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# Kieler Arbeitspapiere

# Kiel Working Papers

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LABOR PRODUCTIVITIES AND LABOR COSTS IN EUROLAND

by

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## **Abstract**

The paper presents labor productivities in the member countries of Euroland. The result is that there is quite a divergence in labor productivities (per head) in the European Monetary Union. The Netherlands and Italy reach 85 percent of the West German level, Spain 62 and Portugal 35. This implies that labor costs have to be differentiated substantially between the euro countries. Labor costs relative to the West German level are also calculated. The paper analyzes the implication of diverging labor productivities for wage policy and for the financing of the social security systems in the European Monetary Union.

1. To what extent labor costs have to adjust in the European Monetary Union can be discussed under two different headings. First, it is argued that in a monetary union the exchange rate is no longer available to serve as a cushion if economic development between different countries of a currency union diverges, i.e. if economic growth of one country is much weaker than in other countries or if a country experiences an asymmetric shock. Since in Europe transfrontier mobility of labor is rather limited and since transfer payments between sovereign nation states are not desirable, labor costs, i.e. the wage rate and the social security costs for firms, has to take over the role of the exchange rate as a shock absorber (Siebert 1998a). Second, the question is asked what the increased transparency of prices and costs in a monetary union means for wage setting in the individual countries. It is this second question which is discussed in the following sections.

#### Transparency of prices and labor costs

2. In a monetary union, trading costs are reduced and market segmentations disappear. As a stylized fact, Jevon's law of one price will prevail. Assuming for simplicity that there is one good only in the monetary union, the ratio of nominal wage costs to marginal labor productivities must be equal across countries. For the simple two-country case we have

$$p = \frac{I}{F_A} = \frac{I^*}{F_A^*} \quad (1)$$

where  $F_A$  and  $F_A^*$  denote the marginal labor productivities,  $I$  and  $I^*$  are nominal labor costs and  $p$  is the national price level.

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\* I appreciate comments from Jörg Döpke.

Equation (1) requires that marginal labor costs of production are equal between countries with  $1/F_A$  representing the marginal input requirement per unit of output and  $1/F_A$  denoting the marginal input requirement evaluated at the input price, i.e. marginal costs.

3. Of course, the equality of marginal labor costs is given if labor productivities and labor costs are equal in the member countries. If labor productivities differ, national labor costs must differ as well. Thus, a country can compensate a lower labor productivity if its labor costs are proportionally lower.

This equilibrium condition for the good market translates into an equilibrium condition of the labor market. An equilibrium in the labor markets of the monetary union will be reached when labor costs are borne by the productivities in the member countries and when at the same time national labor productivities are not distorted by large layoffs in the different countries but reflect the full employment labor productivities.

To put it differently: Diverging national labor productivities in the currency union are consistent with full employment if national labor productivities are not exceeded by national labor costs, i.e. if

$$F_A \geq 1/p \text{ and } F_A^* \geq 1^*/p. \quad (2)$$

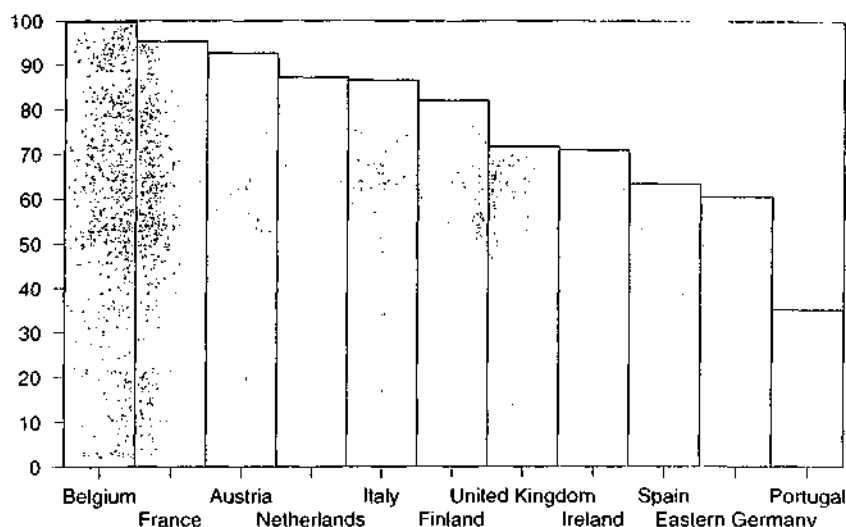
#### Divergence of labor productivities

4. Unfortunately, we cannot calculate marginal national labor productivities but must use average labor productivities instead.<sup>1</sup> In the past, average national labor productivities could not be reliably calculated because nominal exchange rates or purchasing power parities had to be used in order to do the comparison. The euro as a single currency permits to compare the labor productivities of the different countries. Before the formal beginning of monetary union, the central rates which will serve as

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<sup>1</sup> On a method to calculate marginal labor productivities compare Sachverständigenrat (1997), Appendix V, E, p. 264 ff.

