- The government selects the level of working standard.
- To include an rationale for why governments, rather than firms, selects social standards we can take a asymmetric information story. Workers do not know the effort of their future employers at the time they sign their employment contracts.
- Thus each firm has an incentive to under-invest. So the government takes over in order to avoid a lemon market for working standards.
- Finally,

$$w^* > f_L(K_0, L_0^*)$$

and

$$X_t = 0$$

before the workers in the joining country joins.

## 1.2 The firms' problem

The representative firm selects the time path of its labor use,  $L_t$ , and its net investments,  $I_t$ , taking the interest  $r$ , the pecuniary wage  $w_{p,t}$ , and the government standard  $w_{s,t}$  as given. So it solves

$$\max_{L_t, I_t} \int_0^{\infty} e^{-rt} [f(K_t, L_t) - (w_{p,t} + w_{s,t})L_t - I_t - \varphi(I_t)] dt \quad (3)$$

subject to

$$K_0 \text{ given} \quad (4)$$

and

$$\dot{K}_t = I_t$$

The transversality condition is

$$\lim_{t \rightarrow \infty} q_t K_t e^{-rt} = 0 \quad (5)$$

This is a dynamic problem where the control variables are  $L$  and  $I$  and the state variable is  $K$ .

$r > 0$  implies that the future is valued less than the present.

$\dot{K} = I$  is the law of motion.

It shows how the capital stock evolves as a function of investments.

The first restriction simply says that we start at a given capital stock  $K_0$ .

The transversality condition says that the chosen value of the state variable at the end of the planning horizon discounted at the rate  $r$  must be zero.

We now set up the current-value Hamiltonian

$$H = f(K_t, L_t) - (w_{p,t} + w_{s,t})L - I_t - \varphi(I_t) - q_t I_t \quad (6)$$

where  $q_t$  is the co-state variable of the capital stock (or the shadow price).

In general, the first-order conditions to this problem are

$$\begin{aligned} \frac{\partial H}{\partial L} &= 0 \\ \frac{\partial H}{\partial I} &= 0 \\ \frac{\partial H}{\partial K} &= r q - \dot{q}. \end{aligned}$$

So in our case, we have

$$\frac{\partial H}{\partial L} = f_L(K_t, L_t) - (w_{p,t} + w_{s,t}) = 0 \quad (7)$$

$$\frac{\partial H}{\partial I} = -1 - \varphi'(I_t) - q_t = 0 \quad (8)$$

$$\frac{\partial H}{\partial K} = f_K(K, L) = r q_t - \dot{q}_t. \quad (9)$$

### 1.3 The policy of the national government

From the equations we just set up, the (joining) government knows how migrants and private firms will react to the time path of the standard it announces.

It selects the time path of the firms' corresponding expense per workers,  $w_{s,t}$ , so as to maximize national welfare.

National welfare is given by

$$W = \int_0^{\infty} e^{-rt} [f(K_t, L_t) - (w_{p,t} + w_{s,t})L_t - I_t - \varphi(I_t)] dt + \int_0^{\infty} e^{-rt} [U(w_{p,t}, w_{s,t})L_t + w^*(L^* - L_t) - \Psi(X)] dt$$

We note that  $X = L^* - L_t$ .

The first part is the firms profit, and the latter part consists of the workers' utility.

Instead of solving this, a trick is used.

Consider a marginal perturbation  $\varepsilon_t$  of the time path of  $w_{s,t}$  in this equation.

It incurs a first-order effect, and a second-order effect through labor.

The second-order effect,  $\frac{\partial W}{\partial L} \frac{\partial L}{\partial w_{s,t}}$ , is zero since it takes place around the private optima.

To see this, we first study the firm's part and then the consumers' part.

What happens as  $L$  changes in consequence to the perturbation  $(\frac{\partial W}{\partial L})$ ?

Consider the first integral, which is the part that takes the firms' profits into account.

We know that  $\frac{\partial W}{\partial L} = 0$  from the firms' optimization problem, so this is zero.

As for the second integral we have

$$\frac{\partial W}{\partial L} = U(w_{p,t} + w_{s,t}) - w^* + \Psi'(X) \quad (10)$$

Recall that  $w = U(w_{p,t}, w_{s,t})$ .

Recall also that the citizens emigration condition in equilibrium is given by  $\Psi'(X) = w^* - w$ .

Hence,

$$\frac{\partial W}{\partial L} = w - w = 0.$$

In other words, the second order effect through  $L$  is equal to zero!

Consider now the first-order effect.

This effect results from the changes in the direct and indirect wage components, given the behavior of private agents as described by  $L$  and  $I$ .

Recall that from the firms' first-order condition we have

$$\frac{\partial H}{\partial L} = f_L(K_t, L_t) - (w_{p,t} + w_{s,t}) = 0 \quad (11)$$

This implies, since  $L$  is given, that

$$\begin{aligned} \partial w_{p,t} &= -\partial w_{s,t} \Leftrightarrow \\ \frac{\partial w_{p,t}}{\partial w_{s,t}} &= -1 \end{aligned}$$

Hence, the pecuniary wage falls one to one with an increase in the cost of the standard.

Thus, if the government has optimized its policy, this perturbation is unable to change welfare.

