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## **Implications of Integration for Wage Formation and Employment**

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## 1. Introduction

The obvious effect of integration in the form of a monetary union is that exchange rates are irrevocably fixed. Seen from the perspective of Tinbergen's theory of economic policy, formulated many years ago, this means that the participating countries forego using an instrument which formerly was available to them. As is well known, economists do not agree at all with respect to the question on how risky the establishment of a monetary union is, in which the national countries will still be the rulers of the game. They were only able to agree to handing over the responsibility for monetary policy to an independent organisation. Non German countries were mainly motivated by the idea that it may be less disadvantageous to have some voice in a common central bank than to follow - grinding one's teeth - the policy of the German Bundesbank, in which unconditional devotees to price stability were traditionally leading.

Whereas it is clear that the single currency rules out the flexibility that intra-European exchange rates provided - and in this respect it is the cancellation of a potential shock absorber - less obvious is what happens with interest rates and with changes in the price level. As far as interest rates are concerned, it is only certain that those set by the European Central Bank are binding for all members. But some differences will still exist in the debit and credit interest rates in different countries which will increase when some insecurity arises about the continuation of the membership of one of the participants. Changes in the price levels can also differ because non-tradeable goods exist. But notwithstanding these possible differences it should be quite clear that the possibilities to establish a national policy for interest rates or for changes in the price level will be drastically reduced in a monetary union.

In view of these conditions something like a substitute for this loss should be made available. The traditional view is quite unequivocal with regard to the question of

what the best substitute is. According to the opinion of most economists, politicians and central bankers, the loss of flexibility, due to the fixing of exchange rates, has to be compensated above all in the labour market. According to the same opinion leaders this is admittedly exactly the place where most of the members and especially countries like Germany, France and Italy are lacking in flexibility.

That labour markets, their functioning and especially their flexibility will become much more important under the new regulations, is a widespread opinion<sup>1</sup>. A compelling question is thus how wage policy will probably react to the new situation and what may be the consequences.

Before I elaborate, let me mention an effect of the monetary union which has not been discussed as intensively as the loss of the possibility to adjust exchange rates. That is, under the new conditions collective bargaining will much more than before determine the real wage. At least for a decentralised wage policy this will be clear to participants because they can not expect the European Central Bank to adapt to the respective wage policy. Therefore under the new conditions an old demand of traditional economists will be fulfilled much more than before: that the responsibility for wages and employment should rest with the participants of the bargaining process.

The most interesting question is of course how wage policy will react with respect to these new circumstances. Answering this question requires distinguishing between at least two dimensions. The first is concerned with the distinction between a centralised (Europeanised) wage policy, on the one hand, and a decentralised wage policy (country-specific or at regional, sectoral or even firm level), on the other. Centralisation of wage policy is not necessarily one and the same as an undifferentiated and uniform wage policy for all members. But to Europeanise wage policy

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<sup>1</sup> In Germany this was expressed already in 1989 by the Academic Advisory Board of the Ministry of Trade and Commerce (Wissenschaftlicher Beirat beim Bundesministerium für Wirtschaft 1989).

would of course establish forms of co-ordination and maybe of co-operation between trade unions as well as employers' associations. The danger of wage policies in the spirit of beggar-my-neighbour policies, which will be mentioned in the following, would most probably be reduced under these conditions.

The other dimension of wage policy - of importance for its centralised and decentralised variants - is its basic orientation. Collective agreements for single member countries (or for regions or branches) can be the result of different strategies of unions<sup>2</sup>:

1. Trade unions could accept their increased responsibility for the employment situation and attempt to insure that an average unit labour costs in the respective sphere of influence of a trade union do not increase at a higher rate than elsewhere. Nominal wage rates would thus be increased in accordance with the rate of growth of labour productivity and the unavoidable rate of inflation. This means at the same time that the considerable differences in the levels of labour productivity (see Table 1) would be accepted and a catching-up of low-productivity countries would only take place if they were able to realize higher growth rates in labour productivity.

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<sup>2</sup> Of course, the strategies of employers' associations also matter. Nevertheless, the emphasis in the paper is put on trade unions' strategies.

