

Are Wages the Stumbling Block in the Way of Competitiveness for East German Firms?

East German firms are still evidently struggling to make themselves competitive. Compared with their west German counterparts, companies in east Germany – seen as a whole – can only sell their products on national markets at lower prices, their workforces are paid less and their profits are lower. But the empirical results of studies on the wage cost levels in firms in east and west Germany do not suggest that wages in the east are generally too high. Current information gives a very differentiated picture at company level: unlike west Germany, in east Germany new jobs were not created, in the majority of cases, in areas where the wage differential is particularly marked but in smaller firms, which rather tend to pay wages similar to those in comparable west German firms.

In view of the empirical results obtained at the level of the individual firm, an attempt to solve the particular competitive and employment problems in east Germany by widening the wage gap to west Germany even further does not seem very promising, particularly because recommendations on wage policy for the private sector in east Germany have little effect; many companies fix their wage level autonomously and are not bound by collective agreements. Building up the infrastructure must remain the main focus of economic policy, even if improvements in the incomes and employment situation are slow to result.¹

Many collective agreements for east Germany speak of bringing wages right up to the west German level,² but a study of the current wage differentials shows that east Germany is still far from even coming close to the west German level. Hourly wage rates in east German manufacturing firms last rose noticeably faster than in west Germany in 1994, and in 1999 the wage gap actually widened again (cf. figure 1). Most recently east German wages were 62% of the west German level.

¹ A full account of these results will be published under the title 'Zur Bedeutung regionaler Lohnkostenunterschiede' by Schüren Verlag in the series *Wirtschaftspolitik/Standortfragen*. We gratefully acknowledge the financial support for this research given by the Hans Böckler Foundation.

² Cf. WSI-Tarifbericht 2000, Annex, Diagram 5.

As unemployment still persists at a high level in east Germany demands are being made in various quarters for no further wage rises, allowing the wage gap to widen again.³ The main reason given for this demand is that labour productivity in east German firms is insufficient to justify the wage level. If unit wage costs, that is the expenditure on wages necessary to produce a certain quantity of goods, are higher in east Germany than in west Germany the price competitiveness of east German firms will suffer.

Studies over time designed to show the differences in the trends in unit wage costs can certainly lead to the conclusion that the competitiveness of east German firms would be jeopardised by too strong a rise compared with west Germany. Comparisons of wage levels at one point in time, on the other hand, always contain considerable uncertainty factors. In comparing the cost situation in east and west German firms in a sample year it must be taken into account that the firms in the two regions are operating different production processes. A neo-classical production model can show divergent unit wage cost levels for different production functions; hence, when this model is used it cannot be concluded that differences in the level of unit wage costs will lead to differences in competitiveness. Differences in the levels of unit wage costs must also be expected if the market power of the companies is different.

Empirical comparisons of the levels of unit wage costs

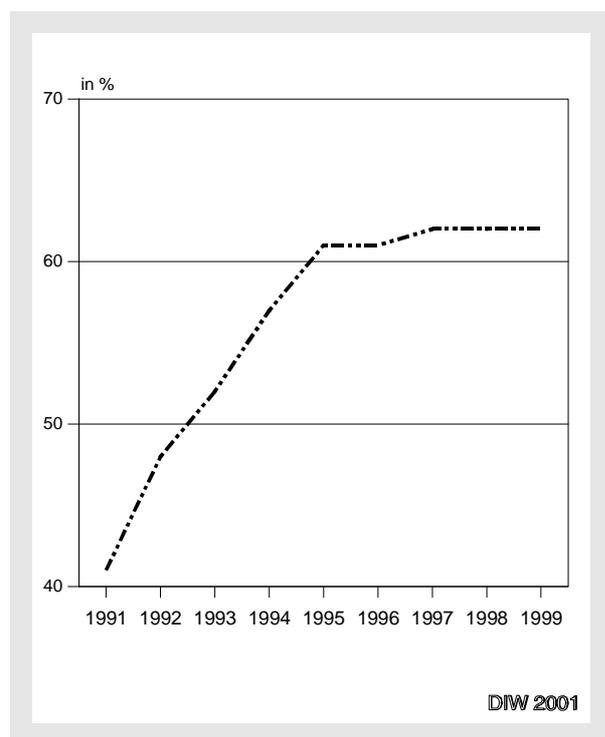
The empirical calculation of unit wage costs in east and west Germany poses serious problems in both statistics and method. Calculations of 'unit wage costs' involve quantifications, for example, where the shares of wages in value added are compared with those in west Germany.⁴ This largely corresponds to a comparison of wage ratios.⁵ But this reflects not only the different wage levels but also the different production structures, and hence also the different cost structures in the two regions.⁶

