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**Working Paper — Digitized Version**

## De-industrialization or re-industrialization? On the future of the Eastern German economy

Kiel Working Paper, No. 576

**Provided in Cooperation with:**

Kiel Institute for the World Economy – Leibniz Center for Research on Global Economic Challenges

*Suggested Citation:* Schmidt, Klaus-Dieter; Naujoks, Petra (1993) : De-industrialization or re-industrialization? On the future of the Eastern German economy, Kiel Working Paper, No. 576, Kiel Institute of World Economics (IfW), Kiel

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# Kieler Arbeitspapiere

# Kiel Working Papers

Kiel Working Paper No. 576

**DE-INDUSTRIALIZATION OR RE-INDUSTRIALIZATION?  
- ON THE FUTURE OF THE  
EASTERN GERMAN ECONOMY -**

by

Klaus-Dieter Schmidt and Petra Naujoks

June 1993



Institut für Weltwirtschaft an der Universität Kiel  
The Kiel Institute of World Economics

ISSN 0342 - 0787

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### **Abstract**

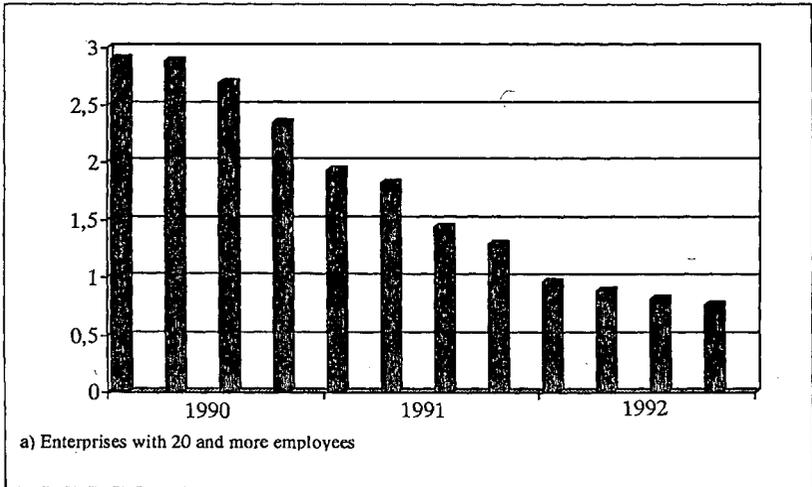
The paper is intended to explore the prospective direction of structural adjustment in eastern Germany in the light of recent developments. The authors do argue that the Mezzogiorno-picture, a completely de-industrialized region between the Elbe- and the Oder-river, is not convincing. In the long-run, say in two decades, eastern Germany has good opportunities to become the most modern and competitive industrial basis in central Europe. In the medium-run, however, a dualization is likely - an industry with a rather new, highly capital-intensive segment and a subsidized old one. Consequently, there will emerge fast growing regions within Eastern Germany, so-called "productivity islands", and regions with high chronic unemployment. This will be the unavoidable price for a very rapid equalization of real wages between east and west.

## I. Introduction: How to Merge a Socialist and a Capitalist Economy<sup>1</sup>

The transition experiment of eastern Germany seems to support the pessimistic view - that the "jump into the market" is not a textbook case for which solutions are easily available (Csaba 1992). Although according to recent figures it is likely that the economy has turned the corner there is no reason to believe that the crisis is getting through. The general understanding actually recognized that the time span for the restructuring of a Soviet-type economy is much longer than originally expected - reaching ahead for some decades rather than just for some years.

At a first glance, after three years of economic unification, the results look disappointing. Eastern Germany still suffers from a continuing decline of major parts of its industry. In terms of employment it has lost three quarters of the productive capacities (Graph 1) - and there is no sign for a reversal. The Treuhandanstalt has to work hard attempting to restructure the core of the old industries by privatization. At present, its portfolio still consists of 1 000 industrial companies with 270 000 employees. The great majority of these companies operates at a large loss. Without financial support they would have no chance to survive.

Graph 1 - Employment in Eastern German Manufacturing a) 1990 - 1992 (Mill. Persons)



Source: Statistisches Bundesamt; own calculations.

<sup>1</sup> An earlier version of this paper was presented at the ACE-Workshop "Industrial Restructuring, Trade Re-orientation and East-West European Integration" held on 27 - 29 March 1993 in Vienna. The authors wish to thank their colleagues Klaus-Werner Schatz and Birgit Sander for helpful comments.

If the prospects are so worrying, has the German shock-therapy failed? Is eastern Germany straight on its way to become a depressed area, a Mezzogiorno in Central Europe? Or can it catch up with the western German economy, and if so, how quickly? Is the recent de-industrialization an "accident" which would have been avoidable, or is it the pre-stage to a re-industrialization - the necessary correction of a biased production structure as the heritage of the past? And will other of the Central and East European countries sooner or later experience a similar decline of production and employment?