Table 1

**Labour Productivity and Labour Costs in Euroland, 1997**

|                | Labour productivity <sup>a</sup> | Labour productivity in percent of West Germany | Labour costs level <sup>b</sup> | Labour costs level in percent of West Germany | Unemployment rate <sup>c</sup> |
|----------------|----------------------------------|--|---------------------------------|---|--------------------------------|
| Austria        | 54,5                             | 90,9   | 30,7                            | 89,5  | 4,4                            |
| Belgium        | 58,5                             | 97,6   | 36,9                            | 107,6   | 9,2                            |
| Finland        | 48,8                             | 81,4   | 32,2                            | 93,8  | 14,0                           |
| France         | 57,2                             | 95,3   | 32,8                            | 95,6  | 12,4                           |
| Germany        | 55,7                             | 92,9   | 32,7                            | 95,3  | 9,7                            |
| -West Germany  | 60,0                             | 100,0  | 34,3                            | 100,0   | 8,3                            |
| -East Germany  | 36,2                             | 60,4   | 25,5                            | 74,4  | 15,7                           |
| Ireland        | 41,7                             | 69,5   | 24,6                            | 71,8  | 10,2                           |
| Italy          | 51,1                             | 85,3   | 27,4                            | 79,9  | 12,1                           |
| Netherlands    | 51,2                             | 85,4   | 33,4                            | 94,4  | 5,2                            |
| Portugal       | 20,7                             | 34,5   | 12,8                            | 37,4  | 6,8                            |
| Spain          | 37,2                             | 62,0   | 23,0                            | 66,9  | 20,8                           |
| United Kingdom | 43,0                             | 71,7   | 23,3                            | 68,0  | 7,1                            |

<sup>a</sup> Nominal GDP per person engaged (total employment) (thousand ECU, calculated with the actual central rate).  
<sup>b</sup> Gross compensation of employees (wage and salary earners) per employee (wage and salary earner) (thousand ECU, calculated with the actual central rate).  
<sup>c</sup> Standardised, OECD; for East and West Germany: own calculations.

Source: Siebert (1998)

2. An intensified (or even perverted) form of job competition between national (or regional, sectoral) trade unions could take place when some of them accept nominal wage increases distinctly below the increase of labour productivity with the intention to increase international competitiveness and - hopefully - the rate of employment in its own sphere of influence. As it is obviously not possible for every country to reduce its unit labour costs in relation to other countries this form of wage policy would finally fail. But the danger exists that it may give rise to a deflationary development. A negative sum game would be the consequence.

3. If trade unions ask for wage increases considerably above the increase of labour productivity, it must have been taken into account by them that competitiveness and employment may deteriorate as a result of such wage policy, while hoping that the European Union prevent (or at least finance) an increase in unemployment and give support in the form of fiscal transfers. The obvious recent historical example for this sort of behaviour is the wage policy practised in Eastern Germany following unification.

## **2. Experts' Recommendations for Wage Policy**

To give an idea of what sort of recommendation traditional economics has to offer for wage policy I will very shortly refer to the recommendation for wage policy as proposed by the German Council of Economic Experts. The general idea is that wage rates should be changed in accordance with the change in labour productivity but that this rule has to be modified in view of unemployment. According to the Council and other influential economists the increase of wage rates has to be below the increase in productivity if unemployment is to be reduced. Additionally the Council (Sachverständigenrat 1997) has recently developed a remarkable interpretation of the specific rate of productivity growth which matters for wage policy. They propose a modified rate of productivity growth which deviates from the measured rate of growth in a two-fold way: first the so-called dismissal productiv-

ity - or more precisely, the productivity increase due to a reduction of employment - is deducted. Second based on the maxim in neo-classical theory that marginal and not average productivity is important, the rate of change in marginal productivity (modified in the same way) should instruct wage policy.

Since statistics about marginal productivities and its rate of change do not exist and the productivity increase due to employment reductions is unknown, the Council has developed the following procedure to derive the rate which he considers to be relevant for wage policy.