³ One proposal is to buy wage reductions by allowing the workforce greater participation in east German firms, cf. H.-W. Sinn: *Recht auf gleiche Infrastruktur*, *Sächsische Zeitung*, 12.12.2000.

⁴ Cf. e.g. Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung: *Vor weitreichenden Entscheidungen*, Stuttgart 1999, p. 80. As a rule, the share of gross incomes from dependent employment in gross value added is calculated at market prices.

⁵ In the wage ratio generally used in macroeconomic studies gross incomes from dependent employment are not related to value added at market prices but to the national income.

Figure 1
Hourly Wage Rates in Manufacturing
in East Germany as % of West German Rates



Sources: Federal Statistical Office; DIW calculations

Divergences in the production structures, and hence divergences in the wage ratios, between individual firms or sectors are not necessarily signs of differences in competitiveness; they are mainly the expression of the production processes being used⁷ – which include not only the production techniques but also the organisation of the production processes.

It is also possible to assess price competitiveness from price level comparisons. However, this raises statistical problems.⁸ These can be solved if more information is included on prices in east Germany measured by the west German price level. If producer price disparities are used to calculate the east German level of productivity,⁹ the conclusion for 1995 is that the price level of east German products is generally lower than that of comparable west German products. In manufacturing the gap

⁶ Moreover, it must be taken into account in regional and international comparisons that the concrete figure for the share of wages in gross value added at market prices can also be the expression of differences in the organisation of the economy. It will be affected by the level of indirect taxation, for example, and by the degree of self employment.

⁷ Cf. Bernd Görzig: Betriebsgröße, Produktionskosten und Faktorsubstitution im verarbeitenden Gewerbe Westdeutschlands, Final Report for the Deutsche Forschungsgemeinschaft, Berlin 1999.

Table 1
The Level of Unit Wage Costs
in East Germany Measured
by West German Manufacturer Prices in 1995

	Unit wage costs ¹	Wage costs ² per person employed	Gross value added per person employed at comparable prices ³
as % of West German level			
Agriculture and forestry	99.9	89.9	90.0
Mining and energy	82.5	70.4	85.3
Manufacturing	83.4	67.0	80.3
Construction	89.4	77.6	86.8
Trade	94.5	74.1	76.4
Services ⁴	114.3	71.2	62.3
Companies ^{4,5}	96.2	69.9	72.7

¹ Wage costs per person employed related to gross value added per person employed at comparable prices. — ² National accounts by the Federal Statistical Office before revision. — ³ Measured by west German prices according to calculations by the Institute for Economic Research, Halle (IWH); subtotals adjusted to the most recent figures in the national accounts by weighting with revised employment figures. — ⁴ Without residential letting agencies. — ⁵ Without transport and communications.

Source: IWH; Federal Statistical Office; DIW calculations.

was around 20 percentage points in 1995, and this relation had not changed much by 1999.¹⁰

Judging by this information on prices, unit wage costs for east German firms had already reached 96% of the west German level in 1995 (cf. table 1).¹¹ The relation has now shifted further to the advantage of east Ger-

⁸ In the information systems generally used, such as the national accounts, data on the price level are not available. As prices are only entered as an index in these systems only price trends and – derived from these – quantity trends can be analysed, not price and quantity levels. Cf. S. Hauf: Volkswirtschaftliche Lohnstückkosten und ihre Komponenten. In: Wirtschaft und Statistik, Statistisches Bundesamt, Vol. 8, Berlin 1997; G.H. Diestler: Lohnstückkosten. In: Lexikon der Volkswirtschaftlichen Gesamtrechnungen, ed. D. Brümmerhoff and H. Lützel, Munich 1994.