Figure 1 — Labor productivities in Euroland



<sup>a</sup>Nominal GDP per person employed.

Source: OECD and own calculations.

conversion factors of national currencies can be used. In Figure 1, the labor productivities of EMU members for 1997 are reported. Labor productivity is defined as the nominal GDP in ECU, calculated with the central rate, per head of total employment.<sup>2</sup> West Germany is set equal to 100. The differences in labor productivity per head of total employment in the countries of Euroland are quite impressive. Belgium reaches a similar level as West Germany, France (95.3 percent) and Austria (90.9 percent) have a somewhat lower labor productivity. The other countries differ considerably from the West German level, with the Netherlands at 85.4 percent, Italy at 85.3 percent and Ireland at 69.5 percent. Spain (62.0 percent) and Portugal (34.5 percent) are quite apart from the others. East Germany reaches 60 percent of the West German level. Using the actual central rate for the British Pound, the UK is at 71.7 percent (Table 1).

<sup>2</sup> Calculating labor productivities for 1997 allows us to use nominal GDP and nominal compensation. Other approaches relating to a time span of several years may use real GDP or real value added. The results can be expected to vary with the methods used.

Table 1 — Labor productivity and labor costs in Euroland, 1997

	Labor productivity <sup>a</sup>	Labor productivity in percent of West Germany	Labor costs level <sup>b</sup>	Labor 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	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>Standardized, OECD; for East and West Germany: own calculations.

Source: OECD Quarterly National Accounts 1998; OECD Main Economic Indicators 1998 and own calculations and estimates.



# Do national labor costs correspond to national productivities?

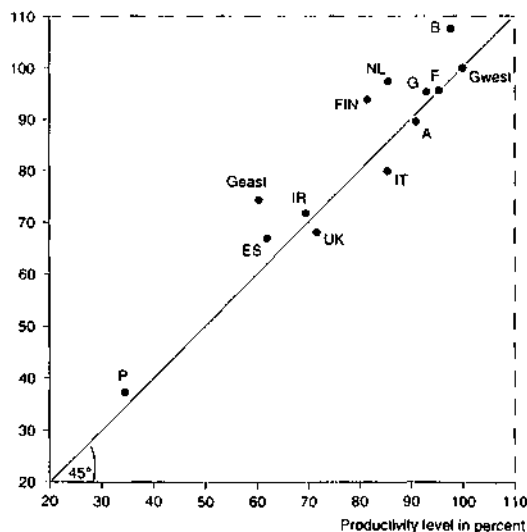
5. Diverging labor productivities require that national labor costs differ as well. Calculating national labor costs per head as cross compensation of all employees (wage and salary earners) per head of employee we see that national labor costs in the countries of the European Monetary Union also differ.

In Figure 2 the labor productivities and labor costs levels of the member countries of the European Union as well of the United Kingdom are presented in percent of the West German productivity level and the West German labor cost level for 1997. The 45°-line takes West Germany as a reference point. This line represents the unit labor costs of western Germany; it should not be misinterpreted as a norm since after all Germany has a high unemployment rate.

Figure 2 — Labor productivities and labor costs in Euroland (in percent of West Germany)

West Germany = 100

Labor cost level  
in percent



Countries above the 45°-line have higher unit labor costs than western Germany, for instance, Belgium, France and East Germany. Countries below the 45°-line have lower unit labor costs. Taking the diagram at face value, countries above the 45°-line like Belgium and Finland should have more problems in their labor markets.