A modified Cobb-Douglas function of the following form is used:

$$(1) \quad Y(t) = L(t)^{\alpha(t)} K(t)^{\beta(t)} e^{\lambda t}$$

Y: real production                       $\alpha$  : production elasticity of labour

L: labour input                               $\beta$  : production elasticity of capital

K: capital stock                               $\lambda$  : Hicks-neutral technological progress

For this form of a production function the relation between the rates of change of marginal and average labour productivity is

$$(2) \quad \left( \frac{\hat{\delta Y}}{\hat{\delta L}} \right) = \hat{\alpha} + \left( \frac{\hat{Y}}{L} \right)$$

As (2) shows, only a change in  $\alpha$  can produce different rates of change in the two rates if a Cobb-Douglas function is assumed<sup>3</sup>.

To 'correct' for dismissal the following procedure is adopted. The productivity function (Y/L) which can be derived from (1) is differentiated logarithmically to arrive at:

$$(3) \quad \left( \frac{\hat{Y}}{L} \right) = \alpha \ln L + (\alpha - 1) \hat{L} + \beta \ln K + \beta \hat{K} + \lambda$$

As  $(\alpha - 1)$  is according to neo-classical assumptions negative, the second term on the right side will be positive when employment shrinks. This is one and the same

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<sup>3</sup> As is well known, in the original Cobb-Douglas function the exponents of L and K are fixed and independent of time. Rates of change in marginal and average productivity are therefore



as the assertion that the measured growth rate of labour productivity contains in the case of employment decline a contribution due to dismissals - sometimes called 'dismissal productivity'<sup>4</sup>.

If this part is not taken into account one gets the modified rate

$$(4) \quad \left( \frac{\hat{Y}}{\hat{L}} \right)^* = \alpha \ln L + \beta \ln K + \beta \hat{K} + \lambda$$

and therefore

$$(5) \quad \left( \frac{\hat{Y}}{\hat{L}} \right)^* = \left( \frac{\hat{Y}}{\hat{L}} \right) + (1 - \alpha) \hat{L}$$

When the same correction is made for the rate of change in marginal productivity the following expression for the rate of change of 'modified marginal productivity of labour' can be derived:

$$(6) \quad \left( \frac{\hat{\delta Y}}{\hat{\delta L}} \right)^* = \left( \frac{\hat{Y}}{\hat{L}} \right) + (1 - a) \hat{L} + \hat{\alpha}$$

Table 2 shows that in the periods under consideration there are remarkable differences between measured productivity growth and the growth rate of marginal productivity constructed in this way. As the measured productivity growth and the rate of growth of productivity, corrected for dismissal's contribution, are very similar, the difference is mainly due to a decline in  $\alpha$ , which in the calculations is identified with the labour share<sup>5</sup>. Hence, the approach of the Council has the somewhat paradoxical consequence that a fall in the labour share unavoidably reduces the wage increase recommended. When (6) is used to calculate the appropriate change in the wage rate a decline in labour's share results in lower wage increases and therefore a further fall in its share.

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one and the same.

<sup>4</sup> It is obviously a rate of change which contributes to productivity growth.

<sup>5</sup> To equalize  $\alpha$ , the production elasticity of labour, with the labour share there are some prerequisites: for example, the assumption of perfect markets and constant returns to scale. Obviously (see equation (1)) the Council was of the opinion that the assumption of constant returns is not necessary.

Table 2

**Rates of Change of Labour Productivity and Marginal Productivity**  
(West Germany)

| Period                   | Average Rate of Change in Labour Productivity, unmodified | Average Rate of Change in Labour Volume | Wage Share <sup>1)</sup> | Average Rate of Change in Labour Productivity, modified | Average Rate of Change in Wage Share <sup>1)2)</sup> | Rate of Change in Marginal Productivity |
|--------------------------|---|---|--------------------------|---|--|---|
| <b>I. Longer Periods</b> |   |   |                          |   |  |   |
| 1980-92                  | 2,7   | -0,2                                    | 64,3                     | 2,7   | -0,8   | 1,9                                     |
| 1982-93                  | 2,9   | -0,2                                    | 64,6                     | 2,8   | -0,8   | 2,0                                     |
| <b>II. 1998</b>          |   |   |                          |   |  |   |
| 1998                     | 2 ½   | ¾                                       | 58,9                     | 2 ¾   | -1   | 1 ¾                                     |

<sup>1)</sup> Wage share includes calculated compensations for self-employed persons and uses in the denominator gross value added.

<sup>2)</sup> For the last row in the table: 1988-98.

