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EMU AND EUROPEAN TRADE UNION COOPERATION

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EMU and European trade union cooperation

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Abstract

Wages and wage bargaining systems play an important part in economic performance. Since this is especially relevant in Europe, it is important to investigate how EMU will affect wage formation in the region. In this paper, we demonstrate that EMU is not neutral towards wages and wage bargaining and will even be of major importance. In order to show this, we use a model that reconciles legal-institutional and strategic explanations for the structure of wage bargaining institutions. It is complementary to the literature on the impact of product market competition on wages.

We introduce a transaction cost t in the labour market, which reflects the trade unions' costs of European coordination of wage bargaining. We assume that this cost is not constant, but depends on the degree of economic integration in Europe.

Our conclusions are the following: for t being high enough, unions that represent workers from the same sector, act as competitors on the labour market and are therefore obliged to moderate their wage demands. Below a threshold value of t , European cooperation becomes attractive for unions, causing a positive jump in the wage level. Further decreases in the value of t dampen wage demands, but the resulting collusive wage remains higher than the competitive wage. We further demonstrate that collusive union utility is negatively related to t , making it more attractive to collude as t falls.

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1. Introduction

1.1. Wages, wage bargaining and economic performance

In the course of 1998, it was decided that 11 countries had passed the entrance exam for the Economic and Monetary Union. Although the considerable and sometimes painful adjustment processes were primarily pushed through by the national governments of the member states, these achievements could not have been realised without the cooperation of the other agents in the economy. A factor that has certainly contributed to keeping down inflation has been the moderate evolution of wages and wage costs since the beginning of this decade.

This is illustrated in table 1, where the recent evolution of the real unit labour cost is listed for each member state¹. The overall conclusion that can be drawn from this table is that in almost all countries – except Greece – real unit labour costs have remained constant or have even declined.

A closer look at the individual countries allows us to distinguish three groups. The first group, composed of Austria, Belgium, France, Germany, Ireland and Italy have known a decline in real unit labour cost, ranging from 4% to 7% over 4 years. Denmark, Finland, the Netherlands, Portugal, Spain, Sweden and the UK form the second group with a moderate or no decline in labour cost. Greece is the only outlier with a rise of 7% over the last 4 years.

Given the importance of the evolution of labour costs for moderate inflation and for economic performance in general, it is thus a fair question to ask what role can be attributed to wages and wage formation to ensure a successful and long-living EMU.

A first issue concerns the consolidation of competitive positions of each single member state within the Euro-zone. Compared to the previous monetary environment, EMU is different in the sense that national monetary policy has become unavailable to correct for diverging economic situations among member states. Competitive devaluations to correct excessive wage claims are henceforth impossible. This knowledge should incite unions to evaluate carefully the effect of their wage claims, especially for bargaining arrangements made at the industry and national level in open economies.

A problem related to the above issue occurs in case a member state loses its competitive position due to a negative asymmetric shock. Given that monetary policy is no longer available as an instrument for national stabilisation policy, and given that asymmetric shocks or country-specific shocks are still likely to occur within the Euro-zone, it is not unimaginable that national governments will try to become a more important player in the national bargaining process and use intervention in the wage formation as an active policy tool to regain a lost competitive position. For these purposes, European-wide bargaining would be highly undesirable.

Yet another argument against the coordination of wage bargaining throughout the entire EU-11 is the danger of excessive industry wage claims for the entire region. As

¹ Note that the base year 1994 is not arbitrarily chosen. The idea behind it is the following. The last realignments and major adjustments in the EMS date from 1992 and 1993. One could thus assume that distorted competitive positions in terms of labour costs would be corrected in 1994. It is thus particularly interesting to look at the evolution that labour costs have undergone from 1994 onwards.

the Euro-zone is a fairly closed economy, competitive threats from American and Asian firms would be a minor problem. European-wide industry-level bargaining could therefore potentially be the cause of bad labour market performance in the spirit of the Calmfors and Driffill analysis of 1988.

