Volume Title: The Transition in Eastern Europe, Volume 1

Volume Author/Editor: Olivier Jean Blanchard, Kenneth A. Froot, and Jeffrey D. Sachs, editors

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-05660-0

Volume URL: http://www.nber.org/books/blan94-2

Conference Date: February 26-29, 1992

Publication Date: January 1994

Chapter Title: East German Economic Reconstruction

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Chapter URL: http://www.nber.org/chapters/c6019

Chapter pages in book: (p. 155 - 190)

5 East German Economic Reconstruction

Rudiger Dornbusch and Holger C. Wolf

In the last resort, labor productivity is the most important, the decisive factor for the victory of the new society.

V. I. Lenin

In November 1989 the Wall came down. Less than a year later the former German Democratic Republic (GDR) had fully adopted the West German economic, legal, and institutional framework. In July 1990 the currency reform took place, and by October of that year the German Democratic Republic had ceased to exist. Monetary, social, and economic union was accomplished almost by the stroke of a pen. The radical transition sent a clear signal that the break with the past was both complete and irreversible, thus setting the basis for a rapid restructuring.

The immediate effect of unification on East Germany's economy was nothing short of radical. The five new states are now in the midst of a depression that economically, although not socially, dwarfs the Depression of the 1930s. GDP fell by almost 30 percent (see fig. 5.1), and industrial production stands at less than 50 percent of the 1989 level. Unemployment, including short time and public works programs, exceeds 30 percent of the labor force (see table 5.1). Eighteen months after unification, the output and employment decline appears to have been arrested; the first signs of recovery are visible. Yet the turnaround rests on massive transfers—DM 139 billion in 1991 and an estimated DM 180 billion in 1992.[1]

The challenge and the big question is how to move from here to a viable economy, with far higher productivity, far higher employment, and sharply reduced transfer payments. Nobody entertains an illusion that this can be accom-

The authors gratefully acknowledge financial support from the National Science Foundation and the Center for European Studies, Harvard University. Comments from participants at the conference—especially Olivier Blanchard, Stan Fischer, Larry Summers, and Janet Yellen—helped improve the paper. The weekly research and statistical reports of the Deutsches Institute für Wirtschaftsforschung in Berlin provided a valuable resource that deserves special recognition.

1. See Deutsche Bundesbank, *Monatsberichte* (March 1992).

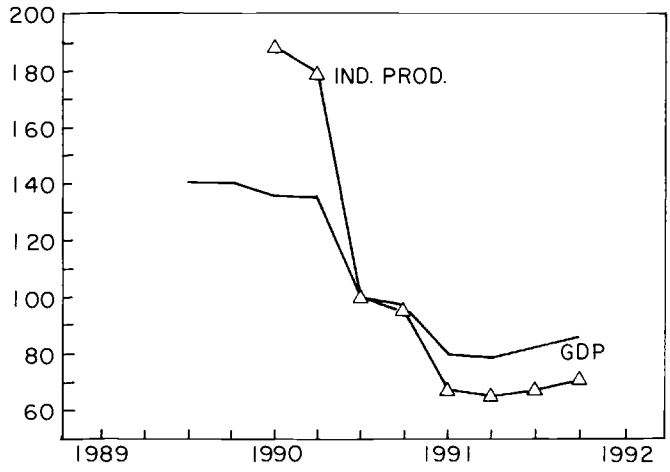

Fig. 5.1 GDP and industrial production (index 1990: 111 = 100)

Table 5.1 Key German Data, 1991

	West	East
GDP (billion DM)	2,502	193.1
Employment (millions)	29.0	7.3
GDP/employment	86,341	27,034
Annual wage (DM)	44,640	19,920
Consumption per capita (DM)	21,600	12,300
Unemployment (%)[a]	4.8	29.5
Transfers (% of GDP)	5.5	72.9

Source: DIW Wochenbericht, nos. 1–2 (1992); Sachverstandigenrat (1991).

[a]Including short work (50 percent), public work programs, retraining measures, and forced early retirement (in 1990 prices).

plished in a year or two, but can it be done in ten or fifteen? And, even if it can be done in ten or fifteen years, is that long a transition politically acceptable?