Source: Sachverständigenrat (1998)

I forego to discuss the problematic features of this recommendation in more detail. Despite the Council's intention to provide for a scientifically substantiated basis for wage policy, it might have the unintended effect of contributing to the aforementioned intensified or even perverted form of job competition between nations which triggers the changes leading to a deflationary downward spiral.

In what follows I will not discuss the probability of such a development but take up a question which is not put forward and therefore obviously also not answered by the Council. It is the question how trade unions and employers' associations are affected by integration. As the Council gives its recommendation unconditioned it has to be inferred that it is applicable to a pre- and post-integration situation. But it is obviously naive to give recommendations for wage policy without taking into account the interests of the actors. With the use of an extremely simplified model I will try to overcome this naiveté — whereas I am by no means aware of the danger that I may be revealing a naiveté of a different nature.

### **3. Effects of Integration for Wages and Employment**

Up to now I have not taken into account explicitly that wages are settled by collective agreements between trade unions and employers' associations. An important aspect of international market integration consists in the fact that generally market structure as well as market size will be changed in comparison to the pre-existing situation. I will, admittedly under very simplifying assumptions, in what follows discuss how the bargaining outcome is affected. To be more specific, my concern is how goods market integration affects wages, employment and profits.

My point of departure is a situation with two initially separate markets A and B, each of which consists of a unionised sector comprising a monopolistic firm (which is one and the same as an employers' association) and a trade union which is the sole supplier of labour to the firm. It is assumed that firms maximise profits, that the products are perfect substitutes, that costs consist only in wages and that pro-

duction functions are linear. Additionally it is assumed that the market under consideration is small and that price changes in this market do therefore not influence the general price level.

Under these assumptions the profit function is

$$(7) \quad \Pi_i = pX_i - w_iL_i$$

with  $i = A, B$   
 $w$  = wage rate in the unionised sector  
 $X$  = production

The linear production functions are:

$$(8) \quad X_A = \alpha L_A$$
$$X_B = \beta L_B$$

with  $0 < \beta \leq \alpha$

$\beta < \alpha$  indicates that productivity in B is lower than in A. In Huizinga (1993), whose model has in other respects many similarities with our model, only  $\alpha = \beta$  is discussed. I will in addition also investigate the case in which the two markets are not fully symmetric.

As far as trade unions are concerned, the usual procedure in the respective literature is now to define an objective function of the union which has to be maximised. Different functions have been proposed (see, for example, Oswald 1985, Booth 1995). I will neither enter into a discussion about the meaningfulness of such an objective function for an organisation with members of different interests nor into the pros and cons of different forms. I will simply assume that the union tries to maximise its rent, i.e. the difference between the wage rate in the unionised and the competitive sector of the economy multiplied by the number of persons employed in the unionised sector. For simplicity I assume that the competitive wage is zero. In that

case maximising the rent is one and the same as maximising the wage sum. Therefore

$$(9) \quad U_i = w_i L_i \\ i = A, B$$

Finally, I assume that the monopolistic and unionised sector in each country is small enough that its price does not influence the price level and that the monopoly firms in A and B have identical and linear negatively sloped demand functions for its products of the form

$$(10) \quad p = a - bX_i$$

In the standard monopoly union model the union fixes the wage rate according to its objective function and accepts the respective employment decision of the firm. As has been shown by McDonald and Solow (1981), preceded by Leontief (1946), the equilibrium in the monopoly model is in general inefficient as the outcome does not lie on the bargaining contract curve.

In our context we have to ask what the pre-integration and the post-integration solution will be. Let us first turn to the question on which solution we arrive at in the pre-integration situation.