On the other hand however, a more coordinated and centralised bargaining arrangement at the European level would be wishful for the following reason: uncoordinated bargaining could lead to divergent wage and inflation developments that are not accounted for by productivity differences. This tendency has to be avoided strongly if we do not want to put pressure on the common monetary policy. Excessive wage claims by sectors or even countries would deteriorate the competitive position of the country in question without the instrument of competitive devaluations being available as an ex-post correction mechanism.

1.2. The impact of EMU on wage bargaining and wages

In the previous section we have indicated the importance of wages and wage bargaining systems for economic performance in the Euro-zone. This means it is relevant to investigate what changes they will undergo in the future. In this section, we will argue that the introduction of the single currency itself is not neutral towards wages and wage bargaining and will appear to be a major determinant.

Increased transparency from the single currency facilitates the international comparison of wages and may cause a converging movement of national wage levels. At one extreme end, the scenario of competitive undercutting is sketched, which means that high-wage countries would be forced to cut their wages to the level of the lowest-wage country. The other extreme consists of an overall wage increase to the level of the highest-wage country. It is however very unlikely that any of these two extreme scenarios will take place. In a world of imperfect product and labour markets, cutting the wage level would increase the profits of the firm in question. This in turn would entail higher wage claims from the part of the unions in the light of the rent-sharing hypothesis. The highest-wage scenario is not very likely either. Wage rises that are not matched by productivity increases would certainly deteriorate the competitive position of the low-wage firms and countries.

It is possible though that a certain degree of convergence will take place as a result of the increased transparency. An overall equalisation of all wage levels, however, requires more than just an easier comparison, regardless of productivity and other relevant economic variables.

More fundamental research reveals that the introduction of the single currency can be considered to have two advantages (De Grauwe, 1997). The first is the elimination of the exchange rate risk as a consequence of fixing the exchange rates. The second gain follows from adopting a common currency. As a result, all trade within EMU will take place in one currency. Both advantages lower transaction costs that previously arose when dealing with other members of the Euro-zone. It is clear that firms are the main direct beneficiaries of these advantages.

From the firm's perspective, a decrease in costs of international transactions makes production for export to foreign markets more attractive, relative to producing for the home market. Employers are thus likely to shift resources from domestic to export

production. Increased trade, an expansion of the relevant market and more competition in the product market are natural consequences.

The impact of increasing product market competition on labour market outcomes has been studied by a number of authors in the past decade. The theoretical conclusions they obtain are mixed. Sørensen (1993) as well as Huizinga (1993) conclude that product market integration leads to an increase in the market size, as well as in the number of competing firms, which is translated into increased competitive pressure. Both models also predict a decrease in the level of prices and wages. Huizinga additionally finds that, under the assumption of linear product demand, the increase in employment compensates for the decrease in wages so that net union utility increases. Despite the similar conclusions, the models differ in their underlying assumptions. Whereas Sørensen uses a right-to-manage model, Huizinga makes use of a monopoly union model, a production function with constant returns to labour and as already mentioned, linear product demand.

Both models have two drawbacks in common. The first is the discontinuous way in which integration is modelled. It is assumed that before integration, no interaction at all takes place between the two economies. In other words, integration is assumed to be a discrete process. The second weakness concerns the nature of the bargaining arrangement. The incentives for cooperation between unions on an international scale are only marginally considered.

Both drawbacks are fully accounted for in two contributions by Driffill and van der Ploeg (1993 and 1995). In both papers, the effects of removing trade barriers in the product market are considered. The difference lies in the underlying assumptions. The 1993 contribution models the effect of tariffs in a perfectly competitive product market with a technology characterised by constant returns to scale. Labour is moreover assumed to be immobile and unions can set wages at a decentralised, national or international level. The evolution of wages as a function of tariffs in this setting crucially depends on the level of bargaining. The authors find that wages are hardly affected when they are bargained at the decentralised or the international level. National unions however tend to set higher wages as tariffs fall. They also show that lowering trade barriers increases the incentives for international cooperation among unions.

