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Working Paper 8364
<http://www.nber.org/papers/w8364>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
July 2001

Dedicated to Assaf Razin on the occasion of his sixtieth birthday. The author is grateful to Harry Flam for giving me his comments to this paper at the conference in honour of Assaf Razin in Tel Aviv. The views expressed herein are those of the author and not necessarily those of the National Bureau of Economic Research.

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NBER Working Paper No. 8364

July 2001

JEL No. J30, H50, F15

ABSTRACT

Business representatives and union leaders in highly industrialised countries often accuse the governments of less-developed countries of practising social dumping in the sense of deliberately neglecting work-place safety legislation, co-determination rights and other fringe benefits which define the quality of workplaces. This paper refutes this view by modelling the transition path of a less-developed small open economy that faces transactions costs when trading capital and labour with the rest of the world. It shows that competitive markets and competitive governments choose Pareto efficient transition strategies which are characterised by a sluggish development of market wages and government-imposed social standards.

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The Accusation of Social Dumping

Business representatives and union leaders in highly industrialised countries often accuse the governments of less developed countries of practising social dumping in the sense of maintaining an underdeveloped welfare state to create a competitive cost advantage for their own industries. In particular they argue that the less-developed countries deliberately neglect the legislation for good social standards in terms of social fringe benefits, protection against injuries, pension schemes, co-determination rights and the like. To stop the seemingly unfair competition resulting from social dumping they postulate an international harmonisation of social conditions, and sometimes they even advocate retaliatory trade restrictions to enforce the harmonisation.

International agreements like those of the International Labor Organisation (ILO) or the EU Social Charter reflect this influence in that they define a number of social minimum standards which are binding for the signing parties. The EU Social Charter prescribes a weekly maximum working time, minimum recreation periods, minimum safety standards for new and old machinery, rules for the employment of minors, equal treatment of gender, minimum times for maternity leaves, dismissal protection rules for pregnant women and many additional workers' rights.¹ Similarly, the ILO members have agreed to establish a system of labour standards² regarding minimum wages, maximum working hours per week and minimum rest time per week, a guaranteed number of holidays with pay and the prohibition of the worst forms of child labour.

¹ Social Community charter of the fundamental social rights of workers, COM (89) 248 final. See also Berié (1993) and Feldmann (1999).

² A comprehensive introduction to ILO's labour standards can be found in Plant (1994). ILO has issued a total of 183 conventions on labour standards to date. See, in particular, the minimum wage fixing convention (No. 131, <http://ilolex.ilo.ch:1567/scripts/convde.pl?C131>), the hours of work (industry) convention (No. 1, <http://ilolex.ilo.ch:1567/scripts/convde.pl?C1>), the weekly rest (industry) convention (No. 14, <http://ilolex.ilo.ch:1567/scripts/convde.pl?C14>), the holidays with pay convention (revised) (No. 132, <http://ilolex.ilo.ch:1567/scripts/convde.pl?C132>) and

This paper will analyse the motives for low labour standards in less developed countries and examine the justification of harmonisation agreements like the EU Social Charter and the ILO conventions. For this purpose it will model the transition growth path of a less-developed country that joins a well-developed economic core area. The EU eastern enlargement can be taken as an example of this problem. Before joining, the less-developed country has a very low labour productivity, low wages and low social standards, but after joining it will catch up by sending guest workers to the core region and attracting capital investment. Because of the factor mobility, factor prices will change and the national government of the joining country will continuously revise its social policies. The question is whether the transition process brought about jointly by private market forces and the forces of systems competition is efficient in any meaningful sense and whether, if it is not, supra-national actions such as the above-mentioned harmonisation agreements are necessary to improve the allocation of resources.

Redistribution vs. Wages in Kind

Analysing the accusation of social dumping is not a trivial exercise because it refers to two completely different phenomena which should not simply be lumped together, although this is frequently done in public debates. One refers to wages, working conditions and wage related fringe benefits that make up the employers' labour costs. The other refers to the redistribution of resources between different types of individuals, such as tax-financed transfers to the poor.

Concerning the second type of social dumping it can be shown that income redistribution between the rich and the poor will indeed be eroded in systems competition. From the point of view of an individual country, redistribution among mobile income earners is not rational. On the one hand, redistribution cannot effectively change the distribution of net incomes when labour

can migrate across the borders and wages react to this migration. On the other, redistribution creates budgetary problems for the government by attracting the people who receive government benefits and driving away those who pay for them. As redistribution is eroded even when, from an ex ante perspective, it is in the general interest of risk averse citizens from all countries, a failure of systems competition can be stated. This may be called social dumping.

However, it is doubtful whether this is the kind of social dumping to which the accusations of business and union leaders in the developed countries refer primarily, because the nexus between neglecting redistribution and a competitive advantage seems less obvious than the one between bad working conditions and a competitive advantage. From a theoretical perspective the case is also not clear. It is true that a fall in net taxes on above-average income earners may reduce the cost of capital and the wage cost for qualified labour. However, reducing the net social transfers to less qualified labour may lead to emigration and higher wage demands by the workers at the bottom end of the income scale, and this, in itself, will tend to raise the wage cost. What business and union leaders have in mind, therefore seems to be the working conditions, wages and wage related fringe benefits, which all have a direct impact on the wage cost.

It is undoubtedly the case that, in countries like Portugal or Spain, not only the wages themselves but also the safety standards in the firms, the social insurance contributions, the number of holidays, the length of maternity leave, the payment of wages in cases of sickness, the safety regulation for work places and similar achievements of the welfare state are well below those in the more advanced European countries like Sweden or Germany. The accusation made by business representatives and union leaders is that the low wage standards are partly the result of a conscious policy of social dumping which is carried out intentionally, or at least tolerated, by the national governments of the less-developed countries. These governments, it is maintained,

stick to low social standards and do not care about low wages, because they know that competitive advantages for the domestic industries result.