⁹ Cf. G. Müller: Schmalere Produktivitätslücke bei Beachtung von Preiseffekten. In: Wirtschaft im Wandel, Vol. 4, Halle 1998, pp. 14-18. This approach is usual for international productivity comparisons. Cf. B. van Arck: Issues of Measurement and International Comparison Issues of Productivity – An Overview. In: Industry Productivity, International Comparison and Measurement Issues, OECD Proceedings, Paris 1996.

¹⁰ Cf. J. Ragnitz: Warum ist die Produktivität ostdeutscher Unternehmen so gering? Erklärungsansätze und Schlussfolgerungen für den Konvergenzprozess. In: Konjunkturpolitik, Vol. 3, 1999.

¹¹ Without residential lettings, transport and communications.

many.¹² So it cannot be concluded from a sectoral comparison of unit wage costs in the two regions that east German firms are disadvantaged in price competition.¹³

However, the fact remains that east Germany as a whole does have a competition problem compared with west Germany. Overall, east German firms can only sell their products on national markets at lower prices, their workforces are paid less and their profits are lower. The amount of production in east Germany in relation to consumption or the potential labour force is clearly lower than in west Germany.¹⁴

From the standpoint of the individual firm

At the level of the individual firm the information available gives a very differentiated picture. On the one side individual cases keep occurring, particularly of firms formerly owned by the Treuhand, where wage costs were such a burden that the company either has had to close or can only carry on with large subsidies. On the other hand, east Germany also has many examples of successful firms that can pay their workforce above-average wages.

So from the microeconomic standpoint of the firm average aggregates, such as the regional wage or price level, are hardly relevant.¹⁵ The individual firm is always only active in certain segments of a market. That applies to the input side of certain labour market segments, which differ, for instance, in skills required, but it also applies to the output side, where the specific sales potentials and market strategies of the firms differ owing to the specific competition conditions. The neo-classical assumption that in markets with the same competitive conditions firms in one region would produce comparable goods at similar prices if the wage levels were uniform very rarely applies now in a developed economy.

For empirical research this means that general comparisons of the wage levels in economies or regions alone tell us little about the interrelation of wage levels and competitiveness. We need a quantitative consideration of indicators of competitiveness for individual firms and hence also an analysis of the wage differentials between firms.

Insufficient empirical information on the level of wages in firms

It must be admitted that insufficient information is available on the wages paid by east German firms. There is a lack of data for the whole of east Germany that covers every east German firm. Even simple structural data are generally only available for larger firms in the manufacturing sector, as they are covered by comprehensive surveys for the official statistics. Little is known about the economic situation in the small industrial firms and firms outside the manufacturing sector. The lack of statistics on services means that activities in these sectors are rarely included even in scientific discussion on the significance of regional wage differentials.¹⁶

One of the few possibilities of obtaining more comprehensive information on the wage levels in the corporate sector in eastern Germany as a whole is by using the statistics on persons paying obligatory social insurance contributions.¹⁷ Owing to the very elaborate and lengthy procedure needed to calculate national data on the wage levels in firms only the results from the 1994 survey processed for the structural report can be analysed here.¹⁸

¹² Cf. The Situation in the World Economy and the German Economy in Spring 2001. In: DIW Weekly Report, No. 15-16/2001, p. 257.

¹³ Even without the longer route through the calculation of unit wage costs this is also directly evident from the fact that the price level of east German products is lower than that for comparable west German products.

¹⁴ Cf. 'Micro- and macroeconomic adjustment processes in east Germany - nineteenth Report'. By DIW, IFW, IWH. In: Economic Bulletin vol. 36, no. 7, July 1999.