How much these findings depend upon the underlying assumptions, is demonstrated in Driffill and van der Ploeg (1995). The same question is answered in a different setting. The goods market is now characterised by monopolistic competition and the production function exhibits increasing returns to scale. Under these conditions, it is found that wages bargained at the national level positively depend upon the tariff level. This can be explained by the fact that trade barriers protect national unions. Falling tariffs therefore oblige them to set lower wages. As international wages are unaffected by the tariff, falling tariffs lead to a widening gap between the nationally and internationally negotiated wages, and thus to an increasing incentive for union cooperation at the international level. Additionally, the authors conclude that the national wage is always lower than the international wage, only approaching the latter when the tariff tends to infinity.

Another contribution is made by Naylor (1997 and 1998), who deduces the following wage evolution (w) as a function of transaction costs (s) in the product market.

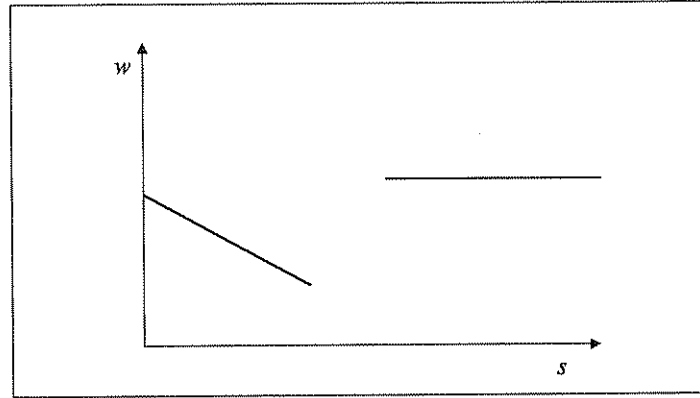


Figure 1: Bargained wages as a function of transaction costs
Source: Naylor (1997)

In Naylor's setting, two identical firms produce a homogeneous product for their home markets. Assuming symmetry in both product and labour market², they engage in reciprocal dumping when s falls below its threshold value. As a consequence, both firms become duopolistic which results in a drop in profits and wage claims³. A further fall in s leads to the conclusion that wages start rising again. This can be explained by the fact that falling trade costs lead to higher profits for both firms, of which unions are able to claim a share.

From the above models, the effect of integration on the level of wages is ambiguous. A number of these models do however predict that economic integration increases the incentive for international coordination in the bargaining process. Empirical evidence for this finding is hard to find. At this moment, the only notable exception would be the recent rumours about possible cooperation among Belgian, German and Dutch unions in the metal industry. The lack of this evidence could potentially be explained using a remark by Horn and Wolinsky (1988b) who classify explanations for differences in bargaining structure into two broad categories: legal-institutional reasons and strategic reasons. This would imply that economic integration offers the necessary incentives for cooperation, which is however prohibited by legal-institutional barriers.

The model sketched in the following paragraph should be seen as an attempt to reconcile both categories of explanations, and it is therefore complementary to the above-described literature. We suggest that the reason for the lack of real-world evidence should be sought in transaction costs in the labour market itself, which makes European cooperation between unions unattractive compared to national or industry-level bargaining. For this matter, we introduce a transaction cost t , which arises as a consequence of costs that go with international coordination of the bargaining process. We moreover suggest that these costs are not constant, but depend upon economic integration in Europe.

In order to isolate specifically the effect of variations in these costs on the evolution of wage demands, we assume there are no transaction costs in the product market.

² Symmetry in the product market implies identical demand and production functions, whereas symmetry in the labour market means that both unions have the same rent function and the same reservation wage.