The interesting questions today lie in two directions. One set of queries concerns the transition and the policies that were used. The decline was to some degree inevitable: the bill for forty years of mismanagement, inefficient resource allocation, and environmental neglect came due overnight. Yet one may ask whether the one to one conversion and the acquiescence in massive wage increases following unification significantly worsened the collapse and, if so, whether there were plausible alternatives? The other set of problems concerns policy choices in the area of privatization, restructuring, and subsidies. Should policy focus on maintaining employment, or should it accelerate the transformation; is it more important to move companies into private hands at any

price—in terms of revenues and of job losses—or should policy focus on getting deals that lock in restructuring.

This paper reviews the transition experience in East Germany and comments on the policy choices and results in four areas:

- The monetary reform and the conversion question
- The collapse of production
- The privatization debate and experience
- The migration issue

Before entering the detailed discussion, it is worth offering some perspective. The political decision by Chancellor Kohl to take a plunge—financially and economically—was dramatically bold. While there is, of course, an important purpose served in discussing how things were done and how they might have been done, the basic fact is that East Germany is experiencing a radical economic transformation that will make it viable in not too many years. The transformation costs a fortune, it is painful, it could not be done without the special intra-German relation, but it is working. One view is that it will take a generation; we believe, however, that most of the work will be done in fifteen years.

One wonders how, with far less external support, the other post-Communist societies can expect to make their transition. One possible answer is that they will not. The other is that they do not suffer the special German handicap of unification with wage parity in sight but with productivity far out of line.

5.1 The Conversion Issue

The conversion debate involves three separate questions.[2] The first deals with the sanitation of balance sheets of firms and banks at the time of the monetary reform, the second has to do with the appropriate rate of conversion for monetary assets of the public, and the third concerns the choice of a conversion rate for current payments, specifically wages.[3]

5.1.1 Balance Sheets

On the asset side, the national balance sheet of East Germany contains state-owned property ranging from real estate and forests to shops, pharmacies, and *Kombinate*. On the liability side are the monetary holdings of the public and external debts. It is apparent that, at this stage, *internal* debts did not represent a net liability of the public to the government. In the consolidation of banks and firms—both state owned—they simply canceled out. Moreover, since these debts bore no relation to the future earning capacity of the firms, and

2. For a comprehensive treatment of the monetary aspects of unification, see Nölling (1991).
3. For a detailed institutional discussion and an assessment, see Lipschitz and McDonald (1990).

since their cancelation would have most assuredly not have had any moral hazard connotations, they should simply have been written off.

The sale price of Treuhand enterprises could in principle be altered to reflect the debt holdings. But one cannot help gaining the impression that, had debts been canceled, banks and firms would now have cleaner balance sheets and debts would be no extra, unnecessary complication throughout the system. In the present setting, the Treuhand employs debts as a negotiating point, assuming debt sporadically to render enterprises more palatable to potential buyers. By this circuitous route, a sizable fraction of debt will eventually end up in the federal budget anyway, but in a manner that further obscures the role of the Treuhand and the responsibilities of managers.

5.1.2 Monetary Conversion

The second aspect concerns the conversion of monetary assets (see table 5.2). The reason that the conversion rate for monetary assets receives such central importance is, of course, that, for most East German households, money constituted the dominant part of overall asset holdings. Other financial instruments did not exist, nor, with few exceptions, did directly held real assets.

In the year prior to reform, the black market rate had reached seven ostmarks to the deutsche mark, falling off toward the conversion date in response to the public discussion of the likely conversion rates. The actual conversion rate—on average 1.6 ostmark per deutsche mark—resulted from a one to one rate of conversion for assets up to a certain level, with special provisions for certain groups, and a rate of two to one for the remaining assets. The argument for a favorable conversion rate here is primarily political: not to disappoint asset holders/savers on day one of the new money and the new market. Of course, the drastic reduction of money balances in the 1948 reforms did not prevent high saving rates in the 1950s, suggesting that political considerations were preponderant.