The social standards meant in this context can best be understood as wages in kind prescribed by the government. Surely the utility of workers increases if they receive better safety standards and other wage-related fringe benefits, just as a pecuniary wage payment increases their utility, and surely the firms' labour costs increase if they have to provide these benefits, just as they would with a pecuniary wage increase. As both the pecuniary wage and the wage in kind are to be paid from the same marginal value product of labour, public legislation on wages in kind does not involve a redistribution of resources between different groups of individuals. It is instead similar to legislation setting wages itself.

This demonstrates that the two potential reasons for social dumping should not be lumped together. They refer to completely different economic phenomena, and the similarity is purely semantic, notwithstanding the fact that they both may appear simultaneously with actual policy measures. Welfare dumping is not wage dumping.

Why are the Differences in Direct and Indirect Wage Costs so High?

There are at present considerable differences in wage costs in Europe. Gross hourly wage costs differ substantially among the European countries. While the average wage cost is about eighteen euros in the EU countries, the differences between the two countries with the highest and the two countries with the lowest wage costs exceed ten euros per hour, and one third of the countries has wage costs which are more than three times as high as those of the two countries with the lowest costs. Figure 1 gives an overview of the wage differences among the European countries.

The figure breaks down the wage costs into direct and indirect costs according to the EUROSTAT definitions.³ Direct costs are defined as gross wages per hour, basically the official annual pay divided by the number of working hours. They include the employees' social security contributions, overtime supplements, shift compensation, regularly paid premia, pay for vacation and national holidays, year-end bonuses and similar items. Indirect costs consist of employer social insurance contributions, sick pay schemes, and other social expenses such as those for sports facilities, canteens, medical services and vocational training. Indirect wage costs according the EUROSTAT definitions are part of what this paper considers as the costs of social standards, however they do not exhaust this category of wage costs. Co-determination rights of workers, safety requirements for machinery, dismissal protection rules or constraints on working time incur additional indirect wage costs which are not included in the official definitions.

³ See Schröder (2000, p. 77).

Figure 1: *Labour Cost in Manufacturing in European Countries 1999 (Euro per working hour)*



Source: Institut der deutschen Wirtschaft, Database, 2000.

Note: Labour cost of male and female workers. The 1999 EU-15 average is a weighted average with working population (Eurostat, Eurostatistics 11/2000, p. 45) as weights.

Despite these omissions the indirect wage costs shown in Figure 1 are substantial, sometimes covering 40% of the total wage costs or more. They clearly are important determinants of the competitiveness of the single countries. Note that countries with a high direct wage also tend to have a high indirect wage. This points to a systematic relationship that will be explored below.

The business and union representatives argue that the large differences in wages and labour standards shown in Figure 1 are incompatible with a common European market where no trade restrictions prevail and the freedom of settlement is granted. In such a market wages and working conditions should be the same to ensure fair competition among the European countries. The fact that they are not the same, it is maintained, indicates social dumping and should be seen as an unhealthy implication of systems competition which ought to be overcome by extending the scope of common European wage and working standards.

However, the argument neglects the fact that differences in wages and working conditions may partly reflect natural transitional phenomena during the adjustment phase towards a uniform European economy. After all, a truly common market without customs barriers and full economic freedom was not achieved until the 1990s. Europe may still be in a convergence phase in which pre-existing differences have not yet been overcome. If this phase is driven by natural forces it is not clear that the convergence process could be improved by European harmonisation agreements that force the countries to converge faster in selected areas than they would have done had they been able to make unilateral decisions.

The important aspect of the convergence process is the existence of frictions in the form of adjustment and migration costs. The abstraction from such frictions is appropriate for a long-run analysis. Indeed, the new freedom of movement in Europe will, in the long run, lead to a general convergence of economic conditions, and there can be little doubt that the mechanism of fac-

tor price equalisation assumed there and described more fully by the foreign trade literature will eventually make their effects felt. With unrestricted exchange of goods, free choice of work place, and free capital movement, the current differences in overall wage costs certainly cannot be maintained forever. Over the long term, countries like Ireland, Spain, Portugal, and Greece will find their factor prices converging towards those of the European core countries.

However, because of the frictions, factor price equalisation cannot come about overnight. It may take decades for an approximate factor price equalisation to take place. The main reason for the delay is the time needed for the accumulation of a modern stock of capital in the countries which are still lagging behind. It is true that financial capital is as nimble as a deer. What matters, however, is real capital, and real capital is as slow as a tortoise. Real capital faces substantial adjustment costs. Many kinds of obstacles must be overcome before it can move into low wage areas. These obstacles include management constraints, the sequential nature of building processes, the roundaboutness of multi-firm production chains, learning-by-doing constraints, the initial lack of public infrastructure and, last but not least, the time consuming construction of the economic and political institutions which are the backbone of efficient modern market economies.

When accumulation of real capital is slow, wages, too, lag for a long time behind those in the more developed regions, and workers in the less-developed areas have strong incentives to migrate to the high wage countries as guest workers. Compared to capital, guest workers are very mobile. Many of them may come in the short term when the wage differences are large, but they return very quickly to their home countries when these differences become smaller. Nevertheless, guest workers face considerable migration costs. These show up less in migration delays than in the fact that many people prefer to stay in their own countries even when wage differentials are large. Objective and subjective costs prevent these people from simply maximising their wages

income. Looked at in this way, persistent differences in pecuniary wages between the developed and the less well-developed countries of Europe seem quite natural for a long period to come despite the extension of the four basic freedoms granted in the Treaty of Rome.

Social standards are not directly explained by market forces because they are typically set by the government. Nevertheless, they may be explained indirectly, since it makes little sense for a government to prescribe in-kind benefits to workers that are out of proportion to the direct wages agreed to in private labour contracts. In the light of the empirical information given in Figure 1 it seems plausible to expect governments to develop the social standards in proportion with the direct wages paid, taking the stages of their respective countries' developments into account. A sluggish adjustment of social standards may also be a natural feature of a transformation process which leads to alignment with the economic conditions in the developed regions only in the very long run.