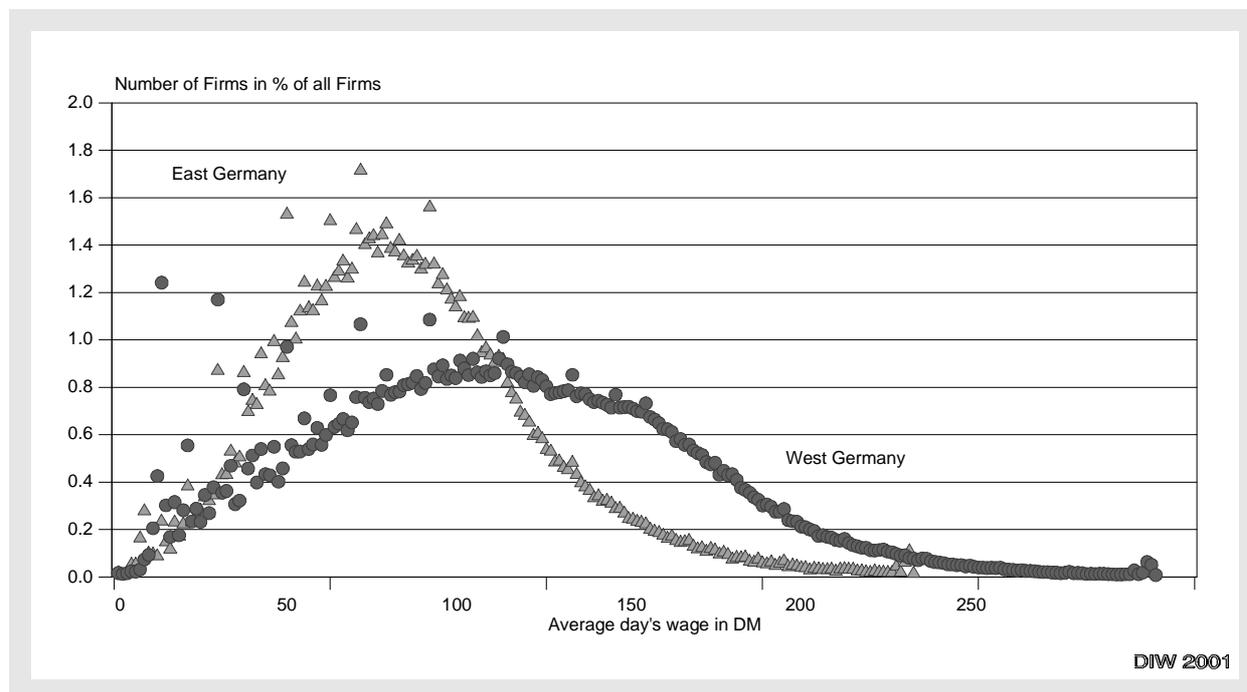
¹⁵ U. Jirjahn, T. Klodt: Lohnhöhe, industrielle Beziehungen und Produktmärkte. In: L. Bellmann, S. Kohaut, M. Lahner (ed.): Zur Entwicklung von Lohn und Beschäftigung auf der Basis von Betriebs- und Unternehmensdaten, Beiträge zur Arbeitsmarkt- und Berufsforschung, No. 220, 1999.

¹⁶ L. Lindlar, W. Scheremet: Does Germany have the World's Highest Wage Costs? In: Jahrbücher für Nationalökonomie und Statistik, Vol. 218, 1999.

¹⁷ This information also has limits. So far there are no data on the self-employed and persons working for only a few hours a week, and wages are only covered up to the assessment threshold for social insurance. For a detailed account of the employment statistics see Stefan Bender and Jürgen Hilzendege: Die IAB-Beschäftigtenstichprobe als scientific use file, MittAB 1/95, p. 76ff.

¹⁸ Cf. B. Görzig, W. Scheremet and F. Stille: Zum Einfluss betrieblicher und sektoraler Differenzierung der Arbeitskosten und sonstiger Regelungen auf die Beschäftigung im Strukturwandel, DIW-Beiträge zur Strukturforchung, Vol. 176, Berlin 1998.