The monetary conversion did *not* involve a transfer from the West to the East. Rather, in the East, bank balances were simply redenominated from ostmarks into deutsche marks. Actual deutsche mark cash required to meet with-

Table 5.2 **Balance Sheet of the Credit System (postconversion, billion DM)**

Assets		Liabilities	
Domestic credit	180.7	Deposits	156.0
Foreign assets	36.3	Enterprises	27.8
Other	29.0	Foreign liabilities	55.6
Total	246.0	Currency	6.8
		Other liabilities	27.0
		Total	246.0

Source: Lipschitz and McDonald (1990).

drawals was obtained from the Bundesbank by borrowing at the discount rate. With this arrangement, the choice of the conversion rate involved a redistribution among various holders of monetary assets—rich and poor—and an intergenerational redistribution. Favorable rates of conversion for households, without a correspondingly burdensome conversion rate for debtors, redistribute wealth toward the current generation.[4] This implies a reduced incentive to save and an increased burden, at least in the short run, for the West, which underwrites the solvency of the system. While ultimately the burden might be paid out of net revenues from the operation and liquidation of state property, that prospect appears increasingly illusionary.

5.1.3 Wage Conversion

In the run up to monetary union, one of the hottest questions concerned the rate chosen for wage conversion. Interestingly, from the present perspective, it seems altogether a moot issue. Not moot, of course, is the question of how wage parity without matching productivity will work out for growth and productivity.

At the time of conversion, East German wages were roughly one-third those in the West (at a one to one exchange rate), and East German productivity was about one-third that of the West. Thus, a one to one conversion rate seemed broadly plausible. The black market rate, however, had been as high as seven, and the "shadow" exchange rate that priced the resource cost of one deutsche mark's worth of exports corresponded to an exchange rate of four ostmark per deutsche mark. The Bundesbank argued strongly against the one to one conversion: in their view, a far less favorable conversion—two to one—was essential to make East Germany competitive and hence to avoid an employment or a fiscal disaster.

As it turned out, the one to one conversion had no lasting effect on relative wages: since the conversion, wages in the East have increased steadily, and outright parity is the avowed objective of unions on both sides. Parity, in time, seems also to be accepted by politicians, for whom a two-part society is basically unacceptable. Of course, a two-part society cannot really be avoided: rather than having a sizable income gap dividing East and West, the line is now increasingly drawn between those who are and those who are not employed.

The push toward wage parity is the outcome of a game between unions aiming to minimize labor market competition and a government all but forced to generously underwrite unemployment, actual or hidden. The solution to that game is a high-wage strategy in the East, fatally driving toward wage parity at least in the organized sectors at the cost of large-scale unemployment (cf. Brauninger 1991; Burda and Funke 1991; and Franz 1991).

4. If households responded immediately to their new opportunities in goods or assets markets, the East German banking system would not have been viable. Public infusion of capital would have been required, financed by public borrowing.

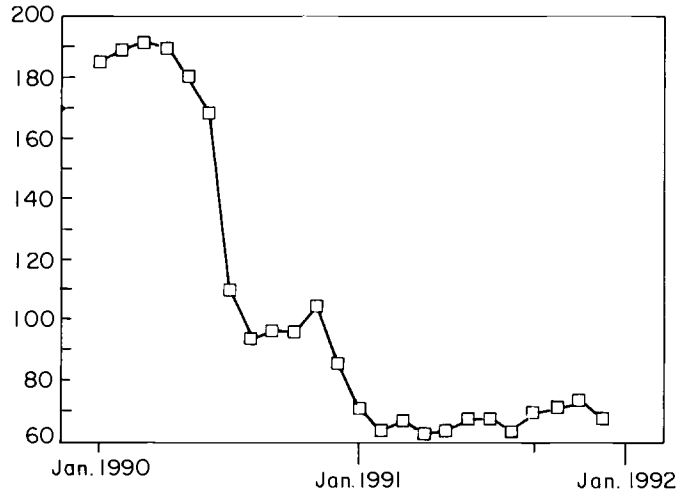

Fig. 5.2 Industrial production (index 1990: 111 = 100)

5.2 The Output Collapse

The rapid transition resulted in a severe initial decline in production.[5] Output in the manufacturing sector fell by half within a few months (see fig. 5.2). This section tries to determine why output dropped so sharply.

Before proceeding to details of the decline in activity and the range of explanations, it is interesting to put the output collapse in perspective, comparing East Germany with other transition economies. The striking difference is the dramatic extra decline in 1991, which comes on top of an already large fall in 1990 (see table 5.3).