In search of an answer it must not be overlooked that eastern Germany is a special case. The task is not only to transform its economy from the centrally planned system into the market system but also to integrate it into another economy, the western German one. Both economies are rather different with respect to their level of development, factor endowment and international competitiveness. What will happen if these two different economies merge? From the theory of integration we would expect the following (Siebert, 1990):

- (1) Both economies will try to exploit their comparative advantages. On the basis of given factor endowment, specialization pattern and productivity differential the outcome will be an extension and diversion of bilateral trade. In the short term scenario the superior economy will display its comparative advantages in tradables and will have a huge export surplus. The inferior economy will have an import deficit which must be financed by foreign capital or transfers from abroad.
- (2) Both economies will experience a process of structural change - to adjust their trade and production structures according to their long run comparative advantages. The size of required structural adjustment depends on the extent of distortions. Evidently, it is much higher in the inferior economy than in the superior one. In the short-run scenario the inferior economy will undergo a de-industrialization, but in the long-run scenario a re-industrialization is likely. In the case that the trade and production structures are identical (albeit of different efficiency levels) an intra-industry specialization should emerge leading to more or less complementary structures in each of the two economies.
- (3) Both economies will export its excess of mobile resources: the superior economy is normally relatively rich in capital and technology while in the inferior economy labour and land exists in plenty. The transfer of mobile factors of production is an important vehicle in the adjustment process. In the short run scenario it will avoid bottlenecks in the factor markets, in the long-run scenario it will equate the existing differences in productivity, in real wages and profits.

Insofar there is no room at all for disappointment. The collapse of the eastern German economy is fully congruent with standard economic theory - which predicts that in these circumstances things must become worse before they can get better.

The crucial point is that the applied model is based on the assumption that factor prices are determined by relative scarcity. In this model huge wage differences exist which are reflecting the backwardness of the former socialist economy and, hence, the gap in productivity. In reality, however, real wages in eastern Germany are rising rapidly, faster than productivity (Schmidt, Sander, 1993). At present, effective wages in eastern German manufacturing have reached 66 percent, while labour productivity does not exceed 40 percent of the western German level. From this we can conclude that unit labour costs are roughly 50 percent higher while all other costs are nearly the same. Consequently, the prospects for many eastern German firms are gloomy.

## II. The Heritage of the Past: What Can Be Left?

From the beginning it was clear that the eastern German economy would undergo a deep transformation - like other former socialist economies do. Manufacturing was expected to shrink and services to expand (Bode, Krieger-Boden, 1990). As industrial production and employment have been found much higher and service production and employment much lower than it would be derived from the "normal pattern" in western countries, it was reasonable to assume that the shares in output and labour input would come closer to the western German level. As Table 1 shows this projection has been confirmed by the actual development: the share of industrial production fell sharply - even much more drastically than anybody predicted. In 1992 the relative weight of manufacturing in the sectoral composition of production amounted to only 17 percent, a loss of 21 percentage points from 1989 onward. According to the western German pattern a relative weight of about 30 percent could have been expected.

How can this "overshooting" be explained? In order to understand the debacle it is necessary to recall the state of the eastern German industry after the fall of the wall: the overwhelming majority of companies had been absolutely unable to compete with western companies. This has not only been due to the main shortcomings of all Soviet-type economies such as low product quality and low productivity. It has also been the result of the intra-bloc specialization philosophy, which was practised by the COMECON countries, aimed at import substitution. Historically, there was a complementary division of labour between the eastern and western parts of Germany: the steel or the shipbuilding industry, e.g., were mainly located in the west, the chemical industry and the textile industry in the east. As a consequence of the autarky-strategy

of the GDR the eastern German industrial structure became more and more a duplicate of the western German one. A comparison of the employment structures<sup>2</sup> of the GDR and the FRG industry on a two digit level shows that both were very similar (Table 2). Significant differences were only in vehicle building (where the share in the FRG was twice as high as in the GDR) and in manufacture of leather, textiles and clothing (where the reverse was true). Because of this, the weight of the capital goods sector in the GDR was somewhat lower and the weight of the consumer goods sector somewhat higher than in the FRG.

Table 1 - Comparison of Production and Employment Structures of Eastern and Western Germany 1989 and 1992 (percent)

	Production					
	Eastern Germany			Western Germany		
	1989(a)	1992	Change(b)	1989	1992	Change(b)
Agriculture, Forestry and Fishing	2.1	1.6	-0.5	1.7	1.3	-0.4
Mining, Energy, Manufacturing and Construction	54.1	32.7	-21.4	40.4	38.1	-2.3
of which: Manufacturing	37.9	16.9	-21.0	31.9	30.4	-1.5
Trade and Transport	17.8	15.5	-2.3	14.5	14.3	-0.2
Services	12.1	26.2	+14.1	29.8	33.0	+3.2
Government and Non-Profit Organizations	13.9	23.9	+10.0	13.6	13.4	-0.2

(a) In DM and Western prices. - (b) Percentage points.

	Employment					
	Eastern Germany			Western Germany		
	1989	1992	Change(b)	1989	1992	Change(b)
Agriculture, Forestry and Fishing	10.0	5.2	-4.8	3.7	3.2	-0.5
Mining, Energy, Manufacturing and Construction	44.5	35.8	-8.7	39.8	38.5	-1.3
of which: Manufacturing	.	.	.	31.4	.	.
Trade and Transport	16.8	19.9	+3.1	18.6	19.1	+0.5
Services	9.2	15.3	+6.1	18.0	19.8	+1.8
Government and Non-Profit Organizations	19.5	23.8(a)	+4.3	19.9	19.4	-0.5

(a) Including persons in job creating programs. - (b) Percentage points.