Figure 2
Distribution of Wage Levels Between Individual Firms¹ in 1994
 number of firms as % of all firms



¹ Economy as a whole without the Federal Railways and the Federal Post Office.
 Sources: Employment statistics of the Federal Labour Office; DIW calculations.

The broad spectrum of company wage levels in eastern and western Germany

Figure 2 gives an initial picture of the wage differentials between firms in east and west Germany, with all the firms in the corporate sector classified according to their average wage level per person employed.¹⁹ The firms are shown according to the level of day's wage paid per person employed, and the bell-shaped curve is very clear.²⁰ As was to be expected, the average for east Germany is below the level for west Germany. In 1994 the east German level was DM 77, and the west German level was DM 97.²¹

However, there is considerable overlapping in the distribution of company wage levels in east and west Germany. In many west German firms the day's wage is

scarcely higher than the average for east German firms; conversely, east Germany has at least some firms paying wages at a similar level to those paid by the top group of high-wage firms in west Germany. These results make it clear that there is no uniform wage level in either east or west Germany.

On consideration of the spread of company wage levels and comparison of the two regions it is also striking that wage levels in east Germany are more strongly concentrated around the average figure. Taking firms as a whole it can be said that the relative deviations between them, measured by the variation coefficients, are significantly less in east Germany, at 39%, than in west Germany at 44%. This is astonishing, as the general conditions in east Germany would rather suggest that wage differentials would be particularly marked, firstly because the economic potentials of former state enterprises face new firms that have the very latest technology, and secondly because a broad spectrum of company wage agreements was possible in east Germany as early as 1994, with opening clauses and relatively low wage levels set in collective agreements.

¹⁹ The Federal Railways and Federal Post Office enterprises have not been included owing to their special nature.

²⁰ Standardising the wages paid on the day's level also enabled wages paid to persons who were only employed temporarily in the firm to be included in the comparison.

²¹ These figures were calculated as averages of the wages paid by the firms, so they differ from averages calculated from wages received by the employees.

Wage differentials between firms vary depending on size class

A breakdown of wage level differentials between firms according to size of workforce also shows that the narrower spread in east Germany is solely due to the situation in small firms (cf. table 2). For firms in east Germany employing fewer than 20 people the spread of company wage levels, measured by the variation coefficient, is more than 10% less than in west Germany.

In medium-sized firms employing between 50 and 200 people, on the other hand, not only is the wage spread between firms in both east and west Germany smaller; it is also at a similarly high level in both regions. The variation coefficient is 24% or 25% in each of the three relevant size classes.

In the higher size classes, that is, firms employing 200 and more people, the wage differentials between firms are consistently smaller in west Germany. In the largest firms, employing 1000 and more, it reaches its lowest point with a variation coefficient of 17%. In east Germany, on the other hand, the wage differentials between firms are hardly any smaller in the top size classes. In the big firms the spread is actually 23% above the west German level, measured by the variation coefficient (500 to 999 employees), and 39% (for firms employing 1 000 and more).

One possible explanation for the deviation in wage differentials between firms in east Germany compared with the reference region of west Germany, in small firms on the one side and large firms on the other, could be the different forms of market segmentation in the two parts of the country. It could be argued that:

- Small firms in east Germany operate almost exclusively to meet regional demand in the services, craft and building sectors. They hardly utilise the sales and earnings potentials in national quality competition by offering high-quality goods and services. In west Germany, on the other hand, a number of small firms - beside the similarly large group of regionally oriented suppliers - have evidently succeeded, through specialisation and innovation, in penetrating market niches where the price level is high, so that they can pay wages that are clearly above average.
- In large firms the high wage differentials between firms in east Germany point to a division of the market into two segments for this type of firm: on the one hand, there are firms that can maintain their position in price competition by paying low wages, and on the other, firms that are tied into the sales strategies of western high price suppliers and so pay wages well above average. The wage differential between large firms in west Germany on the other