³ Note there is a small range of s for which no equilibrium wage can be reached. This is due to the fact that the dominant reaction functions of the two unions, which have to decide between a high-wage strategy and a low-wage strategy, do not intersect.

Inspiration for the setting was found in Horn and Wolinsky (1988), who suggested that firms sometimes spread their operations across different plants (situated in different countries) to prevent unions from forming an encompassing union.

We therefore started from the basic setting of a firm that spreads its production over two plants in different countries. Transaction costs are initially high enough to prevent union cooperation. Product markets are however fully integrated. As a consequence, if one union demands excessive wages, production is shifted to the other plant and imported without extra costs.

Our conclusions are the following: for t being high enough, unions act as competitors on the labour market and are therefore obliged to moderate their wage demands. Below a threshold value of t , it becomes attractive for unions to cooperate, causing a positive jump in the wage level. Further decreases in the value of t dampen wage demands, but the collusive wage remains higher than the non-cooperative wage. Collusive union utility will however appear to be negatively related to t , thus making it more attractive to collude as t falls. The theoretical underpinnings for these conclusions are described in the following section.

2. A model for firm and union behaviour in EMU

In the formal analysis we consider one firm producing a non-differentiated good in two plants that are located in two different countries. The firm regards the union of the two countries as one single market. The good has the same price in both countries, denoted in one single currency. Both plants can produce for both countries without extra costs for export. In this case the firm faces one international product demand function. The plants have an identical production function with decreasing returns to scale in the single input labour. Note that this setting can also be interpreted as that of two identical firms colluding in both the product market and the labour market.

Total output (Q) is produced in two plants ($i=1,2$) with identical production functions (q_i) with decreasing returns to scale in the single input, labour (n_i):

$$q_i = \sqrt{n_i}$$

$$Q = \sum_i q_i$$

The following analysis is restricted to the case where the firm faces a linear product demand function, with p being the common price for the firm's good in both countries:

$$p = a - bQ$$

This means that global total revenue (TR) and marginal revenue (MR) for the internationally operating firm are given by:

$$TR = (a - bQ)Q$$

$$MR = a - 2bQ$$

For each individual plant, total cost (TC_i) and marginal cost (MC_i) depend on the plant's production (or employment) and on the wages the firm has to pay to the plant's workers (w_i):

$$TC_i = w_i n_i = w_i q_i^2$$

$$MC_i = 2w_i q_i$$

Global costs for the firm as a whole are then determined by the horizontal summation of the plants' costs (Salvatore, 1993).

The firm confronts one monopoly trade union in both countries, which represents all the workers employed by its respective plant. For simplicity, we use the monopoly union model, where the unions have the objective of rent-maximisation and have no

influence over employment in the plant, which is unilaterally determined by the firm. We further restrict the analysis to the symmetric case where both unions have the same reservation wage.

Each union's rent (u_i) depends on the wage paid in its respective plant (w_i), on the common reservation wage and on employment in the plant (n_i). The union rent is then defined by:

$$u_i = (w_i - \bar{w})n_i$$

The unions can either bargain separately over the wage in their respective plants⁴ or they can collude and bargain jointly over a common wage for all plants in the whole union. Under the assumption that both plants produce substitutes, it can be shown that union cooperation improves the bargaining power of the union and yields a better outcome (see Horn and Wolinsky, 1988a). However, collusion and joint bargaining will induce costs of information and coordination, which could offset the gains from collusion.

In the case of separate bargaining as well as in the case of union collusion and joint bargaining, there are two stages to the game.

In stage 1, in the case of separate bargaining, each union chooses a wage for its plant, taking as given the wage set in the other country and taking into account the firm's labour demand function for its own plant. In the case of union collusion and joint bargaining, the union chooses one common wage for both plants subject to labour demand by the firm.