A Simple Model of the Economic Catching-up Process

To analyse these issues formally, the transformation process of an initially underdeveloped country that joins a developed economic area will be modelled. The purpose of the model is to help understand the market forces and the actions of national governments in order to find an answer to the question of whether an international harmonisation of labour standards and wages could improve the allocation of resources.

Consider a small underdeveloped '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. The uniform goods prices are normalised to one, and the uniform financial market interest rate is set in the core area at the level r .⁴

Real capital and labour are mobile only to a limited extent and, as discussed above, in different degrees. Real capital can only migrate slowly, but, in principle, it has no lasting location preferences for one area or another; what matters is the return that can be generated. Investments in the joining country, I , result in convex adjustment costs $\varphi(I)$ which reduce the speed of capital adjustment. It is assumed that $\varphi(0) = \varphi'(0) = 0$, $\varphi' < 0$ for $I < 0$, $\varphi' > 0$ for $I > 0$, $\varphi'' > 0$. By contrast, labour can migrate very quickly — a train journey of a few hours is often sufficient to reach a work place in the core area. Nevertheless, people typically do not want to migrate. They prefer to stay at home and migrate only if the reward in terms of a wage increase is sufficiently high. Let X stand for the number of guest workers who have migrated to the core area. Since they prefer to live at home in principle, they incur an aggregate cost $\psi(X)$, when they live and work in the core area, which measures both the subjective aversion against doing so and the objective costs involved. $\psi(X)$ does not represent one-off migration cost. Instead, it refers to the recurring costs associated with staying in the other country. Examples of the objective costs are the costs of 'commuting' or of regular trips home, and of having to pay larger rents than at home. An example of the subjective cost is homesickness. Some guest workers have a low preference for their home country and do not go back there very often; for others the situation is the reverse. $\psi(X)$ describes the total costs of all guest workers staying in the core country as a function of their number. Since the guest workers differ and are ranked in the order of their individual cost, it follows that $\psi'(X) > 0$. Since the first guest worker faces no cost and successive guest workers are increasingly averse to migration, it also follows that $\psi(0) = 0$ and $\psi'' > 0$.

⁴ Related models can be found in Sinn (2000) and Sinn and Sinn (1991, Chapter 5).

Because free transfer of knowledge is assumed, the joining country produces its goods with the same linearly homogeneous production function $f(K,L)$ as the core area, where real capital K and labour L are the factors of production. The constant labour force potential of the joining country is L^* , and the number of guest workers is

$$(1) \quad X = L^* - L.$$

A worker can work for a fixed effective wage rate w^* in the core area or for an effective wage rate of size w at home.⁵ Workers with a high home country preference, $\psi'(X) > w^* - w$, work at home, because the wage differential is not sufficient to compensate them for the cost of working in the core area. The reverse holds for those workers who have some aversion against leaving home, for whom $\psi' < w^* - w$; they decide to be guest workers. The marginal worker who is just indifferent between migrating and staying at home is implicitly defined by the condition

$$(2) \quad \psi'(X) = w^* - w.$$

The effective wage rate w which drives the migration decision is the worker's subjective money equivalent of a benefit bundle consisting of the pecuniary market wage w_p and the benefit resulting from firms' expense per employee, w_s , necessary to meet the government-determined social standard,

⁵ The star is chosen here as the index for the labour force potential of the joining country and the wage rate of the core country, because these two values show up in the model as steady state variables of employment and the wage rate in the joining country.

$$(3) \quad w \equiv U(w_p, w_s),$$

where $U_1, U_2 > 0, U_{11}, U_{22} < 0$. Similarly, w^* , the given effective wage rate in the core area, is the subjective money equivalent of the direct and indirect wage elements available there. The sum of the two wage components is the cost of labour to the firm as reported in Figure 1; however, the sum is not necessarily what the migrants are interested in. Nevertheless, it is assumed that U is linearly homogeneous and normalised in a way that

$$(4) \quad U(w_p, w_s) = w_p + w_s \text{ if } w_p \text{ and } w_s \text{ are chosen such that } U_1 = U_2 = 1.$$

To explain the empirical fact that social standards are chosen by governments rather than the firms themselves, a basic information asymmetry between workers and firms, which gives rise to a lemons problem, can be assumed. While each firm knows its expense for its own measures to improve the quality of its work places, workers have a more limited knowledge when they make their employment decisions. They know the country average, but not the efforts of their future employers at the time they sign their employment contracts. Thus, each single firm has an incentive to underinvest in the quality of its own work places. If it does so, it saves costs, but will not, or not immediately, be punished by not being able to attract or keep workers. An equilibrium emerges in the labour market where the quality of work places is inefficiently low unless the government imposes the right social standard as a binding constraint on firms' choices. In this section the time path of social standards is treated as a given in the decision problems of private agents. The next section will consider the national government's policy choice concerning this time path.

It is debatable whether the information asymmetry carries over to the choice between countries. However, it is much easier to acquire the information about countries than about individual firms. Thus the assumption that workers know the country-specific social standards when they make their migration decisions seems reasonable. A Pole who migrates to Germany knows under which conditions he has worked in Poland and has rather accurate expectations about the social standards prevailing in Germany.