Table 2

Wage Differentials Between Firms¹ by Company Size Class in 1994

Firms employing	East	West	Variation coefficient ² of day's wage
	Germany		
	Variation coefficient		
1 - 9	40.5	45.3	89
20 - 49	24.2	24.8	97
50 - 99	24.7	24.1	102
100 - 199	25.3	24.1	105
200 - 499	25.4	23.3	109
500 - 999	25.5	20.8	123
1000 and more	23.3	16.8	139
All firms ³	39.3	44.1	89

1 Wages liable for statutory social insurance to employees whose wages are below the assessment threshold. — 2 Average in % deviation of unweighted average figures for firms. — 3 All firms not including Federal Railways and Federal Post Office. Source: DIW calculations based on the employment statistics of the Federal Labour Office.

hand is low, because over the long term evidently only those firms can survive on the international markets that have established a position in product competition despite paying high wages.

Wage gap to west Germany greatest in large firms

However, it is not only the wage differentials between firms that change with the size of the firm. A number of empirical studies have shown that the size of the firm also has a considerable influence on its wage level.²² In addition to the production methods and sales conditions, which differ according to size class, the collective agreements that are binding on the firm also, and not least, differ in the various size classes.

The average daily wage paid by small firms in east Germany employing fewer than 20 people was DM 75,

²² Cf. B. Görzig et al., loc. cit., and Lutz Bellmann and Susanne Kohaut: Betriebliche Determinanten der Lohnhöhe und der übertariflichen Bezahlung. Eine empirische Analyse auf der Basis des IAB-Betriebspanels, MittAB 1/95, pp. 62-75.

Table 3
Wage Levels¹ by Size of Workforce in 1994

Firms employing	East-	West	East Ger- many as % of west Germany
	Germany		
	Day's wage in DM		
1 - 19	75	93	80
20 - 49	93	128	73
50 - 99	95	134	71
100 - 199	97	138	71
200 - 499	100	141	71
500 - 999	102	150	68
1000 and more	109	159	69
All firms ²	77	97	79

1 Wages liable for statutory social insurance contributions paid to persons employed whose wages are below the assessment threshold.

2 Firms without the Federal Railways and the Federal Post Office.

Source: DIW calculations based on the employment statistics of the Federal Labour Office.

which was lower than the average for all firms (cf. table 3). As the size class increases the level of wages rises markedly, reaching its peak at DM 109 for large firms employing 1 000 people and more.

The positive relation between the size of the firm and the wage level is also very evident for west Germany. The wage gap between small firms paying on average DM 93 a day and large firms paying the top rate of DM 159 a day is thus even greater than in east Germany.

If one considers the wage relations between east and west Germany separately by size class it is clear that in the east German small firms the adjustment to the west German wage level is far advanced. In firms employing fewer than 20 people the wage gap to west Germany was only 20% in 1994. As firm size grows this gap also grows, to be widest for large firms at 37%.

This is surprising in that one can assume that the east German small firms in particular will pay collectively agreed wages. In fact, the actual wage levels are also clearly lower in the east German small firms than in the large firms in east Germany. However, evidently they can tolerate a stronger wage adjustment to comparable firms in west Germany.

One of the reasons for this may again lie in the specific orientation of many east German small firms to the local market. Small firms can derive competitive advantages on such local markets because they are close to their customers (regional monopolistic competition). As these advantages are similar for small firms in east and in west Germany they are also reflected in closer approximation of the wage levels. For larger firms selling outside their region as well, on the other hand, these quasi natural competitive advantages do not exist. Weaknesses in their market position thus lead directly to price reductions, which in turn result in lower productivity and lower wages.

A shortage of jobs in the high wage class in east Germany

In view of the under-employment problem it must be asked in which production segments or sales areas insufficient jobs were created in east Germany. To show the structure of the employment shortfall the relations between employment and the supply of labour for east and west Germany have been shown here by company size class. Employment is defined by the number of employees paying statutory social insurance contributions. For the supply of labour the data on the number of persons in the workforce given in the microcensus has been used.