The decline in production has been matched, with a lag, by a decline in employment. While the official unemployment figure remains relatively small, very sizable fractions of the economically active population have shifted into quasi unemployment in various forms, including short work,[6] retraining, early retirement, and public work programs, or have withdrawn from the East German labor force (see table 5.4).[7]

Total employment has fallen by more than 2 million; a further 1.6 million employment relationships are conditional on public support. In the aggregate,

5. For comprehensive treatment, see Burda (1990), Neumann (1991), Siebert (1990, 1991), and Sinn and Sinn (1991).

6. The short work regulation allows firms to retain workers while shifting the major part of wage costs to the unemployment insurance agency.

7. Prior to unification, East Germany boasted the world's highest female labor force participation ratio. After unification, the cutback in day-care centers forced a sizable reduction in the ratio. In addition to a reduction in the female labor force, some 450,000 economically active individuals moved to West Germany.

Table 5.3 Output Collapse in Transition Economies (% changes)

	GDP		Industrial Production	
	1990	1991[a]	1990	1991[a]
Czechoslovakia	−3.1	−10.0	−4.0	−10.0
Hungary	−5.0	−5.0	−8.5	−8.0
Poland	−13.0	−6.0	−27.1	−12.0
East Germany	−13.3	−20.0	−53.9	−18.6

Sources: DIW Wochenbericht, nos. 1–2 (1992); Sachverstandigenrat (1991).
[a]1991 figures until fall.

Table 5.4 The Labor Market: East Germany (thousands)

	1989	1990	1991	1992[a]
Labor force	9,861	9,153	8,165	8,142
Employed	9,861	8,916	7,250	6,798
Dependent	9,678	8,597	6,735	
Independent	183	319	515	
Unemployed	0	237	915	1,343
Commuters	2	−89	−365	−500
Short work	0	758	1,640	520
Public works	0	3	185	393
Training	0	14	110	435

Sources: Sachverstandigenrat (1990, 1991); *DIW Wochenbericht,* nos. 5–6 (1992); BMWI (1992).
[a]January or last observation.

the active labor force has declined by more than 40 percent since 1989. A comprehensive measure of unemployment approaches one-third of the labor force.

The decline in employment is particularly acute in the industrial and the agricultural sectors. In industry, estimates of the medium-term labor force reduction center at 50–60 percent of initial employment. In contrast, employment in the service sector remained fairly constant, with substantial increases in the highly skilled professions.

While the decline in production dominated the decline in employment during the second half of 1990, the further reduction in employment during 1991 at fairly stable output levels resulted in an increase in measured productivity and turnover per employee. In the aggregate, turnover per employee remains, however, at a quarter of the West German level and thus substantially below relative production costs.

As a result of wage increases in excess of productivity increases and declines in producer prices, wage bills for a large fraction of the East German enter-

prises exceed net value added at factor costs. The net losses are covered by Treuhand liquidity loans and asset sell-offs.

5.2.1 Output and Spending

From the GDP accounts, it is immediately apparent that *all* individual components of real demand increased between 1989 and 1991 (see table 5.5). Thus, a fall in absorption cannot explain the decline in output. Second, the dramatic increases in imports—equal to half of 1989 real GDP—dominates by far any other development.

Additional information comes from the sectoral breakdown of GDP (table 5.6). The aggregate decline reflects primarily the sharp drop in industrial output. In other sectors, there was either expansion or at most a moderate drop. Sectors with high nontradable components, in particular construction, printing, and services, face high demand, while tradables sectors went into a steep decline. Thus, computer production virtually vanished, while printing expanded.

The data suggest two questions. First, what happened to the composition of demand? Second, with so much of a fall in industrial output, how could the demand for nontraded goods stay high?

The second question has, of course, an immediate answer in the massive transfers from the West that in various forms, including unemployment compensation and the financing of short work, sustained disposable income and hence kept up real aggregate demand (table 5.7). This explanation draws immediate attention to the problem of continuing transfers. Without transfers, disposable income would fall by 40 percent or more, and that would mean a collapse of demand for the entire domestic sector. Transfers are therefore bound to stay for a long time, although there is an important question of how best to target them.