So it is as a necessary condition for an optimum that

$$\Delta W |_{L,I} = \int_0^{\infty} e^{-rt} \varepsilon_t [U_{w_p,t}(w_{p,t}, w_{s,t}) - U_{w_s,t}(w_{p,t}, w_{s,t})] L_t dt$$

This implies that

$$\frac{U_{w_p}(w_{p,t}, w_{s,t})}{U_{w_s}(w_{p,t}, w_{s,t})} = 1$$

Because of the linear homogeneity of the utility function this implies that the government-imposed work place standard will improve gradually in step with a rise in the market wage.

Also, we note that this implies that the utility function may take on the form

$$U(w_{p,t}, w_{s,t}) = w_{p,t} + w_{s,t},$$

as assumed before.

Proposition 1 *Maximizing social welfare, the government of the joining country chooses a time path of social standard such that the rate of substitution between the pecuniary wage and the firms' expenses necessary to satisfy the standard is equal to one.*

This result is in line with empirical evidence.

Remember that the pecuniary wage and social standards were following each other suspiciously closely in the European countries.

## 1.4 A supra-national planner

After studying the optimality conditions of private agents and the national government, a supranational perspective will now be taken to check whether the accusation of social dumping is justified.

A supra-national planner considers the firms' profits, workers utility at home, workers utility abroad, and the personal cost of being abroad.

So it solves

$$\max_{L_t, I_t, w_{p,t}, w_{s,t}} W$$

where  $W =$

$$\begin{aligned} &= \int_0^\infty e^{-rt} [f(K_t, L_t) - (w_{p,t} + w_{s,t})L_t - I_t - \varphi(I_t)] dt + \\ &+ \int_0^\infty e^{-rt} [U(w_{p,t}, w_{s,t})L_t + w^*(L^* - L_t) - \Psi(X)] dt \end{aligned}$$

We have the restrictions

*s.t.*  $K_0$  given

$$\dot{K}_t = I_t$$

and the transversality condition

$$\lim_{t \rightarrow \infty} q_t K_t e^{-rt} = 0 \quad (12)$$

There are now four control variables and one state variable.

The current value Hamiltonian is

$$H = f(K_t, L_t) - I_t - \varphi(I_t) - (w_{p,t} + w_{s,t} - U())L_t - \\ -I_t + w^*(L^* - L) - \Psi(L^* - L) - q_t I_t.$$

where  $q_t$  is the costate (the shadow price) (there is an error in the book where it says  $w^*(L - L^*)$ ).

In general, the necessary for a maximum of the Hamiltonian are

$$\frac{\partial H}{\partial L} = 0 \quad (13)$$

$$\frac{\partial H}{\partial I} = 0 \quad (14)$$

$$\frac{\partial H}{\partial w_p} = 0 \quad (15)$$

$$\frac{\partial H}{\partial w_s} = 0 \quad (16)$$

and

$$\frac{\partial H}{\partial K} = r q_t - \dot{q}_t. \quad (17)$$

The last equation is the law of motion.

So in our case, the first-order conditions are

$$\frac{\partial H}{\partial L} = f_L - (w_{p,t} + w_{s,t} - U()) - w^* + \Psi'() = 0$$

$$\frac{\partial H}{\partial I} = -1 - \varphi'(I_t) - q_t = 0 \quad (18)$$

$$\frac{\partial H}{\partial w_p} = -1 + U_{w_{p,t}}(w_{p,t}, w_{s,t}) = 0 \quad (19)$$

$$\frac{\partial H}{\partial w_s} = -1 + U_{w_{s,t}}(w_{p,t}, w_{s,t}) = 0 \quad (20)$$

$$\frac{\partial H}{\partial K} = r q_t - \dot{q}_t. \quad (21)$$

We note that from the first order conditions we get

$$\frac{U_{w_{p,t}}(w_{p,t}, w_{s,t})}{U_{w_{p,t}}(w_{p,t}, w_{s,t})} = 1,$$

which exactly coincides with the condition we found under the national optimum.

This also implies that we have

$$w_t = U(w_{p,t}, w_{s,t}) = w_{p,t} + w_{s,t}.$$

In other words, the firms costs and the the workers utility at home cancel in equilibrium.

So  $\frac{\partial H}{\partial L}$  simplifies to

$$\frac{\partial H}{\partial L_t} = f_L(K_t, L_t) - w_t^* + \Psi'(X_t) = 0$$

It consists of the marginal change in production, the marginal change in incomes abroad and the marginal change in cost of being abroad.

Let's now recall the national optimum where the firms maximized their profits with respect to  $L$

$$\frac{\partial H^{FIRM}}{\partial L_t} = f_L(K_t, L_t) - w_t = 0$$

It consists of the marginal change in production and the marginal change in the cost for the home-workers.

Now, in equilibrium, we note that

$$\Psi'(X_t) = w_t^* - w_t. \quad (22)$$

Therefore

$$f_L - w^* + w_t^* - w_t. = 0$$

or

$$\frac{\partial H}{\partial L} = f_L - w_t. = 0,$$

Hence, the first-order conditions with the respect to  $L$  are the same and so are all the other first-order conditions!

*Proposition 2 The transformation process chosen by market forces and the work standard policy chosen by the joining country's government are efficient from a supra-national perspective.*

To sum up: Systems competition with public redistribution (chapter 3) erodes the welfare state but systems competition with work place standards does not.