Source: Statistisches Bundesamt.

<sup>2</sup> Because of the distorted price structure in the GDR economy, it is advisable to compare the employment structure and not the production structure.

Table 2 - Comparison of Employment Structures in Manufacturing in the GDR and the FRG in 1989 (percent)

	Shares		Deviation (a) GDR against FRG
	GDR	FRG	
Total Manufacturing	100	100	-
of which:			
Oil refineries, plastic manufacturing	4.8	5.4	-0.6
Stone, sand and clay industries	5.1	3.8	+1.3
Iron and steel industries, non-ferrous metal industry	5.6	7.6	-2.0
Metal products	8.2	7.0	+1.2
Chemical industry	5.9	8.2	+2.3
Engineering	15.2	14.0	+1.2
Vehicle building	7.2	14.5	-7.3
Electrical equipment	14.1	15.6	-1.5
Precision engineering, optical, watches	1.9	1.9	±0
Wood processing	4.5	3.5	+1.0
Paper and board	1.6	2.2	+0.6
Printing	1.3	2.5	+1.2
Leather and leather products, textiles, clothing	12.8	6.0	+6.8
Food, drink and tobacco	9.1	6.3	-2.8
Note:			
Manufacture of			
Basic products	29.6	32.0	-2.4
Capital goods	38.4	46.0	-7.6
Consumer goods	20.2	14.2	+6.0

(a) Percentage points.

Source: Bode, Krieger-Boden (1990).

Meanwhile this large degree of identity in industrial structures is more of a burden than an advantage for the eastern German industry. Normally, in open western market economies with identical factor endowment and technology, identical patterns are not exceptional. But these economies have a high degree of intra-industry specialization; not only with respect to production but, simultaneously, with respect to the exports and imports of manufactured goods. The bilateral trade between the GDR and the FRG, however, had only a distant bearing to this matter. The export structure of the GDR was predominated by basic material and consumer goods while the import structure was determined by capital goods. The export hits were textiles, chemical products and mineral fuel which amounted to roughly 35 percent of total exports to the FRG in 1989 (Table 3). It is evident that the GDR had no comparative advantage in these fields: the export of textiles (most of them of low quality) was heavily subsidized, and the ex-

port of chemical products and mineral fuel was only profitable on the basis of cheap crude oil imports from the Soviet Union.

Table 3 - Sectoral Structure of Intra-German Trade in 1989 (percent)

	Sales	Purchases
	of the GDR	
Food, drink and tobacco	3.8	7.7
Mineral fuel	11.3	4.7
Chemical products	12.4	14.5
Engineering and vehicles	11.4	34.2
Wood products and furniture	4.9	0.2
Textiles	12.4	4.6
Iron and steel	9.4	10.4
Precision engineering and optical goods	0.6	1.0

Source: Statistisches Bundesamt; own calculations.

The low competitiveness of the GDR industry is also reflected in the terms of trade in intra-German trade: according to the calculations by Schmieding and Stehn in 1989 the ratio of the GDR export prices to import prices (in DM) was on average roughly 1:3 (Table 4). It is remarkable that the ratio was 1:4 in the consumer goods sector and even 1:5 in the capital goods sector. The price ratio was nearly the same as the productivity ratio which have been estimated to range between 1:3 and 1:4 on average.

Table 4 - Price Ratios in Intra-German Trade in 1980 and 1989 (a)

	1980	1989
Total Industry	0.56	0.36
of which:		
Basic products	0.64	0.42
Investment goods(b)	0.34	0.22
Consumer goods	0.44	0.26

(a) Average DM-values of FRG purchases divided by the average values of sales of the respective class of goods. - (b) Without shipbuilding, air- and spacecraft, finished buildings.

Source: Jürgen Stehn, Holger Schmieding, 1990.

It should be noted that between 1980 and 1989 the price ratios declined substantially - in fact by almost the same amount in all market segments. Consequently, the domestic resource costs incurred by GDR firms by selling their products on world markets rose. Akerlof et al. (1991) calculated that the shadow exchange rate, at which the firms would have been competitive, in Mark per DM earned in exports to non-socialist countries was 3.73 on average in 1989; and the rate, expressed in Transferrubel, earned in exports to non-socialist countries was 4.65. However, these rates varied extremely across sectors and within them. The costs in Mark of earning a D-Mark ranged from 2.08 in the energy sector to 4.82 in the electronic sector (Table 5).

Table 5 - Domestic Resource Costs in Eastern German Industry in Trade with Western and Eastern Countries 1989

	Expenses in Mark of Earning One ...	
	D-Mark	Transferrubel
Industry	3.73	4.65
of which:		
Energy	2.08	3.16
Chemicals	4.11	5.93
Metallurgy	3.22	7.63
Machinery	3.59	3.62
Transport equipment	3.46	3.35
Electronics	4.82	3.44
Textiles	3.70	6.45
Furniture, toys etc.	4.22	4.55
Glass, ceramics, paper	3.33	4.65
Food, beverages	4.09	8.00

Source: Akerlof et. al. 1991.