Let t indicate calendar time. Unless otherwise indicated all equations hold for all points in time, $t > 0$, where zero is the time of joining the union. Variables like X , L , or w are time dependent magnitudes. It is assumed that no migration is possible before the time of joining and that, in the joining country, the marginal product with full employment is below the wage rate in the core area because the initial stock of capital, K_0 , is sufficiently low:

$$(5) \quad \begin{aligned} X(t) &= 0, \quad \psi'[X(t)] = 0, \\ w^* - f_L(K_0, L^*) &> 0, \\ \text{for } t &\leq 0. \end{aligned}$$

A rational expectations equilibrium is modelled, because the national government or a supranational government like the EU cannot be assumed to have better foresight than the participants in the market. The representative firm in the joining country takes the rate of interest and the time path of the pecuniary wage as given, and in equilibrium this anticipated time path equals the actual one. The firm also knows the time path of the government-imposed social standard, and at each point in time it spends the amount of money per worker, w_s , necessary to meet the then-

prevailing standard. The firm chooses the time paths of its labour use, L , and its net investment, I , such that the present value of the cash flow it generates is maximised:⁶

$$(6) \quad \max_{\{L, I\}_0^\infty} \int_0^\infty \{f[K(t), L(t)] - [w_p(t) + w_s(t)]L(t) - I(t) - \varphi[I(t)]\} e^{-rt} dt$$

s.t.

$$K(0) = K_0 = \text{const.},$$

$$\dot{K} = I.$$

The current-value Hamiltonian of this problem is

$$H = f(K, L) - (w_p + w_s)L - I - \varphi(I) + qI,$$

where q is the co-state variable of the stock of capital, i.e. Tobin's q .

Applying Pontryagin's Maximum Principle, the first order conditions

$$(7) \quad \frac{\partial H}{\partial L} = f_L - w_p - w_s = 0$$

and

$$(8) \quad \frac{\partial H}{\partial I} = -1 - \varphi'(I) + q = 0,$$

the canonical equation

$$(9) \quad \dot{q} - rq = -f_K$$

⁶ The formulation leaves open whether investment is financed by equity or loan capital. Because taxes are not dis-

and the transversality condition

$$(10) \quad \lim_{t \rightarrow \infty} q(t) K(t) e^{-rt} = 0$$

can be derived.

The Policy of the National Government

Knowing the behaviour of migrants and private firms as described in the previous section, it is the task of the national government to choose the time path of the social standard and hence the time path of the necessary expense per worker, w_s , which maximises national welfare. In the present context, national welfare, W , is the sum of the present value of the representative firm's cash flow according to (6) and the present value of the money equivalents of the direct and indirect wage benefits earned at home, $U(w_p + w_s) \cdot L$, and abroad, $w^* \cdot (L^* - L)$, minus the migration cost $\psi(L^* - L)$.⁷

$$(11) \quad W = \int_0^{\infty} \{ f[K(t), L(t)] - [w_p(t) + w_s(t)]L(t) - I(t) - \phi[I(t)] \} e^{-rt} dt$$

$$+ \int_0^{\infty} \{ U[w_p(t), w_s(t)]L(t) + w^* \cdot [L^* - L(t)] - \psi[L^* - L(t)] \} e^{-rt} dt$$

criminary the two ways of financing it are equivalent.

⁷ It could be argued that the return to capital earned by foreign investors which has to be financed out of the output produced in the joining area would have to be subtracted in the welfare calculation. However, if this is done, it is also necessary to add the funds flowing in at the time of investment. As the present value of the total cash flow between the joining country and its foreign investors is zero, this amendment of the equation would not affect the re-

The constraints of the government's optimisation include the migration rule (2) and the firms' optimality conditions (7) – (9).

Consider the effect on W of a marginal perturbation $\epsilon(t)$ of the time path of w_s . This perturbation incurs a first-order effect and a second-order effect on national welfare. The latter results from the general equilibrium reactions of the time paths of I and L , given the time paths of the direct and indirect wage components w_p and w_s . It is zero since the marginal perturbation takes place around the private optima. None of the two integrals in (11) takes on a different value.⁸

The first-order effect results from the changes in the direct and indirect wage components, given the behaviour of private agents as described by L and I . The relationship between these two wage components is given by (7), which obviously implies that $\partial w_p / \partial w_s = -1$. If the government has optimised its policy, the perturbation is unable to change welfare. Thus it is a necessary condition for an optimum that

$$\Delta W|_{\{L,I\}} = \int_0^{\infty} \epsilon(t) [U_2(w_p(t), w_s(t)) - U_1(w_p(t), w_s(t))] e^{-rt} dt = 0.$$

Since this condition must hold for arbitrary perturbations $\epsilon(t)$, it is also necessary that

$$(12) \quad U_1(w_p, w_s) = U_2(w_p, w_s) \quad \forall t \geq 0.$$

sults. In fact, discounting with the rate of return in the core area, r , already correctly expresses the joining country's funding cost.

Because of the linear homogeneity of the utility function this optimality implies that the government-imposed work place standard will improve gradually in step with a rise in the market wage. Because of the normalisation of the utility function assumed with (4), equation (12) implies that the utility from having a job in the domestic economy, which above was called the effective wage, can simply be taken to be the algebraic sum of the wage paid out to the workers and the per-capita expense involved by satisfying the government-imposed work standard:

$$(13) \quad w = w_p + w_s .$$

If the government did not satisfy equation (12), the effective wage would be lower than this sum, because an excess burden from setting non-optimal social standards would have to be subtracted.

Proposition 1: *Maximising social welfare, the government of the joining country chooses a time path of the social standard such that the marginal utilities of the pecuniary wage and the firms' expenses necessary to satisfy the standard are equal.*

The Overall Welfare Optimum

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. Consider the optimisation problem of a benevolent social planner. If the result of this optimisation problem does not differ from the outcome of the previous two sections, there is no rea-

⁸ Note, e.g., that the derivative of the integrand of the second integral with regard to L is zero because of the mar-

son to intervene by harmonising social standards or similar measures. If it does, supranational actions may be considered.