As to the composition of demand, there is no surprise in the expansion of services and construction. The former did not substantially exist in the GDR and therefore will be built up increasingly over the years to come. The expan-

Table 5.5 **GDP Decline by Component (billion DM, constant 1990:2 prices)**

	1989	1991	Contribution to GDP Change (%)
GDP	281.2	196.0	−30.2
Consumption	155.1	181.5	9.4
Government	71.3	76.5	1.8
Fixed investment	51.4	63.0	4.1
Inventory investment	17.0	19.5	.9
Net exports	−13.5	−145.0	−46.7
Exports	49.9	61.0	3.9
Imports	63.4	206.0	−50.7

Source: DIW Wochenbericht, no. 33 (1991), nos. 1–2 (1992).

Table 5.6 **Value Added (billion DM, quarterly rates, not seasonally adjusted)**

	1990:1	1990:3	1991:1	1991:3
Agriculture	1.7	2.8	1.1	2.4
Industry	34.8	15.0	11.2	9.5
Handicrafts	4.2	5.0	4.5	5.5
Construction	4.2	4.8	3.8	6.1
Trade	3.5	3.3	2.2	2.2
Services	8.1	9.0	10.5	9.0
GDP	70.5	54.0	45.7	46.4

Source: DIW Wochenbericht, nos. 51–52 (1991).
Note: All data in prices of second half year 1990.

Table 5.7 **Income and Consumption (billion DM)**

	1990	1991	1992[a]
Disposable income	182.3	206.0	251.51
Net wages and salaries	116.3	102.0	116.0
Transfers	45.7	72.0	89.5
Distributed earnings	28.0	43.0	58.5
Deductions	7.7	10.5	12.0
Private consumption	175.2	201.5	232.0

Source: DIW Wochenbericht, nos. 1–2 (1992).
[a]Forecast.

sion of construction reflects the extraordinary state of disrepair of the housing stock, the availability of materials, and the need to create an infrastructure for the service sector. The relative ease of construction—in terms of skill requirements, lumpiness, credit, and planning—further helps understand the early expansion. Not surprisingly, construction is booming.

The remaining question then concerns the collapse of industrial output.

5.2.2 Industrial Output Decline

Complementary explanations for the dramatic fall in industrial output include the following: markets disappeared in the former CMEA (Council for Mutual Economic Assistance) trading partner countries; consumers shifted to Western goods because of availability or cost competitiveness; firms were caught in a cost-price bind where they could no longer profitably produce. Production might have declined because management was unable to cope with the breakdown of the traditional organization of input supply and output marketing, which gave way to a market economy.

The most immediate source of a decline in production has to do with firm closing by the Treuhand. A case in point involves the production of automobiles—the Trabant. But closing down of firms has so far not been pursued on

a very wide scope, and thus important reasons for the fall in output must be looked for elsewhere.

The next reason for output decline has to do strictly with the supply side: firms faced a radically different set of relative prices. Wages increased, and so did materials prices, while many other inputs became freely available at much lower prices, requiring a radical behavioral change. At the same time, the shift to markets entailed a near complete depreciation of the organizational human capital of Eastern managers: the procurement abilities that characterize the successful manager under central planning are of little use in a market environment. The disruption of the status quo often translated into bottlenecks in material supplies or in an inability to maintain markets in the new environment.

On the demand side, the collapse of CMEA trade, shown in table 5.8, is an important part of the story. The decline is partly explained by the disruption and recession in the partner countries—CMEA trade in 1985–88 averaged 71 percent of East German exports. Substantial export credits and guarantees help sustain exports to Eastern Europe and especially to the former Soviet Union. Moreover, prices of exporting firms do not yet fully reflect costs. Liquidity credits and increasingly sales of productive assets still finance the discrepancy between costs and prices. The fall in demand from this region is not only explained by disruption but is also a reflection of the broader choice now available to the former partner economies and, of course, the exchange rate.

Although trade is an important element of the demand collapse, we should look mostly to domestic demand. A key factor in reducing demand was, however, surely the new and radical competition from the West. Overnight, all barriers to imports were eliminated, and Western goods, distributed by Western firms, became completely accessible. Thus, even though total consumption spending rose (in constant prices), the demand shifts toward Western goods far outweighed the increase in spending. Particularly in the initial opening, import penetration at the retail level reached in some areas as much as 90 percent (table 5.9). It is worth recording that those goods that did survive the initial test are now making a comeback. A case in point is a champagne with the brand name "Rotkappchen."