The domestic resource costs are a good indicator of the viability of East German industrial firms under free trade. The total collapse of electronic industries (the conglomerate "Mikroelektronik/Robotron" needed to spend 7.17 Mark in order to earn one D-Mark) demonstrates the predictive power of these figures.

The low competitiveness of the eastern German industry is also reflected in the composition of its trade with all western countries. The structure, on the export as well as on the import side, was rather comparable to those of a less developed country than of an industrialized country. The export side was dominated by resource-intensive and labour-intensive goods and the import side by research-intensive goods. The contrast to export and import structures of the FRG was striking (Table 6).

Table 6 - Trade with Western Countries of the GDR and the FRG in Classes of Goods in 1987 (structure in percent)

	GDR(a)		FRG(b)	
	Exports	Imports	Exports	Imports
Resource-intensive goods	28.2	17.7	7.3	21.6
Labour-intensive goods	28.8	17.5	20.0	23.0
Capital-intensive goods	17.7	17.8	28.8	18.6
Easy-to-imitate research-intensive goods	10.8	14.3	15.5	16.6
Hard-to-imitate research-intensive goods	13.2	32.4	28.4	20.2

(a) Trade with OECD-countries including intra-German trade. - (b) Trade with industrialized western countries.

Source: Jürgen Stehn, Holger Schmieding, 1990.

In early blueprints for the time after unification the deplorable state of the eastern German industry has not been completely recognized yet. There was a widespread feeling that it would be possible to restructure and modernize the old socialist conglomerates in a relatively short period of time. The enormous productivity gap was the symptom and not the cause for the decline. The cause was the general backwardness of the industrial sector in a Soviet-type economy - not only with regard to production techniques and product quality, but also to the specialization pattern. It has become evident that the eastern German industry must be totally built up from scratch. This is the reason why it makes no sense to stop or to delay the decline.

### III. The Recent Trends: Between Collapse and Revival

Our anatomy shows that the eastern German industry endures an adjustment crisis. From recent statistical figures we can conclude that it is midway between collapse and revival. While in some branches the production has not yet reached the bottom line, in some others it has already started up. The question arises how these different "trends" should be interpreted. Are they an indicator for the long-term prospects of different branches or do they simply reflect their different short-term market conditions? A closer examination of relevant statistical figures may cast some light on the matter.

#### I. Production

During the last two years the eastern German industry experienced not only a dramatic contraction but also a considerable change in its sectoral structure. At a first glance, the results look surprising (Table 7):

- On an aggregated (2-digit) level, capital goods industries have become the main losers of the unification process. They lost about one fifth of their shares in production. Initially, these industries have been expected to be among the winners. However, against strong international competition they have lost nearly all their foreign and domestic markets. Only the manufacture of constructional steel could increase its share as a result of the building boom in eastern Germany.
- Consumer goods industries have been able to stabilize their share. This is mainly due to gains in the printing industry which benefits from a heavy demand for printing material and from high investments by western German publishers who were entering the eastern German markets quickly.
- Basic product industries have increased their share. This can mainly be explained by favourable demand conditions and relatively high competitiveness of some branches such

as the stone, sand and clay industry. Many basic products are produced only for local markets where they are needed to modernize the infrastructure.

Industries producing food and drinks have been the "champions" - they were able to increase their share from 13 percent to 18 percent. Due to the relatively high competitiveness of these goods already before the German unification these industries have been among the first to be privatized. After having modernized plants most of the firms could even extend their competitiveness.

Table 7 - Production Structure of Eastern German Manufacturing by Branches 1990 - 1992 (in percent)

	1990	1991		1992		Change (a)
	II	I	II	I	II	
Total manufacturing	100	100	100	100	100	x
Manufacture of basic products of which:	22.4	25.1	26.2	28.2	26.3	+3.9
Oil refineries	2.2	4.0	4.2	4.5	4.4	+2.2
Stone, sand and clay industries	4.8	3.9	5.1	6.2	8.0	+3.2
Iron and steel industry	2.6	3.0	2.3	2.5	3.4	+0.8
Foundries	1.6	1.5	1.2	1.2	0.9	-0.7
Chemical industry	8.3	9.4	10.1	10.1	7.2	-1.1
Manufacture of capital goods of which:	53.4	45.2	44.9	40.2	42.8	-10.6
Constructional steel	5.2	7.5	9.6	10.4	12.4	+7.2
Engineering	23.6	18.3	18.5	12.6	11.1	-12.5
Vehicle building	3.3	2.9	2.1	2.5	3.2	-0.1
Electrical equipment	15.7	11.5	11.1	10.8	12.1	-3.6
Precision engineering, opticals, watches	2.4	1.1	0.6	0.6	1.5	-0.9
Metal products	1.1	1.9	1.8	2.3	2.0	+0.9
Manufacture of consumer goods of which:	11.6	12.2	12.0	13.5	12.8	+1.2
Wood processing	2.3	2.8	2.5	2.9	2.7	+0.4
Printing	1.6	2.5	3.1	3.5	3.5	+1.9
Textiles	3.0	2.1	1.8	1.7	1.3	-1.7
Food, drink and tobacco	12.6	17.6	16.9	18.3	18.1	+5.5

(a) Percentage points.