From an international perspective, the welfare goal does not differ from the national one as long as it can be assumed that the term $w^* \cdot [L^* - L(t)] - \psi[L^* - L(t)]$ correctly measures the social benefit from sending guest workers to the core country. Such an assumption is justified in the competitive small-country case considered here because w^* equals the fixed marginal product of labour in the core country minus a potential excess burden from setting sub-optimal work standards. Thus the over-all social optimum can be found by solving the problem

$$\max_{\{L, I, w_p, w_s\}_0^\infty} W, \text{ s. t. } K(0) = K_0 = \text{const. and } \dot{K} = I,$$

where W is defined as in (11). The current-value Hamiltonian for this problem is

$$H = f(K, L) - I - \varphi(I) - (w_p + w_s - U(w_p, w_s)) \cdot L + w^* \cdot (L - L^*) - \psi(L^* - L) + qI.$$

Here, the term $(w_p + w_s - U(w_p, w_s))$ is the per capita excess burden from a non-optimal choice of social standards and q is again the co-state variable of the stock of capital, K . The necessary conditions for a maximum of the Hamiltonian are

$$(14) \quad \frac{\partial H}{\partial L} = f_L - [(w_p + w_s) - U(w_p, w_s)] - w^* + \psi' = 0$$

$$(15) \quad \frac{\partial H}{\partial I} = -1 - \varphi'(I) + q = 0$$

$$(16) \quad \frac{\partial H}{\partial w_p} = -1 + U_1 = 0$$

$$(17) \quad \frac{\partial H}{\partial w_s} = -1 + U_2 = 0$$

and the canonical equation is

$$(18) \quad \dot{q} - rq = -f_K.$$

The transversality condition of this problem is

$$(19) \quad \lim_{t \rightarrow \infty} q(t) K(t) e^{-rt} = 0.$$

Equations (16) and (17) coincide with the national optimum as defined by (12) and (13) with regard to the work standard policy. Thus the term in squared brackets in (14) disappears, and obviously the marginal conditions coincide with conditions (7) – (10) which characterise a market equilibrium. This is the response to the accusation of social dumping.

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 supranational perspective.*

If the national choices were not efficient, a supranational agency such as the EU would have to think about potential remedies including the frequently demanded harmonisation of social

standards. However, Proposition 2 confirms that this is not necessary. Since the decentralised solution including the decentralised choice of government actions leads to a first-best optimum, there is no social dumping and no need for centralised government actions. Systems competition with work place standards works even though systems competition with public redistribution does not.

The social optimality of the national government's choice is even warranted in a second-best sense, when the core area itself sets a non-optimal standard, because a potential excess burden from having a wrong policy in the core area was taken into account. Nevertheless, it will be assumed in the following sections that the core area's governments have also chosen optimal social standards according to the same utility function relevant in the joining countries. In this case, there is no excess burden in the core area, and the effective wage there, w^* , equals the marginal product of labour in the core area.

The Properties of the Catching-up Process

While the above analysis has clarified a number of normative policy issues, it has not yet explored the positive implications of the model set up. Suppose the government of the joining country chooses the optimal time path of social standards, firms optimise their employment and investment decisions and households optimise their migration decisions. Which transition path will be taken by a less-developed country joining a well-developed core region like the EU?

Applying (8) or (15), a central differential equation for the growth of private investment over time follows from (9) or (18):

$$(20) \quad \dot{I} = \frac{r[1 + \phi'(I)] - f_K(K, L)}{\phi''(I)}.$$

It follows from equations (1), (2), (7) and (13) that

$$(21) \quad w = f_L(K, L) = w^* - \psi'(L^* - L)$$

which implies a functional relation of the type

$$(22) \quad L = \phi(K)$$

between capital and employment, where

$$(23) \quad \phi'(K) = \frac{f_{LK}}{\psi'' - f_{LL}} > 0$$

follows from an implicit differentiation of (21).

This indicates that if there is capital investment in the joining country, employment will increase. As assumed with (5) the joining country is undercapitalised and has a low marginal productivity of labour, and as indicated by (20), the stock of capital cannot adjust instantaneously after joining, but only gradually with the passage of time. It thus follows from (21) that there will be an immediate out-migration of guest workers and that the resulting initial wage rate will be *below* the effective wage rate in the core area by the marginal cost of staying in the host country. Since, because of the assumption of an immediate transfer of knowledge, the two countries have

identical production functions, they also have the same factor price frontiers. The marginal productivity of capital in the joining country after the migration of the guest workers is thus *above* that in the core area, if it is assumed that the marginal productivity of capital in the core area is equal to the rate of interest r because the adjustment of the capital stock has already been completed there.

If capital is being accumulated after this initial adjustment, this will change the factor prices. From (21)-(23) it is possible to establish that the marginal product of labour increases,

$$\frac{df_L[K, \phi(K)]}{dK} = \psi'' \cdot \phi' > 0,$$

and because of the negative slope of the factor price frontier the marginal product of capital declines:

$$\frac{df_K[K, \phi(K)]}{dK} < 0.$$

Let K^* be the capital stock at which the marginal product of labour in the joining country would be equal to the wage rate in the core area: $f_L[K^*, \phi(K^*)] \equiv w^*$. The fact that the two regions have the same factor price frontiers then implies that the joining country's marginal productivity of capital would equal the common interest rate r if K increases to K^* :

$$f_K[K^*, \phi(K^*)] = r.$$

Figure 2: *Factor Price Equalisation between the Joining Region and the Core Region*