Interestingly, the import penetration is not focused exclusively on West German goods. For example, of 1991 new car registrations in the East, 56.6 percent were actually foreign, with only 6.3 percent coming from former CMEA partners (*Die Welt*, 2 February 1992).

Table 5.8 **East German Merchandise Exports (billion DM)**

	Total	CMEA	Other
1988	40.2	30.1	10.1
1989	41.1	29.8	11.3
1990	38.1	30.5	7.6
1991	17.9	12.1	5.8

Sources: Sachverstandigenrat (1991); Deutsche Bank (1992).

Table 5.9 **West German Goods on East German Shelves (West German goods as % of retail sales)**

Margarine	35	Fat	76
Cooking oil	41	Fruit yogurt	90
Detergent	53	Chocolate	96
Black tea	66		

Source: Die Zeit, 28 September 1990.

In judging the shift into imported goods, it would be a mistake to emphasize availability exclusively. Price clearly did matter—East German citizens bought cheaper cars than West German citizens. East Germany clearly did not have a substantial price advantage. With nominal wages rising in excess of productivity, prices were high, and firms lost output owing to reduced demand.

Interdependence effects must also have played a role. To the extent that the production decline occurred at the stage of final goods, there was a feedback to intermediate goods that were no longer demanded and hence, in the absence of alternative markets, no longer produced. The extreme inflexibility of the planned economy may have seriously aggravated the effect of final demand reductions throughout the production system.

5.2.3 An Assessment

Few observers would have predicted so dramatic a fall in production. The question arises why output in other East European economies declined so much less. Part of the answer lies clearly in the exchange rate or wage level: in East Germany, consumers could afford to buy Western goods, and they did splurge, more so because the prices were not at all out of line with the prices of similar (although "inferior") East German goods.

Poland had only moderate protection and thus offers a good comparison. The chief difference in the degree of import penetration comes from two sources. First, East Germans were already introduced to West German goods via the widely watched West German television. Second, in the case of East Germany, the West German firms organized the import and distribution of West German goods drawing on their experience and their resources. In the Polish case, this was done predominantly by small-scale Polish traders without scale and capital and thus with a far larger handicap. In addition, of course, the purchasing power of Polish wages in terms of foreign goods was minimal compared to that of West Germany after unification.

In the Czech and Slovak Federal Republic or Hungary, by comparison, trade restrictions continued at substantial levels up to the end of 1991 and in some measure even beyond. Moreover, even in the absence of trade restrictions, imports were forbiddingly expensive, and hence the demand shift was far less. The economies have in common, however, that much of industrial restructuring still lies ahead. In Germany, the availability of substantial transfers will cushion the blow, and investment will have to create high-wage jobs. In the other East

European economies, a supercompetitive exchange rate will have to be the chief mechanism for creating new employment as inefficient operations are streamlined.

In conclusion, there is no single explanation for the dramatic output decline. But, if a summary explanation is to be given, it has to be the combination of an overnight eradication of all trade barriers in a situation where product alternatives were known, products were made available instantly by the West, and wages were high enough to make large-scale import spending possible and optimal. That makes the East German case very special.

5.3 Privatization

The transition economies confront the dual problem of overall capital deficiency and misallocation of the existing resources. Ideally, the privatization process solves both problems by channeling resources to salvageable firms while freeing inefficiently allocated resources through the liquidation of nonviable enterprises. This section reviews the operation of the Treuhand and assesses its success and the prospective difficulties.[8]

5.3.1 Treuhand Organization

The hard-line stance of the Honecker government yielded an unexpected benefit to the East German privatization process: shunning partial reform, the socialist regime retained ownership of most productive assets under central control, eliminating the problem of "spontaneous privatization" and enabling the wholesale transfer of ownership to a newly founded agency, the Treuhand (THA).

At the time of its inception, the THA assumed ownership of approximately 95 percent of the enterprise sector, comprising some 9,000 industrial firms, 20,000 commercial enterprises, 7,500 hotels and restaurants, and 40 percent of the total land area, with a total employment of 3 million. The Treuhand is charged by law with privatizing the enterprises under its control, enforcing budgetary discipline, encouraging know-how transfers, fostering the creation of a competitive economic system, and stimulating capital inflows. Residual revenues from privatization are to be used as compensation for the losses incurred by the East German savers during monetary unification, thus implicitly obliging the Treuhand to extract substantial revenues form the privatization process (see table 5.10).