Source: Statistisches Bundesamt; own calculations.

From this it could be concluded that the changes in the production structure have been more coincidental than systematical. A closer examination, however, reveals a clear-cut pattern: the losers have been the producers of tradables where the market is characterized by high competition from western German and other non-domestic suppliers. The winners have been among those industries producing goods for local markets - be it because these products are easily perishable, because their transport creates high costs as a result of their high weight (relative to their value) or be it because no time is to be wasted by selling the goods like in the industries printing newspapers. In these markets a high competition need not to be feared, because it is not worth transporting the products.

## 2. Markets

At the moment the main markets for the eastern German industry are the domestic ones - especially in eastern Germany. In 1992 the share of sales to foreign markets to total sales was only 15 percent, not higher than in 1991, which is extremely low for such a small economy (Table 8). In fact, the export performance is even weaker than it appears according to these figures: more than 60 percent of export sales are still undertaken in markets of the former COMECON partners, massively pushed by export credits and producer subsidies. Eastern Germany has lost almost the whole of its export basis - in contrast to the other Central and East European reform countries which have been very successful in entering western foreign markets.

The low competitiveness especially in western markets for tradables is also reflected in the relatively low importance of sales to western Germany. Sales of engineering products, e.g., are nearly negligible. The only industry with a promising future which has reached a significant share of sales to western Germany is the automobile industry mainly due to the new assembly plants of Volkswagen and General Motors which serve eastern German markets as well as western German ones. In the iron and steel industry and in the textile and clothing industry, however, the prospects are gloomy. Their high share of sales on western German markets is not an indicator for competitiveness. Many firms are only - temporarily - "prolonged workbenches" of west German producers.

Table 8 - Sales Structure of Eastern German Manufacturing 1991 and 1992

	1991				
	Sales (in Mill. DM)			Ratio of Sales to ...	
	Total	of which		to Total Sales	
		Foreign Markets	Western German Market	Foreign Markets	Western German Market
Total Manufacturing	86 664	13 658		0.16	
of which:					
Stone, sand and clay industries	2 917	31	109	0.01	0.04
Iron and Steel	3 654	1 032	608	0.28	0.17
Engineering	13 169	3 664	331	0.28	0.03
Vehicle Building	3 869	371	720	0.10	0.19
Shipbuilding	1 420	834	4	0.59	0.00
Electrical Engineering	7 682	895	703	0.12	0.09
Chemical Industry	8 857	2 156	1065	0.25	0.12
Textiles	1 782	282	408	0.16	0.23
Clothing	594	61	257	0.10	0.43

	1992				
	Sales (in Mill. DM)			Ratio of Sales to ...	
	Total	of which		to Total Sales	
		Foreign Markets	Western German Market	Foreign Markets	Western German Market(a)
Total Manufacturing	84 863	12 369		0.15	
of which:					
Stone, sand and clay industries	4 537	37	189	0.01	0.04
Iron and Steel	2 779	686	743	0.25	0.27
Engineering	10 704	2 977	257	0.28	0.02
Vehicle Building	5 434	436	1 431	0.08	0.26
Shipbuilding	1 548	758	303	0.49	0.2
Electrical Engineering	7 650	745	704	0.10	0.09
Chemical Industry	7 751	1 831	1 159	0.24	0.15
Textiles	1 451	251	339	0.17	0.23
Clothing	673	44	154	0.07	0.23

(a) December values estimated.

Source: Statistisches Bundesamt; own calculations.

### 3. Performance

The need to improve competitiveness, on international as well as on domestic markets, forces the eastern German industry to obtain large productivity gains. In 1992 the turnover per employee (as a rough measure of labour productivity) nearly doubled (Table 9). These productivity gains, however, have been achieved, above all, by the reduction of employment. The greatest jump was accomplished by the automobile industry where General Motors and Volkswagen started their new assembly plants. Also the textile industry could achieve above average productivity gains but mainly by closing down a great number of unprofitable plants. The stone, sand and clay industry profits from the favourable demand conditions as a result of the rising eastern German construction activity where the increasing demand could be satisfied even with fewer workers.

Table 9 - Turnover per Employee in Selected Branches of Eastern and Western German Manufacturing 1991 and 1992 (in DM)

	1991			1992		
	East	West	Ratio(a)	East	West	Ratio(a)
Total Manufacturing	52 902	261 342	0.20	98 264	268 453	0.37
of which:						
Stone, sand and clay industries	53 625	261 244	0.21	134 183	261 389	0.51
Metal products	71 367	271 030	0.26	107 521	261 089	0.41
Engineering	42 289	199 097	0.21	66 773	203 771	0.33
Vehicle building	47 822	318 866	0.15	136 176	325 320	0.42
Ship building	49 636	234 667	0.21	89 569	230 919	0.39
Electrical engineering	36 152	202 828	0.18	79 884	215 927	0.37
Chemical industry	70 438	336 544	0.21	111 703	345 363	0.32
Textiles	20 769	204 453	0.10	53 182	209 326	0.25
Clothing	15 677	176 590	0.09	33 895	184 500	0.18

(a) Turnover per employee in eastern Germany divided by turnover per employee in western Germany.