In stage 2, the firm sets output and allocates the production between the two plants, taking as given the wages set in both countries in the first case and taking as given the common wage for both plants in the second case. Note that when wages are bargained at the plant level, it could be hypothetically the case that the two unions set a different wage. In the absence of transaction costs in the product market, the firm can then freely decide to shift production to the cheaper plant, until wage levels in the two plants are equalised. In this way, we introduce wage competition between the two unions.

For each possible case, we proceed by backward induction, first solving for the firm's choices in stage 2, and then for the union's strategies in stage 1. The following sections describe the two possible scenarios of separate bargaining and joint bargaining.

⁴ In our setting, decentralised, industry and national bargaining coincide since we only consider one industry. The relevant distinction is the one between national and international bargaining.

Case 1: Separate bargaining

Stage 2: Profit maximisation by the firm:

Deriving the firm's decisions in stage 2 is straightforward. The firm maximises global profits (Π) to determine the total production for the single market, facing the global demand function for its good on that common market. This profit-maximising production level is allocated between the two plants in function of their respective costs. The firm then sets employment in each of its plants in line with the production decision.

The firm's global optimisation problem is:

$$\max (q) \Pi = TR - TC$$

This yields the F.O.C.:

$$MR = MC$$

The firm's global marginal cost can be derived from the individual plants' marginal cost as follows:

$$q_i = \frac{MC_i}{2w_i}$$

In order to add MC_1 and MC_2 horizontally to find the global MC , we solve for the global output Q and get:

$$Q = \sum_i q_i = \sum_i \frac{MC_i}{2w_i} = \frac{w_1 + w_2}{2w_1w_2} MC$$

Marginal cost for the whole firm is then:

$$MC = \frac{2w_1w_2}{w_1 + w_2} Q$$

This transforms the F.O.C. for global profit maximisation into:

$$a - 2bQ = \frac{2w_1w_2}{w_1 + w_2} Q$$

Global production and marginal revenue for the firm as a whole are then given by:

$$Q = \frac{a}{2 \left(b + \frac{w_1 w_2}{w_1 + w_2} \right)}$$

$$MR = a - 2bQ = \frac{aw_1 w_2}{bw_1 + bw_2 + w_1 w_2}$$

The production decision in the two plants $(i, j)^5$ is made by setting each plant's marginal cost equal to the global marginal revenue:

$$MR = MC_i$$

This leads to the following production in the plants:

$$q_i = \frac{1}{2} \frac{aw_j}{w_i w_j + b(w_i + w_j)}$$

$$\text{with } \frac{\partial q_i}{\partial b} < 0 \quad \frac{\partial q_i}{\partial w_i} < 0 \quad \frac{\partial q_i}{\partial w_j} > 0$$

Output in each plant depends negatively on the own wage cost and positively on the wage level in the competing plant.

The allocation of production between the plants immediately implies labour demand in the two plants (i, j) :

$$n_i = \frac{\left(\frac{aw_j}{2} \right)^2}{[w_i w_j + b(w_i + w_j)]^2}$$

$$\text{with } \frac{\partial n_i}{\partial b} < 0 \quad \frac{\partial n_i}{\partial w_i} < 0 \quad \frac{\partial n_i}{\partial w_j} > 0$$

Employment in each plant depends negatively on the wage in the own plant and positively on the wage in the other plant. This naturally means that workers in both plants have to compete with each other on the labour market. This fact is reflected in the unions' behaviour.

⁵ $i=(1,2); j=(1,2)$ and $i \neq j$

Stage 1: Rent maximisation by the union(s):

In stage 1 of the separate bargaining scenario, we now consider the case where each union bargains separately with the firm. In this case, each union's rent (u_i) depends only on the wage outcome (w_i), the reservation wage and on employment (n_i). Each union sets the wage that maximises its own rent. The union's optimisation problem is:

$$\max (w_i) \quad u_i = (w_i - \bar{w})n_i$$

Substituting first for the plant's labour demand in the union's objective, the following wage outcome can be derived from the F.O.C. of this maximisation problem:

$$w_i = \frac{bw_j}{(b + w_j)} + 2\bar{w}$$

$$\text{with: } \frac{\partial w_i}{\partial w_j} > 0$$

In the symmetric case, wages in both countries are the same and equal to:

$$w_i = w_j = w = \bar{w} + \sqrt{\bar{w}(\bar{w} + 2b)}$$

$$\text{with: } \frac{\partial w_i}{\partial \bar{w}} > 0 \quad \frac{\partial w_i}{\partial b} > 0$$