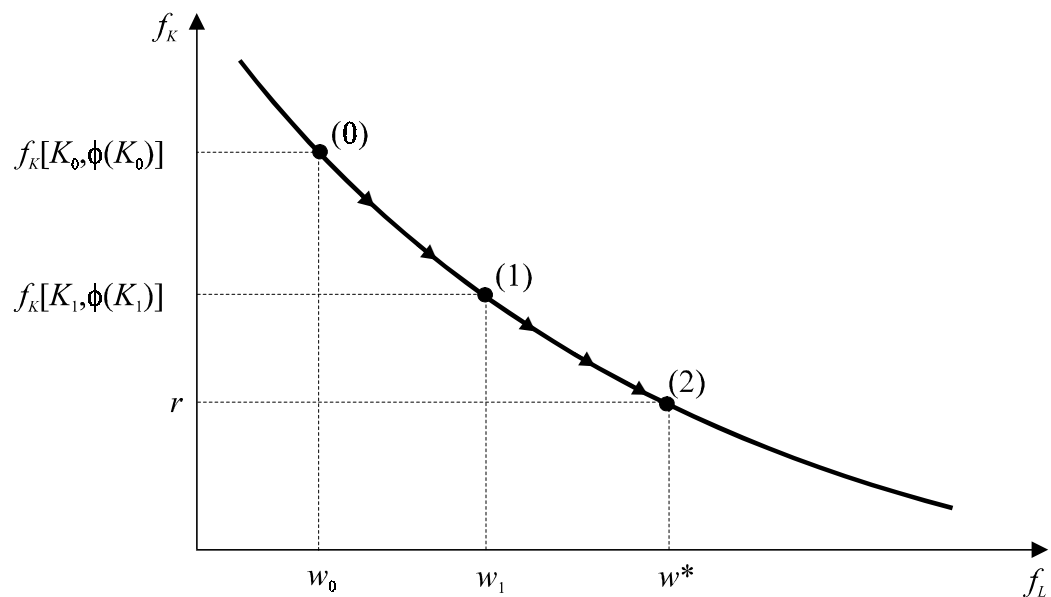


Figure 2 explains these relationships by showing the joining country's movement along the factor price frontier. Before people migrate, and before the equilibrium described above is produced, with freedom of movement capital intensity in the joining area is very low. Point (0) gives the values of the effective wage rate and the marginal productivity of capital associated with this. The spontaneous migration of guest workers that occurs immediately after joining leads to an instantaneous jump along the factor price frontier from (0) to (1). Provided that capital subsequently flows into the joining country, there will be subsequent gradual movement from point (1) to point (2) on the factor price frontier, where point (2) is characterised by the critical level of capital, K^* , at which the factor prices in the core region and the joining area are equal.

The movement from (1) to (2) takes place if the stock of capital increases. Whether this presumption is correct can be derived from the differential equation (20) which, by applying (22), can also be written as

$$(24) \quad \dot{I} = \frac{r[1 + \phi'(I)] - f_K[K, \phi(K)]}{\phi''(I)}.$$

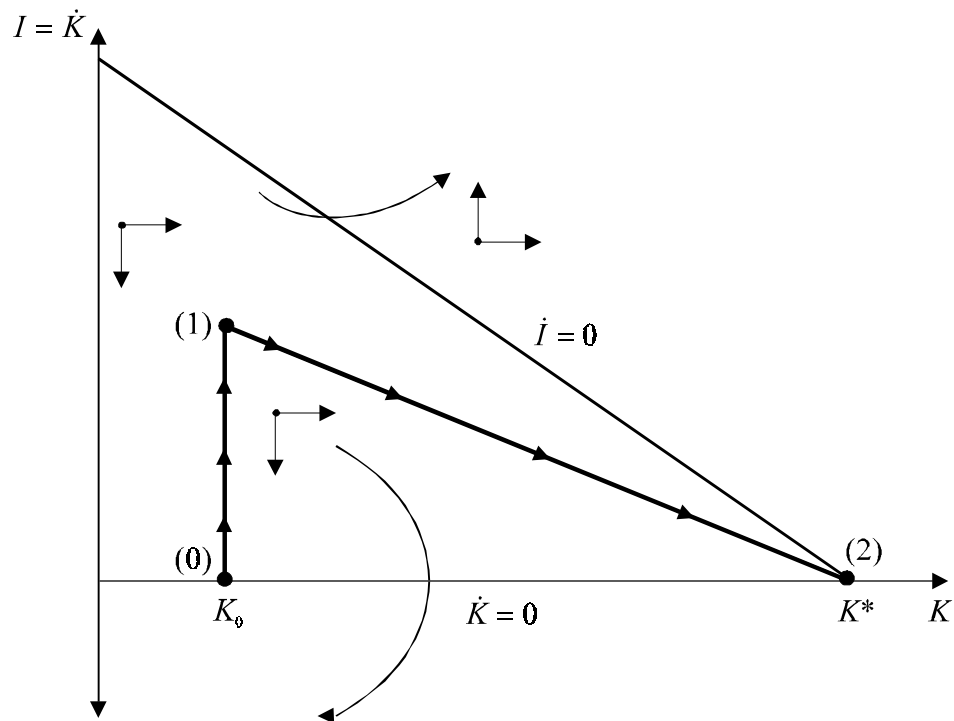
The implications of this differential equation, combined with the definitional differential equation $\dot{K} = I$, are shown in Figure 3. The figure includes all time paths which are compatible with (24). The $\dot{I} = 0$ curve shows those combinations of I and K for which the numerator of (24) is zero. The curve divides the figure into two areas, where movements are in different directions as shown by the arrows. Some paths cut the $\dot{I} = 0$ curve horizontally, others meet the abscissa vertically. Just one path, the stable branch, leads to the point with the co-ordinates $(I = 0, K = K^*)$. Only this path can characterise the market equilibrium.

Paths above the stable branch indicate positive and increasing investment up to the point where $K = K^*$. Since the marginal productivity of capital will then be equal to the market rate of interest, further investment would be unable to bear any adjustment cost. However, the positive level of investment characterising paths above the stable branch implies such cost. This contradiction rules out the possibility that such paths could characterise a market equilibrium.

Paths below the stable branch will eventually cut the abscissa from above before the marginal product of capital is equal to the market rate of interest. After this the capital stock will shrink at an increasing speed and become zero in finite time so that the policy described by (24) becomes infeasible.