Source: Statistisches Bundesamt; own calculations.

Despite these remarkable improvements productivity in eastern Germany is still lagging behind. In 1992 turnover per employee only reached one third of the level in Western Germany regarding the industry as a whole.<sup>3</sup> While the productivity gap in the basic goods industries was below and in the capital goods industries near the average, in the consumer goods industries it

<sup>3</sup> In terms of added value the gap may be somewhat higher. Normally, the eastern German firms are less vertically integrated than western German ones, thus the ratio of added value to employee is smaller.

was substantially higher than the average. The textile and the clothing industry were those with the least favourable productivity level.

It is a matter of simple arithmetic that the eastern German industry as a whole operates at heavy losses. In 1992 the deficit amounted to 15 percent of total sales, whereas in western Germany a surplus of 3-4 percent is normal (Graph 2). Thus, one can conclude that only a small number of firms is profitable. Average losses of the Treuhandanstalt even accounted for roughly 30 percent of total turnover in 1992. Some branches such as electrical engineering or tool engineering reported losses of more than 50 percent of sales (Graph 3).

A company which makes losses has - in the short run - two possibilities: it can try to increase prices or to increase productivity by cutting manpower. In eastern Germany these strategies are now open to companies only to a limited extent:

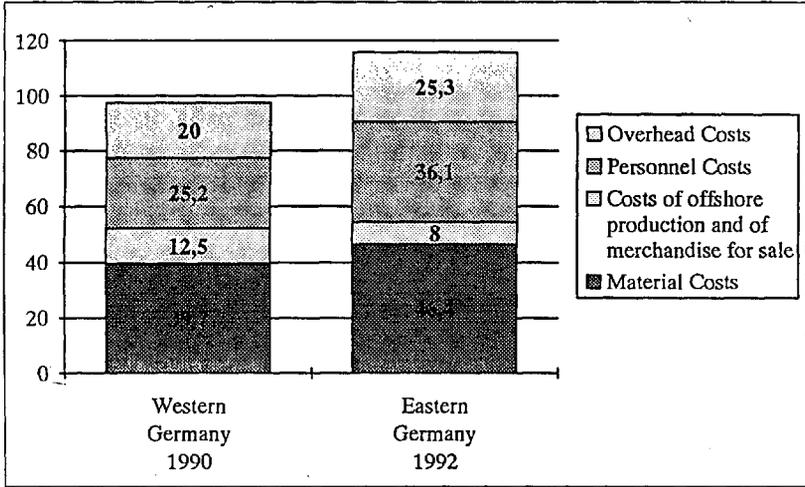
- The position of companies in price competition is still extremely weak (Table 10). Producer prices in Eastern Germany remained almost stable in the last two years. The only branch able to increase prices slightly was the food industry which produces mainly for local markets where competition is lower than elsewhere.
- Employment is now approaching the "bottom line". Jobs in management and maintenance, e.g., are in some ways comparable to fixed overheads, some production jobs may become obsolete, if continuous automated processes are used. Under such circumstances manpower can be reduced only by closing down entire production units.

Table 10 - Producer Price Indices of Eastern and Western German Manufacturing 1991 and 1992 (1989=100)

	Eastern Germany		Western Germany	
	1991	1992	1991	1992
Total Manufacturing	58.6	58.7	102.3	105.1
of which:				
Basic goods	51.8	51.4	100.2	99.0
Capital goods	64.8	64.2	105.8	108.7
Consumer goods	52.0	52.1	105.2	107.1
Food, drink, tobacco	67.4	69.9	101.9	105.5

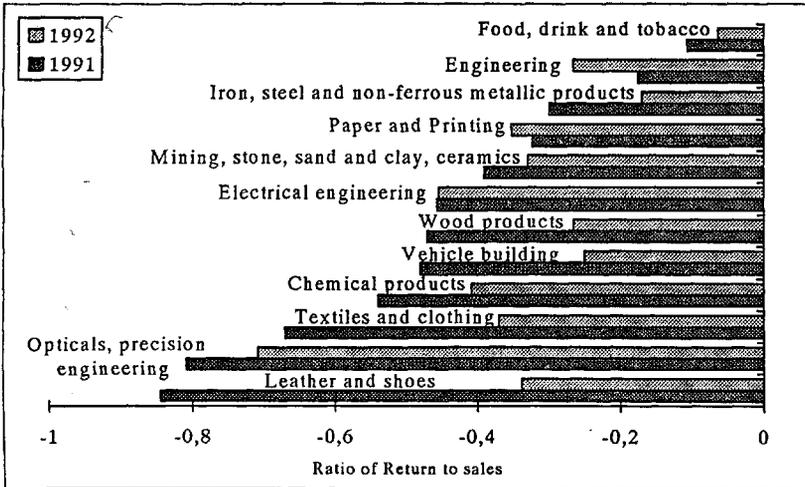
Source: Statistisches Bundesamt; own calculations.