The THA provides liquidity assistance to enterprises, services debt, and can assume environmental liabilities and claims arising from ownership disputes. The Treuhand enjoys near complete authority over the enterprises under its control, including liquidation and separation into subunits. It is thus fairly unrestricted in the manner in which it can discharge its obligations, facing neither

8. For extended expositions of privatization, see Beirat (1991), Bos (1991), and Sinn (1991).

Table 5.10 Treuhand Budget, 1991 (billion DM)

Revenues	37.7	Expenditures	37.7
Privatizations	15.8	Interest and principal	13.8
Others	1.1	Restructuring of firms	12.9
Deficit	20.8	Cost of sales	4.8
		Other	6.2

Source: Bos (1991).

detailed de facto supervision nor binding deadlines for the completion of its tasks.

5.3.2 Treuhand Strategy

The wide leeway to customize notwithstanding, the Treuhand has implicitly adopted a set of policies.

Single Owners

The survival of many enterprises in the transition economies depends on their ability to attract a "foreign" investor willing to transfer process know-how, management, and marketing skills. The incentive for investors to become "active" depends positively on the stake held. Privatization plans consequently tend to include a role for majority shareholders (e.g., Blanchard et al. 1991; Lipton and Sachs 1990; and Tirole 1991). The Treuhand has pushed this consideration to the limit, concentrating on selling the entire object to a single buyer.

Most of the mammoth *Kombinate* cannot of course be sold as an entity. To obtain privatizable units, the Treuhand has begun to split enterprises into "core" and "noncore" businesses, to be sold separately. The breakup of *Kombinate* and even of smaller operations thus represents an important simplification.

Criteria

In deciding on a privatization proposal, the Treuhand places weight on investment and employment guarantees in addition to the price offered. Potential investors are required to submit a detailed restructuring plan, including proposed investment and employment levels. Both proposals are binding; violators incur a contractual penalty.

Liquidity Credits

With few exceptions, the Treuhand has presumed enterprises to be salvageable by default until balance sheets have been drawn up and approved, providing liquidity credits in the meantime.[9] After the completion of the balance

9. Some 80 percent of enterprises have received liquidity credits.

sheets, liquidity credits for the two lowest-ranked enterprise groups have been discontinued.

Debt

Enterprise debts in the postsocialist economies predominantly reflect arbitrary pricing decisions made under the former regime. By judging enterprise viability on the basis of ability to cover net of debt service outlays, the Treuhand has recognized the arbitrariness of the debt distribution across enterprises. Debts have been de facto consolidated, and enterprises contribute to debt service on the basis of their current and predicted cash flow.

5.3.3 A Case Study: Zeiss Jena

Before unification, Zeiss Jena employed 27,000 workers, predominantly in opticals. In March 1991, the Treuhand offered Zeiss Jena to its Western "sister" company, Zeiss Oberkochen. The THA took on the firm's accumulated debt of $812 million. Zeiss Jena was split into two subunits. Fifty-one percent of Carl Zeiss Jena GmbH was acquired by Zeiss Oberkochen for a price of DM 0.00. The Treuhand provided $375 million in start-up funds and loss compensation until 1995. The new firm employs 2,800 people.

The second unit, Jenoptik, was transferred to the state of Thuringia and retained 7,000 employees. The Treuhand provided $687 million in start-up funds and loss compensation until 1993. In total, some 17,000 jobs have been eliminated, with a per capita compensation of $13,750. Total Treuhand outlays are $812 million for debt, $1.06 billion for start-up funds and loss compensation, and $188 million for job loss compensation, in total $2.06 billion or $212,500 per job saved. Current forecasts view 1997 as the first profitable year for the restructured enterprises.

5.3.4 Outcome Today

After an extended period of preparation, privatization has begun in earnest, with around thirty sales per week. The impressive numbers—more than 5,200 privatizations to date out of an initial stock of 7,100 enterprises (see table 5.11)—are, however, somewhat misleading as the total number of enterprises has increased, reflecting the parceling strategy. Nevertheless, the Treuhand has made very rapid progress, ensuring employment for one-third of the original employees and obtaining some DM 114 billion in investment guarantees.