The union in every country knows that wage rates and labour demand are negatively correlated because the profit of a country's monopoly ( $\Pi_i$ ) can be defined as follows:

$$(11) \quad \Pi_i = (a - bX_i) X_i - w_i L_i$$

and for profit maximising firms the following labour demand functions in the two countries can be derived:<sup>6</sup>

$$(12) \quad L_A = \frac{a\alpha - w_A}{2b\alpha^2}$$

$$(13) \quad L_B = \frac{a\beta - w_B}{2b\beta^2}$$

The functions to be maximised by the unions with respect to the wage rate are therefore

$$(14) \quad U_A = \frac{a\alpha w_A - w_A^2}{2b\alpha^2}$$

and

$$(15) \quad U_B = \frac{a\beta w_B - w_B^2}{2b\beta^2}$$

Solutions for the optimal wage rates are

$$(16) \quad w_A^* = \frac{a\alpha}{2}$$

$$(17) \quad w_B^* = \frac{a\beta}{2}$$

and for the respective labour demands

$$(18) \quad L_A^* = \frac{a}{4b\alpha}$$

$$(19) \quad L_B^* = \frac{a}{4b\beta}$$

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<sup>6</sup> By inserting (8) and (10) into the respective profit function and making use of the necessary

$U_i^*$ ,  $p^*$  and  $\Pi_i^*$  are independent of the productivity parameters and therefore identical for A and B:

$$(20) \quad U_i^* = \frac{a^2}{8b}$$

$$(21) \quad p^* = \frac{3}{4} a$$

$$(22) \quad \Pi_i^* = \frac{a^2}{16b}$$

Let us now turn to the post-integration constellation. We exclude labour mobility<sup>7</sup>, but firms are now competitors in one single market. After integration, firms are assumed to be engaged in Cournot output competition, i.e. the output of the competitor is assumed to be fixed and independent of one's own output. As far as the unions are concerned, when setting the wage rate, they take into account how labour demand will react, whereas the wage rate of the other union is taken as given. Cooperation between unions and firms does not take place<sup>8</sup>.

Under the new conditions the demand curve one gets by horizontal addition is

$$(23) \quad p = a - \frac{b}{2}(\alpha L_A + \beta L_B).$$

Starting again from the profit maximisation condition, the labour demand functions of the two firms can be derived:

$$(24) \quad L_A^{**} = \frac{2}{3\alpha b} \left( a - \frac{2w_A}{\alpha} + \frac{w_B}{\beta} \right)$$

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conditions for profit maximization ( $d\Pi_i / dL_i = 0$ ) under the assumption of a parametrically given wage rate.

<sup>7</sup> In the European Union we will of course have some labour mobility. But there are good reasons to assume that it will be much lower than in the United States. For a drastically simplified model it seems appropriate to neglect mobility completely.

<sup>8</sup> We will later take up the consequences of a change in these assumptions.

and

$$(25) \quad L_B^{**} = \frac{2}{3\beta b} \left( a - \frac{2w_B}{\beta} + \frac{w_A}{\alpha} \right).$$

As can be seen, labour demand is (as before) inversely related to the wage rate of the respective country and (now additionally) positive to the foreign wage rate. The last mentioned influence shows that a positive employment externally exists.

Maximising its objective functions the trade unions determine their optimal wage rates which are:

$$(26) \quad w_A^{**} = \frac{a\alpha}{3}$$

$$(27) \quad w_B^{**} = \frac{a\beta}{3}$$

A comparison of (26) and (27) with (16) and (17) shows that wage rates are lower than in the pre-integration situation. But, as can be seen by inserting these wage rates into the labour demand functions, labour demand and therefore employment is higher:

$$(28) \quad L_A^{**} = \frac{4a}{9\alpha b}$$

$$(29) \quad L_B^{**} = \frac{4a}{9\beta b}$$

Finally, it is easy to check that trade unions' objective functions exhibit a larger value than in the pre-integration situation.<sup>9</sup> And although the price is lower after integration profits, too, are higher after integration. The somewhat surprising result is therefore that in the case under discussion trade unions' rents (under our assump-

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<sup>9</sup> The solutions for the different variables are summarized in Table 3.



tions one and the same as the wage sum), profits and employment are higher in the integrated market.

Before discussing these results we should remember that some very special assumptions had been made which may be questioned. Between the European countries obviously important pre-integration differences exist. Of these we only took productivity differences into account whereas the pre-integration market sizes of the two markets under consideration were assumed to be identical, and the same assumption was made with respect to competitive wages<sup>10</sup> (which in reality substantially vary between countries). Although it would be possible to relax some of these assumptions (for example by assuming different coefficients in the price equations - with larger values for smaller markets - at this point I will not try to make the model more realistic in this regard. But I want to hint at the changes which develop when the assumption of an uncoordinated wage policy or competition between firms is abandoned.