Graph 2- Cost Structure in Eastern and Western German Manufacturing (in percent of gross output)



Source: Statistisches Bundesamt, Institut für Wirtschaftsforschung Halle.

Graph 3- Return on Sales of Treuhand-Companies in Selected Branches (1991, 1992)



Source: Treuhandanstalt.

Table 11 - State of Privatization of Eastern German Manufacturing by Branches  
(February 1993)

	Total enterprises		Of which (p.c.)(a)		
	No.	p.c.	Completely privatized	In Treuhand-ownership	
				In liquidation	To be privatized
Manufacturing	5 494	100	40.1	24.9	12.8
of which:					
Chemical industry	254	4.6	43.7	22.8	16.1
Plastic, rubber and asbestos industry	177	3.2	37.3	27.7	7.3
Stone, sand and clay industry, fine ceramics	455	8.3	55.6	14.5	7.9
Iron, steel and non-ferrous metal industry, foundries, steel forging	246	4.5	38.2	21.1	22.4
Constructional steel	202	3.7	38.1	14.4	17.3
Engineering	1 105	20.1	42.9	20.6	17.0
Vehicle building industry	360	6.6	55.0	15.3	11.4
Precision engineering, opticals, watches	79	1.4	36.7	32.9	8.9
Metal products, musical instruments, toys, jewellery	324	5.9	28.4	32.4	11.7
Wood processing	502	9.1	31.5	28.7	11.8
Paper and board, printing	239	4.4	51.0	24.3	8.8
Leather and leather products	170	3.1	17.6	50.0	12.9
Textiles, clothing industry	520	9.5	17.9	40.2	18.7
Food, drink and tobacco	861	15.7	47.4	23.9	5.9
(a) Difference: already closed down, given to the former owner or to municipalities, partly privatized.					

Source: Treuhandanstalt.

Many companies will be unable to meet the requirements on their own. It is therefore a matter of greatest urgency that private investors are found for the companies currently owned by the Treuhandanstalt. What is needed are investors able to modernize productivity plants, restructure the product range and improve sales figures. In February 1993 only 40 percent of industrial firms were completely privatized, 25 percent were in liquidation, 12 percent were still offered for sale. It is not surprising that the share of Treuhand-companies in liquidation is the highest in the leather, textile and clothing industry. It is not surprising either that in the stone, sand and clay industry as well as in the printing industry and in those producing food, drink and tobacco only a handful of companies are still to be privatized (Table 11).

#### IV. The Prospects: Some Keystones for a Projection

What can we learn from the facts presented? We find an ongoing decline of industries producing goods saleable in international markets and a revival of industries producing goods for local markets. That is exactly what we could expect in the short run: an economy in which incomes are mostly based on external transfers must have a relatively large non-tradable sector. However, this cannot be a scenario for the long run. In a small open economy the expanding branches of the future must be found mainly among industries which are able to produce competitive tradables. These are exactly those which are on the decline right now.

It is hard - if not impossible - to predict precisely which branches will rise and which will decline. The figures for sectoral growth and decline over the last three years do not supply sufficient information about the direction and the scale of adjustment necessary to overcome the crisis. The period is too short to enable a numerical projection of the long-term trends. This is a big challenge for forecasters. They must solve their task in the framework of a more general evaluation of the diverse economical and political factors which may be relevant for the development; the computer can only give limited assistance. At present only some keystones for such a projection can be provided.

##### 1. General Prospects

There are good reasons to argue that - despite all the existing substantial handicaps - the transformation and integration of the eastern German economy will be successful. The dramatic decline of the industrial sector has been inevitable in the short run - as a precondition for a catch-up in the long run. It is by no means justified to argue that the eastern parts are on the way to become Germany's Mezzogiorno.

This optimism, of course, cannot only be based on reasoning but it must be supported by facts:

- The most encouraging sign is the huge - private and public - investment. Although a lot of investment projects are still blocked by several bottlenecks (by the privatization process and by the sluggish establishment of the administrative machinery) investments into the productive capacities and the physical infrastructure are rising steadily. In 1993 fixed capital investment of 131 Bill. DM is expected, in 1992 the amount was 109 Bill. DM and in 1991 only 83 Bill. DM (Arbeitsgemeinschaft, 1993). Great parts of the capital stock are now renewed completely, and investment projects will incorporate the most modern technologies. The eastern German telecommunication system, e.g., will soon have a higher standard than the western German one.

- Another positive factor is the growing transfer of knowledge, as the result of privatization and investment from western firms. In many cases the old management was replaced completely; the management deficits in the former socialist firms proved to be one of the most important bottlenecks in the restructuring process.

Consequently, one can expect that a number of companies and industries in eastern Germany is going to start strongly in the near future - when huge investments in fixed and human capital materialize in production and employment. The completion of the two new car plants of Volkswagen and General Motors in Saxony and Thuringia in 1993, e.g., will push production figures in the automobile industry to some hundred thousand units annually. Recent statistical figures suggest that the adjustment process is well under way in other branches too.