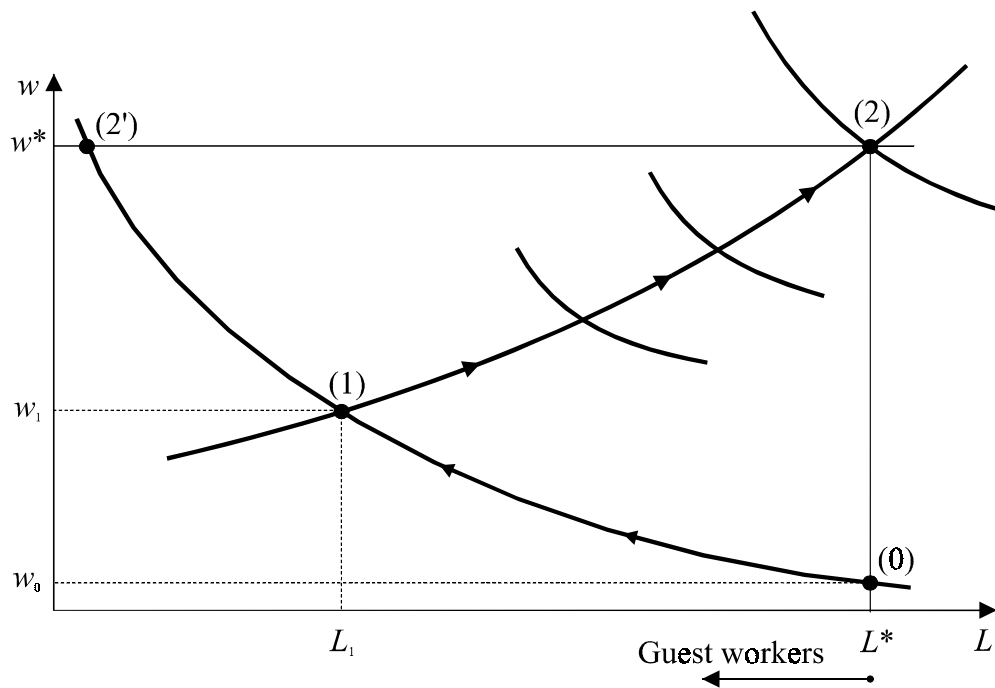
On the stable branch, the level of investment shrinks to zero as K approaches K^* . Thus K^* will not be reached in finite time, but the economy converges to this capital stock as time goes to infinity. It follows from (15) and (18) that the co-state variable, Tobin's q , is greater than one on the stable branch and converges to one as time goes to infinity. Thus it is clear that the transversality conditions (10) and (19) are met. All the necessary conditions for a welfare optimum and an optimum in the market agents' planning problem are satisfied.

Figure 3: *Investment and Capital in the Adjustment Process*



The optimal adjustment strategy after integration into the common capital and labour markets is shown in Figure 3 by a rapid increase in investment from (0) to (1) and a gradual development from (1) to (2). In this gradual development process investment is at first very high and then becomes successively smaller. The capital stock, and with it the whole economy, thus initially grows at a very high rate and then at a gradually falling rate towards the value K^* , which characterises complete factor price equalisation.

Figure 4: *The Adjustments in the Labour Market*



Finally, to round off the overview, it is useful to take a look at Figure 4.⁹ The development path of the joining country is shown there in a labour market diagram with supply and demand curves. At the time of joining, and before people and capital migrate, point (0) on the demand curve $f_L(K_0, L)$ is realised. The effective wage rate w_0 is low enough to ensure full employment of the labour force potential L^* . This point is not an equilibrium when the borders are open, because the wage difference with the core area exceeds the marginal migration cost which is zero when no one migrates. In accordance with the assumptions made, people are quick but unwilling and capital is slow but willing. Therefore there is initially an instantaneous jump along the old

⁹ The figure must be interpreted only qualitatively. For clarity of presentation the number of guest workers ($L^* - L$) is very much exaggerated in the figure. If the “joining country” can be taken to be the set of ten east European countries applying for EU membership, an emigration in the order of 5% – 7% or 5 – 7 million people can be expected. See Sinn, Flaig, Munz and Werding (2000).

demand for labour curve up to point (1) where this curve is cut by the supply curve. The supply curve shows the number of workers in the reverse order of their reservation wage. The reservation wage is the effective wage rate in the core area, w^* , minus the individual cost of staying in the home country, ψ' . The realisation of point (1) means that initially $L^* - L_1$ people migrate to the core area as guest workers and that the same number of (less productive) jobs in the joining country are lost.

After point (1) is reached capital accumulation makes itself felt in the form of a gradual rightward shift of the demand for labour curve towards position $f_L(K^*, L)$. The market equilibrium point moves out from (1) gradually, but with diminishing speed, along the labour supply curve towards point (2). In the course of this gradual adjustment process, the number of guest workers falls until they all have returned home again, and the effective wage rate rises until it reaches the effective wage rate in the core area, w^* . Thus, there is only a temporary population shift from the joining country to the core area, and not a permanent one. At first, there is a rapid wave of out-migration but, over time, when wages rise as the capital stock increases, complete return migration to the home country takes place. This two-sided migration pattern is typical for guest worker migration flows from countries in transition.

Recall that this process incorporates not only private market decisions, but also the decisions of the national government in that this government gradually redefines the social standard for employment contracts. According to assumptions (3) and (4), in the national optimum as given by (12), both components of the effective wage rate w^* , the pecuniary wage w_p and the non-pecuniary wage resulting from the firms' social expenses w_s , rise in step during the adjustment from point (1) to point (2). As it was assumed in addition that the governments in the core area have optimised their social policies, reaching point (2) also implies that both wage compo-

nents converge towards the respective values in the core area. Eventually, the joining country's government will impose the same social standards as the governments of the core area does.

The following proposition summarises the positive implications of the model.