Let me first turn to a co-ordinated wage policy, with firms operating under conditions of Cournot competition. A simple assumption is that now a common utility function, consisting of the unweighted two rents (wage sums) is maximised. Maximising such a function with respect to  $w_A$  and  $w_B$ , and taking into account the constraints (24) and (25) gives as solution for the wage rates exactly the values of the pre-integration case. As we already know, these wage rates are higher than the wage rates in the case of an uncoordinated wage policy in an integrated market. For labour demand a co-ordinated wage policy under the aforementioned assumptions has the following solutions:

$$(30) \quad L_A^{***} = \frac{a}{3\alpha b}$$

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<sup>10</sup> Only to simplify the equations we assumed additionally that competitive wages in both countries are zero.

$$(31) \quad L_B^{***} = \frac{a}{3\beta b}$$

When we compare these solutions with the two previously discussed cases, we see that employment is higher than in the pre-integration situation but lower than in the case of an uncoordinated wage policy. As wage rates are the same as in the pre-integration situation and employment is higher, trade unions obviously gain from integration whereas firms' profits are lowered. From the standpoint of the unions, a co-ordinated wage policy is also to be preferred in the post-integration situation in comparison to the aforementioned case: Although employment is lower than in the uncoordinated case, both unions' utility is higher, assuming that utility is equally distributed between the unions.

It is quite obvious that with the simple model which has been used further constellations can be analysed. For example, we can analyse what happens when the country with the lower wage rate (in our case B) tries to catch-up with the high-wage-and-productivity country without a corresponding larger increase in productivity. Without going into the details of this case it is quite clear that for the country with the expansive wage policy wage unit costs deteriorate and a reduction in international competitiveness will take place. At least within the boundaries of the simple model we are discussing, employment will be lower and the trade union in the low-wage country has to decide if an expansive wage policy is really worthwhile. This can be modelled by using an utility function  $U_B$  which selects the maximal value of the wage policies which the union has at its disposal.

The opposite case is that of wage dumping: here, it is not the low-wage country which tries to catch up with the high-wage country, it is rather the high-productivity country which wants to gain in international competitiveness, for example by adopting the (lower) wages of the low-productivity country. Again I will not go into details. But it is quite obvious that the relative decline in labour unit costs of country A will improve its international competitiveness and, under the assump-

tions of our simple model, the employment situation. Whether lower wage rates and higher employment result in a higher value of unions' rents seems to be an open question. For our simple model, however, it can be shown that both unions achieve a lower utility than in the case of a productivity-oriented wage policy. The situation becomes even worse for unions when they enter into a competition of undercutting. This form of competition may result in the complete disappearance of any union rent, while union wages become equal to the competitive wage. The same holds true when, contrary to the assumption made up to now, a collusion between the two firms take place. When firm-level co-operation results in a division of markets we are back to the pre-integration situation which has been shown to be inferior even for firms in comparison to post-integration with uncoordinated wage policy. But without market division what counts is that the bargaining situation of the (now single) firm is improved. Huizinga (1993) characterised the situation as a 'Bertrand-style wage setting game', with union wages equal to the competitive wage as the outcome.

In Table 3 the cases we discussed in greater detail are summarised.