## **2. Sectoral Dualization**

Due to the public subsidization of capital and labour there will emerge a dual economy in the industrial sector. On the one hand the government pushes private investment by a generous aid package (which amounts to an effective rate of subsidization of between 30 and 50 percent). The new plants (mostly built up from scratch) will be highly capital-intensive - and probably with a much higher degree of automation than in the west. On the other hand the government backs employment: directly by financing several labour market measures, indirectly by pressing the Treuhandanstalt to open its deep pockets for loss-making firms. Consequently, it delays the decline of the old industries (steel, ship building, textiles) which face gloomy long-term prospects. Basically, this dualization will be in many respects a duplicate of the development in western regions in the 1970s and 1980s. However: while the sunset regions in the west - after restructuring - were left with still tolerable unemployment rates of 10-15 percent, the rock bottom of unemployment in the east must be expected to amount to more than 20-25 percent of the labour force for a long time (The Kiel Institute of World Economics, 1992).

It is not possible to predict the emerging sectoral structure of the eastern German industry in detail. In its modern parts it cannot just become a precise duplicate of the western German industry. Huge subsidies on investment encourage to build up capital-intensive production facilities. It is by no means a matter of course, that the German automobile industry decided to establish two ultra-modern new plants in Saxony and Thuringia - although the normal case is to relocate production to low-wage countries. Currently, it is hardly possible to reach definite conclusions in this respect.

### 3. Regional Agglomeration

Within eastern Germany it can be expected that the industrial heartlands of the pre-war period in Saxony, Saxony-Anhalt, Thuringia and South-Brandenburg will have the best prospects for a re-industrialization. Notwithstanding the current chronic structural problems they are attractive locations for investment. The most important advantage of these regions is perhaps that they are geographically well placed at the crossroads between Europe's west and east. With the re-establishment of trade and transport links to the east, the artificial handicaps will disappear soon. The most likely winner will be the surroundings south of the capital Berlin which is becoming the seat of the German government. Many firms may relocate their headquarters from Munich, Frankfurt or Cologne where they moved after World War II. However, due to their relatively high wages compared to neighbouring regions to the east - especially Bohemia, Moravia and Silesia with their formidable industrial tradition - they will be no place for establishing "prolonged workbenches". The new automobile plants of Volkswagen and General Motors, e.g., are not restricted to pure assembly lines, but include manufacturing of parts and components as well. Moreover, they will include cheap input suppliers in Central East European countries into their facilities network. As a consequence, a new "borderline economy" will emerge based on the division of labour between low-wage and high-wage countries.

### 4. Industrial Networks

Recent trends in manufacturing can be characterized by an ongoing process of internationalization, specialization, diversification, decentralization and tertiarization (Klodt, Schmidt, 1988). Producers are in search for new forms of organizing sourcing, production and sales. Special attention is paid to new concepts such as "lean production" - aiming to lower the degree of vertical integration. In order to implement the new concepts they need an efficient network of supplies. Those must be located in the vicinity of the plants guaranteeing "production just in time". With the exception of the automobile industries the new concepts have not fully materialized anywhere.

Eastern Germany could become a place for practical experiments in a big way. Typical candidates for network production are the chemical industry, the automobile industry or the iron and steel industry. Consequently, the Treuhandanstalt's strategy is to enable such links to be established. In the chemical industry, e.g., it tries to restructure and privatize bundles of enterprises which are strongly interrelated. In these cases it digs deep in her pockets - in order to preserve the agglomerational advantages of well-developed industrial networks.

## V. The Policy Conclusions: Capital or Wage Subsidies?

While in the sense of a causal therapy capital subsidies have been widely accepted as an instrument for a quick renewal of the eastern German capital stock, the role of wage subsidies has remained controversial. The most striking argument against them has been that the causes for the collapse of the old industries can surely not be cured by wage subsidies (Schatz, Schmidt, 1992). However, the front line against this instrument seems to be weakening as the political establishment falls increasingly under pressure to stop the de-industrialization. The debate has been triggered off by a political carelessness of the German Chancellor who promised to preserve "the industrial core". But what is the "industrial core" of an industry which has lost three quarters of its capacity? Is it the remaining torso of the ailing firms in the shipbuilding, iron and steel or engineering industries? And, is it likely that these industries will become viable at any time? There is a great danger that wage subsidies will prolong the crisis in certain sectors and regions and perpetuate the structures of a dual economy. The choice of what to subsidize is not free but has its price.

There are three major deficiencies of wage subsidies as an instrument for supporting the adjustment process. They

- discriminate against viable and competitive enterprises;
- do not give adequate incentives for adjustment, thus they introduce allocative distortions, causing inefficient structures of production;
- can easily degenerate into a self-perpetuating mechanism that leads to permanent intervention in the labour market (Schmidt, Sander, 1993).

The policy for German economic unification is defined in terms of the long run economic performance of the eastern part, and that is the right way. The relevant question to be asked is: how can the profitability of investment in eastern Germany be raised at best? From a theoretical point of view the answer is clear: capital subsidies are superior to wage subsidies. They will massively direct capital from the west to the east - and that is the only way to catch up quickly. An artificial reduction in labour costs, however, will hamper the renewal of the capital stock, especially if the subsidies are intended to be granted only temporarily.

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