Substituting the wage outcome in the symmetric case and labour demand for the plant in the definition of the union's rent, it can be seen that the maximum union rent that can be obtained is given by:

$$u_i = \frac{a^2 \sqrt{\bar{w}(\bar{w} + 2b)}}{4 \left[\bar{w} + \sqrt{\bar{w}(\bar{w} + 2b)} + 2b \right]^{\frac{1}{p}}}$$

Together, the two unions therefore obtain the following maximum rent:

$$\sum_i u_i = \frac{a^2}{2} \frac{\sqrt{\bar{w}(\bar{w} + 2b)}}{\left[\bar{w} + \sqrt{\bar{w}(\bar{w} + 2b)} + 2b \right]^{\frac{1}{p}}}$$

Case 2: Union collusion at cost (T) and joint bargaining for a common wage (w_c):

Stage 2: Profit maximisation by the firm:

In the scenario of union collusion, the firm's global decisions in stage 2 are derived as in the first case, yielding the same F.O.C. for profit maximisation:

$$MR = MC$$

If the firm pays a common wage (w_c) in both plants, its global marginal cost can again be derived from the individual plants' marginal cost as follows:

$$q_i = \frac{MC_i}{2w_c}$$

or:

$$Q = \sum_i q_i = \sum_i \frac{MC_i}{2w_c} = \frac{1}{w_c} MC$$

Global marginal cost for the whole firm is then:

$$MC = w_c Q$$

The F.O.C. for global profit maximisation is now transformed into:

$$a - 2bQ = w_c Q$$

In the case of one common wage, global production and marginal revenue for the firm as a whole is then given by:

$$Q = \frac{a}{w_c + 2b}$$

$$MR = a - 2bQ = \frac{aw_c}{w_c + 2b}$$

The production decision in the two plants (i, j) is again made by setting each plant's marginal cost equal to the global marginal revenue ($MR=MC_i$). In this case, this leads to the following production in the plants:

$$q_i = \frac{1}{2} \frac{a}{w_c + 2b}$$

$$\text{with } \frac{\partial q_i}{\partial b} < 0 \quad \frac{\partial q_i}{\partial w_c} < 0$$

The allocation of production between the plants immediately implies labour demand in the two plants (i, j):

$$n_i = \frac{1}{4} \frac{a^2}{(w_c + 2b)^2}$$

$$\text{with } \frac{\partial n_i}{\partial b} < 0 \quad \frac{\partial n_i}{\partial w_c} < 0$$

Employment in each plant now depends negatively on the common wage. There is no competition on the labour market between workers of different plants. This is also reflected in the collusive union's behaviour, which is fundamentally different from the previous case.

Stage 1: Rent maximisation by the union(s):

In stage 1 of the union collusion scenario, we now consider the case where the unions bargain jointly with the firm in the labour market. In the case of joint bargaining, the two unions act as one, and the collusive union's rent (u_c) depends not only on the common wage outcome (w_c), the common reservation wage and global employment for the two plants together (n_1+n_2), but also on the coordination and information costs incurred by collusion (T).

With respect to the costs of collusion, one could think of coordination costs (defining the optimal strategies for all workers) and information costs (comparing wage levels and labour conditions across jobs in different countries). These costs of coordination and information can therefore reasonably be assumed to increase in the number of members that are represented by the unions⁶.

$$T = t \sum_i n_i$$

with t as the collusion cost per employed union member

⁶ The introduction of a fixed cost element does not alter the following analysis substantially.