Table 3: Pre- and Post-Integration Constellations

|                 | Pre-Integration      | Post-Integration: Uncoordinated Wage Policy | Post-Integration (3) in comparison with Pre-Integration + respective variable higher -respective variable lower or unchanged: | Post-Integration Co-ordinated Wage Policy | Post-Integration (5) Comparison with Pre-Integration | Co-ordinated Wage Policy in Comparison with Uncoordinated Wage Policy (Post-Integration) |     |
|-----------------|----------------------|---|---|---|--|--|-----|
|                 | (1)                  | (2)   | (3)   | (4)                                       | (5)  | (6)  | (7) |
| Wage Rate A     | $\frac{a\alpha}{2}$  | $\frac{a\alpha}{3}$                         | -   | $\frac{a\alpha}{2}$                       | 0  | +  |     |
| Wage Rate B     | $\frac{a\beta}{2}$   | $\frac{a\beta}{3}$                          | -   | $\frac{a\beta}{2}$                        | 0  | +  |     |
| Employment A    | $\frac{a}{4b\alpha}$ | $\frac{4a}{9\alpha b}$                      | +   | $\frac{a}{3\alpha b}$                     | +  | -  |     |
| Employment B    | $\frac{a}{4b\beta}$  | $\frac{4a}{9\beta b}$                       | +   | $\frac{a}{3\beta b}$                      | +  | -  |     |
| Profit A        | $\frac{a^2}{16b}$    | $\frac{8a^2}{81b}$                          | +   | $\frac{a^2}{18b}$                         | -  | -  |     |
| Profit B        | $\frac{a^2}{16b}$    | $\frac{8a}{81b}$                            | +   | $\frac{a^2}{18b}$                         | -  | -  |     |
| Price A         | $\frac{3a}{4}$       | $\frac{5a}{9}$                              | -   | $\frac{2}{3}a$                            | -  | +  |     |
| Price B         | $\frac{3a}{4}$       | $\frac{5a}{9}$                              | -   | $\frac{2}{3}a$                            | -  | +  |     |
| Union Utility A | $\frac{a^2}{8b}$     | $\frac{4a^2}{27b}$                          | +   | $\frac{a^2}{6b}$                          | +  | +  |     |
| Union Utility B | $\frac{a^2}{8b}$     | $\frac{4a^2}{27b}$                          | +   | $\frac{a^2}{6b}$                          | +  | +  |     |

#### 4. Some Concluding Remarks

Let me now draw some conclusions. It goes without saying that the partial equilibrium model which has been applied can produce only very limited insights. A more general study of the integration effects with regard to employment and wages has to be, of course, much broader in scope. Especially it has to take into account the effects on investment, innovation and economies of scale which may be triggered by the process of integration. Unfortunately, they are anything but clear.

Although this investigation is only a very modest one which can only offer very limited insights, my claim is that it is not useless. It is a first step to investigate the integration effects in countries and among social economic groups. As we have not sufficiently distinguished between countries (which would ask for consideration of different market sizes, different competitive wages, etc.) the model is not particularly suited to investigate the prospective winning or losing countries<sup>11</sup>. But we were able to learn something about winners and losers of different strategies in one country. Contrary to the usual opinion, it was shown that trade unions *and* firms can benefit by integration. But as most of us will guess, even without using a model there exist strategies which improve the situation of one group (in our model firm or a trade union) while deteriorating the other's. Therefore recommendations such as, for example, Siebert's (1998) 'Do not Europeanise wage policy' are not per se justified because it is not the common interest of both groups to behave according to this rule but expresses the interest of one of the parties. Only if in the middle or long run all participants would lose by adopting such a strategy would such a recommendation be justified. But thoroughly convincing arguments or even proof of this does not exist. It is therefore necessary to ascertain who are the winners and losers of integration under different conditions. To offer a modest contribution with respect to this question was the intention of this contribution.

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<sup>11</sup> With highly different initial conditions (as they clearly do exist between EU member states as Table 1 verifies) this question gains in importance as the probability of unequally distributed gains and losses increases in this case.

## Literature

- Booth, A.L. (1995), *The Economics of the Trade Union*, Cambridge 1995
- Huizinga, H. (1993), International Market Integration and Union Wage Bargaining, *Scandinavian Journal of Economics*, Vol. 95, pp. 249-255
- Leontief, W. (1946), The Pure Theory of the Guaranteed Annual Wage Contract, *Journal of Political Economy*, Vol. 54, pp. 76-79
- McDonald, I.M. and Solow, R.M. (1981), Wage Bargaining and Employment, *American Economic Review*, Vol. 71, pp. 896-908
- Oswald, A.J. (1985), The Economic Theory of Trade Unions: An Introductory Survey, *Scandinavian Journal of Economics*, Vol. 87, pp. 160-193
- Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung (1997), *Jahresgutachten 1997/98*, Bonn
- Siebert, H. (1998), The Euro: A Dozen Do's and Don't's, *Kiel Discussion Paper*, Nr. 312, Kiel
- Wissenschaftlicher Beirat beim Bundesministerium für Wirtschaft (1989), Europäische Währungsordnung, Gutachten, *BMWi-Studienreihe*, Nr. 61, Bonn

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