6. If instead of the statistically observed productivities and labor costs we are interested in the question which loci are consistent with full employment, two corrections have to be made in Figure 2:

- First, the observed points of individual countries reflect a too high labor productivity if the unemployment rate is high. If more people would be integrated into the labor market, the labor productivity would be correspondingly lower. Therefore, we would have to correct for the so-called lay-off productivity. For instance, in the case of West Germany, the full employment labor productivity would be definitely lower. Thus, the full employment point in Figure 2 would move to the left.
- Second, we have to examine whether the observed national labor costs are too high relative to the full employment labor productivity. Taking the case of West Germany and using a rough calculation, a twelve percent lower level of labor costs would allow to halve the unemployment rate (Siebert 1998).<sup>3</sup> Thus, the point for the labor costs consistent with full employment would be correspondingly lower by 12 percent.<sup>4</sup>

<sup>3</sup> A wage elasticity of 0.5 and a stable price level are assumed.

<sup>4</sup> Note that in equation (1) full employment is assumed. If we split up the full employment labor supply  $A^F$  in actually employed  $E$  and unemployed  $U$ , we have

$$pF_A(E + U) = 1.$$

With an analogous equation for the second country

$$p^* F_A^*(E^* + U^*) = 1^*$$

it follows, assuming separability of productivity,

$$p = \frac{1}{F_A(E)} - \frac{F_A(U)}{F_A(E)} = \frac{1^*}{F_A^*(E)} - \frac{F_A^*(U)}{F_A^*(E^*)}.$$

Thus, a constant relation between the nominal labor costs and productivity can no longer be derived if national unemployment rates differ.

As a consequence, countries which show a relatively high unemployment rate would move to the left and downward with their full employment points. A line defining the full employment situation would therefore be on a lower level than the 45°-line. Countries with a high unemployment rate like Spain (20,8 percent), France (12,4 percent), Italy (12,1 percent) and Germany (9,7 percent) would have to be placed according lower.

7. The above analysis can only be a first approach to analyze European labor markets. The data leave a great deal to be desired. One aspect already mentioned is that labor productivities have to be corrected for the differences in the unemployment rates. Another aspect is that the data are preliminary. Moreover, the collection and calculation of the data differs between countries. For instance, Italy adds a correction factor for the shadow economy, so that nominal GDP and, consequentially, labor productivity may be overestimated relative to other countries. The extent of part time work differs considerably between countries, so that ideally productivity and labor costs should be calculated per hour. Here data are even more sketchy. Countries with an overproportionally high part time employment tend to show a lower labor productivity per head (like the Netherlands). Moreover, productivity is related to total employment, labor costs are related to salary and wage earners the difference being self-employed business men. Statistical methods of calculation of self-employed business men influence the comparability of data. There are other differences in the statistical calculation of the data. Finally, the data only present a snap-shot of the year 1997. Thus, differences in the business cycle situation among countries will influence the comparison since labor productivity in most countries varies procyclically.

#### Implications for wage policy and for financing the social security systems

8. In spite of these concerns the empirical results allow the following conclusions for wage policy.

- Since labor productivities diverge considerably between the countries of the European Monetary Union, labor costs must be differentiated between the member states of the monetary union since national labor costs must be borne by national productivities. Otherwise, unemployment will result. Moreover, we know from empirical studies that convergence takes a long time.
- Wage policy in the individual countries should orient itself at the national labor productivities. Wage harmonization in the European Monetary Union cannot be aimed at. People must understand that the level of national wages must reflect the differences in national labor productivities.
- Institutionally, wage formation cannot be europeanized, even if people compare their wage in one single currency and even if political demands of „the same wage for the same type of work“ are likely to be articulated. Europeanizing of wage formation would definitely increase the unemployment rate in the European countries. What is needed is a decentralization of wage formation, shifting wage formation from the economy wide or sector level to the regional and to the firm's level. Wage formation, especially in the major countries of the continent, should follow more closely the market process.

The europeanization of employment policies cannot undo the differences in labor productivities. Accepting the given fact of diverging labor productivities between the member countries of the monetary union, the idea of europeanizing employment policies is a misguided approach to European integration.

9. Labor costs also include the contributions to the security systems paid by the firms. These labor costs, too, have to be borne by the national productivities. The divergence in labor productivities makes clear that the costs of social security systems in the different countries also must be different. This means that social security benefits cannot be harmonized. With such a divergence of national productivities a social union cannot be realized and the europeanization of social policy is to be avoided. The territorial principle of social insurance in Europe according to which benefits can only be obtained from the system to which contributions have been paid is quite appropriate.

10. Some have the idea that wage competition in Euroland will be a spiral downward. This idea is wrong. As soon as the national wage level corresponds to the national full employment labor productivity, wages will no longer have to be adjusted downward. Firms will compete for qualified labor and this will insure that wages will not fall short of the national full employment threshold of labor productivity.

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