This cost has to be subtracted from the union's rent that would apply in the case of separate bargaining. Therefore, the union rent in the collusive case is defined as:

$$u_c = (w_c - \bar{w} - t)(n_1 + n_2)$$

$$u_c = \frac{a^2}{2} \frac{w_c - \bar{w} - t}{(w_c + 2b)^2}$$

Having substituted for the firm's labour demand for both plants in the union's objective function, the following wage outcome can be derived from the F.O.C. for the collusive union's rent maximisation problem:

$$w_c = 2(\bar{w} + b + t)$$

$$\text{with: } \frac{\partial w_c}{\partial \bar{w}} > 0 \quad \frac{\partial w_c}{\partial b} > 0 \quad \frac{\partial w_c}{\partial t} > 0$$

It can be seen immediately that for $b > 0$ the collusive wage will always be higher than the wage in the case of separate bargaining: when unions cooperate they strengthen their bargaining position against the firm's. It is also clear that the collusive wage rises in the collusion cost.

Substituting this wage outcome and the firm's labour demand for both plants in the objective function, yields the following maximum union rent that can be obtained:

$$u_c = \frac{a^2}{8} \frac{1}{(\bar{w} + 2b + t)}$$

Because of symmetry, the comparison of the maximum rents in the collusive case (u_c) and in the non-collusive case ($u_1 + u_2$) determines whether or not the unions have an incentive to collude and bargain as one with the firm. If the costs of collusion are too high, they continue to bargain separately with the firm. If the collusion cost falls below a certain value, e.g. because of economic and monetary integration, unions will start to cooperate and set higher wages. In other words, falling transaction costs reduce the barriers for cooperation.

If the cost of collusion is zero (and $b > 0$), it will always pay for the unions to collude. When the cost rises, collusion remains optimal until t reaches the value:

$$t = \frac{[\bar{w} + 2b - \sqrt{\bar{w}(\bar{w} + 2b)}]^2}{4\sqrt{\bar{w}(\bar{w} + 2b)}}$$

This value is strictly positive for $b > 0$.

If t equals this value, then unions are indifferent between colluding and not colluding, because both strategies yield the same global rent:

$$\sum_i u_i = \frac{a^2}{2} \frac{\sqrt{\bar{w}(\bar{w} + 2b)}}{\left[\bar{w} + \sqrt{\bar{w}(\bar{w} + 2b)} + 2b\right]^2} = u_c = \frac{a^2}{8} \frac{1}{\left(\bar{w} + 2b + \hat{t}\right)}$$

If one assumes that the cost of collusion for the unions is declining in the European Union, due to economic and monetary integration and the introduction of the single currency, our analysis suggests a possible pattern for the future wage evolution in some industries in Europe. When costs of collusion fall below the critical value, wages could increase dramatically. A gradual decline in wages can follow afterwards, but wages will not fall to the level they were at before the international collusion of unions. Figure 2 illustrates this possible pattern.