Proposition 3: *Opening the borders between a less-developed joining area and a well-developed core area results in a two-sided migration process. In the short term with an initially given capital stock, some of the working population of the joining country migrate as guest workers to the core area. In the joining country, this reduces the labour supply, increases wages, destroys some of the jobs and induces the national government to raise the social standard in step with the wages. Because interest rates are the same in both regions and because the subjective and objective costs of migration mean that wage equalisation cannot happen in the short run, the joining country attracts an inflow of capital from the core area. The inflow of capital increases the demand for labour in the joining country and leads to a further increase in the wage rate and the social standard which results in a gradual return migration of the guest workers. The capital inflow dries up when the market wage and the social standard have reached the respective levels in the core area and all the guest workers have gone back home again.*

As the catching-up process described characterises the market equilibrium, an equilibrium in systems competition and an overall welfare optimum, the result once again refutes the hypothesis of social dumping insofar as it refers to the artificial reduction in wages and fringe benefits – and not to the redistributive measures. A government that acts in the national interest knows that measures to promote the use of capital would be as harmful as harmonising the factor prices too

soon, because both of these measures would involve departing from the joining country's optimal adjustment path. Wages and work-related fringe benefits must be lower than in the core area during a long transition period before an adequate capital stock has been accumulated, and in the long run, they adjust by themselves without the need for central government intervention measures. The temporary lag in wages and social standards has nothing at all to do with social dumping; it is the result of the efficient working of the Invisible Hand in systems competition.

Lessons from German Unification

The adjustment problem just described is extremely important for the development of the European Union, for the eastern enlargement involves the entry of countries whose economies are very backward compared to those of the core countries. Because wage costs there are between 10% and 15% of the German (west) level, in the core countries the political pressure for a harmonisation of wages and social standards in the run up to entry is increasing.

The practical example of German unification shows how dangerous such a policy would be. Following unification, Germany learned the painful way that the laws of the market cannot be ignored. In anticipation of a wonderful future, the policy of early equalisation of wages and social standards was given the go-ahead and the economies of the new Länder were led up a blind alley. Social standards were adjusted immediately after unification, and the hourly wage costs in east German manufacturing jumped to more than 70% of the western level in only five years, although they were only 7% of this level before unification at the then prevailing exchange rate. The consequence of this explosion of the labour cost was a loss of competitiveness which destroyed nearly 80% of the jobs in manufacturing. Mass unemployment and a westward net migration of around 10% of the east German population resulted.

In terms of Figure 4, the east German wage policy means that the automatic increase in wages from w_0 to w_1 , which would have occurred by itself as a result of westward migration and cutbacks in the east German labour market, was not waited for. Instead, there was a movement along the labour demand curve $f_L(K_0, L)$ upwards to the left towards point (2'). The excess supply of labour shown in the figure is the present mass unemployment. Unemployment, at least as far as it was triggered off by too rapid an increase in wages and the immediate implementation of west German labour standards, is an obvious sign of misallocation, a waste of valuable working time, and a irrecoverable loss of national output.

Germany has had to pay for the misallocation with massive social transfers to the new Länder. In the first decade after unification, loans of € 750 net for the eastern transfers had accumulated and the government debt more than doubled. The European Union cannot permit itself to make such an expensive policy mistake.

Fortunately, the German policy mistake is not likely to be repeated at the European level, because first, people can learn and second, the special policy mechanisms that were responsible for wage policies in Germany do not extend to the European level. The German problem was that the western trade unions and the western employers negotiated the east German wages among themselves – there were no east German firms in existence at the time (spring 1991) the critical wage decisions were made. There were proxy negotiations in which both of the ‘negotiating parties’ had the same interest in high east German wages because they wanted to avoid unpalatable competition in their own west German branches of industry. Similarly, western employers and union representatives helped convince the government to impose west German work standards and the west German social security system on the east Germans right from the beginning. Circumstances like these can, in principle, be ruled out for the EU accession countries because nego-

tiations there will take place between national trade unions and national employers. This will ensure that the negotiating parties represent opposing interests with regard to wage policies. Also, it is hard to imagine that the governments of the accession countries will come under pressure from the employers' and employees' representatives of the core countries. Thus it is very likely that these countries will approximate the optimum described above more than east Germany was able to do.

Why Low Wages and Social Standards Do not Indicate Social Dumping

The accusation of social dumping, which the less-developed European countries seem to have engaged in because their wages and social standards are low, is not justified. Low wages, low social standards and high returns to capital are the necessary concomitants of a long-term adjustment process. Even in a common European economy without artificial barriers to factor movements there are natural barriers large enough to slow down the process of factor price equalisation for a long time, and the governments of the joining countries will take this into account when they define the speed with which they adjust social standards to those in the developed core areas. In allocative terms, it is a mistake to want to overcome these barriers with counteracting policy measures. It would be particularly mistaken to attempt to enforce the equalisation of factor prices and social standards appropriate for the long run by means of premature harmonisation. Such an attempt would only reproduce the east German debacle in the new countries joining the European Union.

Left to themselves, decentralised choices of households, firms and national governments will solve the adjustment problem of a relatively underdeveloped joining country in that some of the labour force potential will move to the core area as guest workers. This will then lead to spon-

taneous increases in wages and a parallel adjustment in social standards which will reduce the pressure to migrate. As the effective wage level will still be well below that of the core area despite the spontaneous increase, there will be an import of capital and this will successively raise labour productivity, wages and social standards. To the extent that the increase in effective wages results in a closure of the wage gap, it reduces the incentive for investment and thus prevents a further increase in effective wages. Wages and social standards will equalise in the long run. The mistrust of the allocative efficiency of systems competition is not justified. The lag in wages and non-wage benefits in the still-undeveloped countries is the key characteristic of an efficient transformation process.

A simple but important insight for the assessment of systems competition follows from this. Because private competition and systems competition carry out the gradual transformation of the joining country perfectly, there is no need for a supranational government like the EU to intervene by harmonising social standards. Both the EU Social Charter and the ILO conventions are interventions of dubious use.

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