The corporate sector as a whole (without the Federal Railways and the Federal Post Office) employed around 6 300 out of a potential labour force of 10 000 in east Germany in 1994. That is around 95% of the comparable west German figure (cf. table 4). If one takes the distribution of persons employed according to company size class it is clear that there is only a shortage of jobs in east Germany in larger firms. In companies employing more than 200 clearly fewer people are employed, calculated per person employed, than in west Germany. In large firms, employing more than 1 000, the gap is particularly great, with the east German figure for employment per person employed more than 50% below the west German level.

But the small and medium-sized firms in east Germany are employing clearly more people than their west German counterparts, in relation to the total supply of labour. The gap is greatest in firms employing between 20 and 49, where the east German figure for the number employed per person employed is 25% higher.

If one compares this structure of the job shortage in east Germany with the wage structures in the reference region west Germany, it is clear that there tends to be a shortage of jobs in east Germany in those areas where

Table 4
Employment per Person Employed

Firms employing	Employment per 10 000			Average day's wage ¹		
	East	West	East as % of west	East	West	East as % of west
1 - 19	2 094	1 847	113	75	93	80
20 - 49	1 179	945	125	93	128	73
50 - 99	856	723	118	95	134	71
100 - 199	757	719	105	97	136	71
200 - 499	626	857	73	100	141	71
500 - 999	336	524	64	102	150	68
1000 and more	443	1 025	43	109	159	69
All firms ²	6 259	6 639	95	77	97	79

¹ Wages liable for statutory social insurance contributions paid to persons employed whose wages are below the assessment threshold. — ² Firms without the Federal Railways and the Federal Post Office.

Source: DIW calculations based on the employment statistics of the Federal Labour Office and the microcensus.

west German firms pay relatively the highest wages. Even a far above-average backlog in wage adjustment in the high wage segment of the larger firms in east Germany to the wage level in these firms in west Germany was not able to counteract this. Many jobs were created, then, not in the areas where the wage cost advance is particularly great but in the smaller firms that can pay wages at a similar level to their west German counterparts.

Widening the wage gap would split the economic structures even more

The attempt to solve the particular competition and employment problems of east Germany by widening the wage gap between east and west Germany even further does not appear a very promising solution in view of these results. Even if wage restraint in east Germany were to lead to noticeable employment effects the result would not be sustainable over the long term. It would have been bought at the price of a further split between

the economic structures in east and west Germany. In east Germany the firms that are in price competition and so depend on being able to pay low wages would gain more weight, although they are already tending to be over-represented. In west Germany, on the other hand, those firms would continue to be dominant that have managed to avoid price pressure in product competition at least in part, and so can reward their factor labour at a higher rate.

It must be feared that the lasting split into a low-wage east Germany and a high-wage west Germany with firms oriented to this parameter will create a permanent transfer need. If this is to be avoided economic policy must be directed elsewhere than to further widening of the wage gap to west Germany. Above all, the structural deficits in the east German economy must be reduced. The empirical analyses show unmistakably what is lacking in east Germany – high-wage firms oriented to selling outside their region.

Hence the task for economic policy can only be to enable more firms in east Germany to take the step from price competition markets into national and national product competition markets. In the narrower sense this

may be first and foremost a task for the management in the firms and not the bodies responsible for economic policy; nevertheless, the structures in successful high-wage re-gions, not only in west Germany, show that high-quality transport links, for instance, and excellent education and research facilities are essential to the economic success of firms pursuing innovative product and market strategies.²³ Continuing to build up the infrastructure in east Germany must therefore still remain the main focus of economic policy, even if improvements in the incomes and employment situation are slow to result.

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²³ Cf. M. Storper: *The regional world: territorial development in a global economy*, New York 1997; M. Gornig et al.: *Regionale Strukturpolitik unter veränderten Rahmenbedingungen der 90er Jahre*. DIW-Sonderheft 157, Berlin 1996; R. Kurz, H.-W. Graf, M. Zarth: *Der Einfluss wirtschafts- und gesellschaftspolitischer Rahmenbedingungen auf das Innovationsverhalten von Unternehmen*. Forschungsberichte aus dem Institut für Angewandte Wirtschaftsforschung, Tübingen 1989.