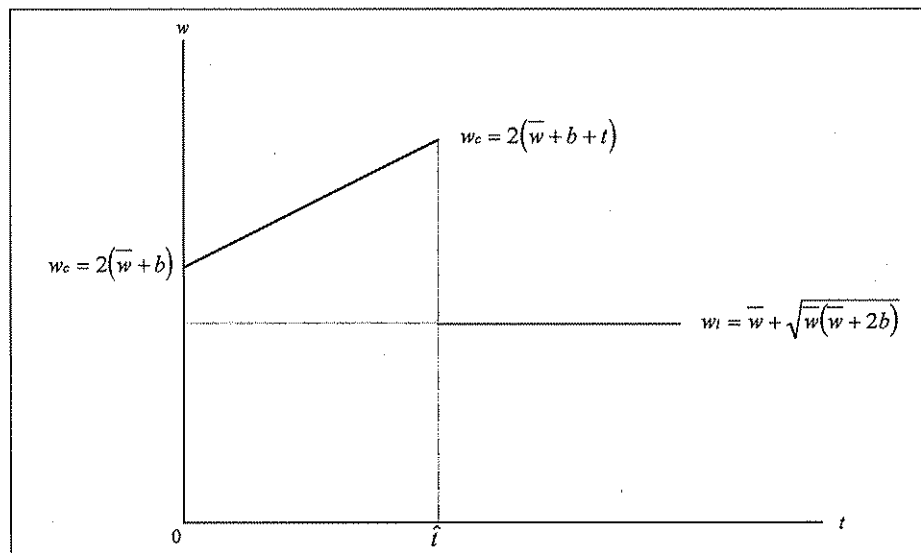


Figure 2. Wage evolution before and after union collusion

3. Concluding remarks

In previous research several authors had come to the conclusion that integrating product markets increase the incentives for union cooperation. The results from our paper are complementary to these findings. We conclude that falling transaction costs in the labour market decrease the barriers for international cooperation between unions and thus strengthen the incentives for union cooperation at the European level. Since we assumed that firms produce homogeneous products, cooperation will be restricted to unions bargaining with firms operating in the same sector.

With respect to the evolution of the wage bargaining institutions under EMU, we are thus able to conclude that European-wide sector-level bargaining is a likely option. In the light of the remarks made in the first section, this outcome is favourable for a stable evolution of wages throughout EU-11. Asymmetric shocks due to divergent wage evolutions are thus unlikely to occur. European-wide bargaining however also means that national governments will be unable to use income policy to correct for asymmetric shocks arising from other sources than wage demands. Moreover, in the light of the Calmfors-Driffill hump-shape, European industry-level bargaining is unlikely to be very much affected by competitive pressures coming from outside the Euro-zone. Economic performance in the whole region could therefore be affected.

With respect to the future evolution of the wage level, we concluded that a reduction in transaction costs in the labour market would initially cause an upward jump in the wage level. This is caused by the fact that unions find it profitable to cooperate. Further reductions in transaction costs lead to decreasing wage demands.

Our analysis is however far from perfect. Let us therefore mention a few subjects for future research. We have used very specific functional forms for utility, production and cost functions. It would therefore be preferable to generalise the model, or at least use some alternative functional forms, to test the robustness of the results. Second, we also need to be more precise about what is meant by integration. More specifically, we assumed that European integration only took place in labour markets, while product markets were unaffected by the integration process. It would be interesting to merge both effects in the same model.

Table 1: Real^a Unit Labour Costs

Year	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Netherlands	Portugal	Spain	Sweden	United Kingdom
1991	99,8	101,6	103,9	108,2	100,6	103,1	102,7	100,1	106,5	102,1	102,4	102,8	105,5	105,7
1992	100,7	101,6	103,4	107,7	101,1	103,3	99,7	100,7	106,5	103,5	103,9	103,2	104,5	104,9
1993	101,5	102,2	102,3	101,9	102,0	102,6	99,3	101,4	104,2	103,6	102,8	103,9	102,3	102,1
1994 ^b	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
1995	99,3	99,7	100,3	97,9	100,4	99,4	105,7	96,7	96,4	99,6	98,5	97,6	96,8	99,2
1996	96,8	98,0	99,9	97,8	100,8	98,0	105,2	96,3	96,3	98,8	97,8	97,3	100,4	98,9
1997	95,0	96,7	100,3	96,9	100,7	95,7	106,8	96,4	96,5	98,1	97,4	97,9	100,6	99,3
1998 ^c	93,1	95,7	100,8	96,2	100,2	94,1	107,5	96,4	96,0	97,6	96,6	98,0	100,2	99,8

Source: OECD Statistical Compendium, 1998

^a Corrected by the deflator for GDP at market prices.

^b 1994 = 100

^c OECD forecast

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