The overall picture hides substantial sectoral differences. Privatization of small- and medium-scale service enterprises is nearly completed. The transfer of utilities to the local authorities likewise has proceeded largely on schedule. In contrast, the privatization of the large industrial behemoths suffering from obsolete capital stocks, substantial overstaffing, environmental risks, and rapidly disappearing export markets remains sluggish. Privatization from below is proceeding rapidly. While a large fraction of nominal registrations are pres-

Table 5.11 Privatization: Progress to Date

	Jun. 91	Nov. 91	Feb. 92[a]
Cumulative sales (no.)	2,583	4,777	5,584
Employment guarantees (1,000s)	511	857	1,150
Investment guarantees (billion DM)	64	105	140
Total sales revenues (billion DM)	10	16	19
Closings	529	871	983
Management buyouts	...	808	894

Sources: Sachverstandigenrat (1991); BMWI (1992); *Financial Times,* 3 March 1992.
[a]February or latest.

ently inactive, it is estimated that the 435,000 new registrations imply some 175,000 effective enterprise foundations.

On the closure front, the Treuhand has been hesitant. While internal estimates apparently place the fraction of nonsalvageable enterprises at 30 percent and external estimates range considerably higher (Akerlof et al. 1991), as of December 1991 only 983 enterprises, less than 10 percent of existing firms, have been closed.

5.3.5 Problems and Issues

The availability of West German financial and personnel support, political stability, a hard currency, and EEC membership greatly facilitate the East German privatization process. While privatization has picked up, sales and particularly revenues fall short of the initial optimistic expectations.[10] In its annual member survey, the DIHT (Deutscher Industrie und Handelstag) identified concerns about environmental liabilities, a lack of infrastructure, a shortage of experienced local administrations, and legal uncertainty as the major obstacles perceived by potential investors (see table 5.12).

Increasingly, the THA faces three challenges: how much tailoring should go into the privatization process, how to deal with regional issues, and how to resist political pressures surrounding closings of large plants. We briefly comment on these.

Regional Policy

The extreme degree of industrial concentration frequently makes closing an enterprise commensurate with a decision to eliminate the industrial base of a town or an entire region, giving rise to conflicts between the microeconomically justified decision to liquidate a nonviable enterprise and regional policy objectives. For example, a quarter of Sachsen-Anhalt's labor force is employed

10. Detlev Rohwedder, the first chairman of the Treuhand, initially estimated revenues at DM 600 billion.

Table 5.12 **Perceived Investment Obstacles: A Survey**

	Legal Uncertainty	Administration	Infrastructure	Environmental Liabilities
Industry	37	25	24	14
Mining	13	0	4	83
Intermediate goods	34	28	17	21
Capital goods	41	24	26	9
Final goods	33	28	25	14
Construction	42	35	17	6
Trade	42	29	24	5
Services	39	30	26	5
Total	39	27	24	10

Source: Deutscher Industrie und Handelstag, Autumn Member Survey.

Note: Figures are given in terms of percentage of respondents answering affirmatively.

Table 5.13 **Workers per Firm**

Industry	FRG	GDR	Ratio	Industry	FRG	GDR	Ratio
Chemicals	296	1,419	4.8	Light industries	95	671	7.1
Metals	474	3,209	6.8	Textiles	169	1,301	7.7
Mechanical engineering	271	838	3.9	Food processing	125	480	3.8

Source: Schnabel (1990).

in the chemical industry (see table 5.13), estimated to have to shrink by two-thirds in the medium run (see "Man lasst uns nicht sterben" 1991). Privatization and regional policies should be strictly separated: if continuing support for economically nonviable enterprises is regarded as justified, the decision should reflect the political concern for regional balance and be funded outside the privatizing agency. A stronger regional differentiation of investment subsidies would be a promising start.

Auctions

Should the THA sell by auction rather than using customized sales? A criticism frequently levied at the THA holds that a shift to auctions with a sole emphasis on the bidding price would have shifted the valuation exercise to the individuals best informed about the potential of firms, the bidders, while avoiding excess windfall gains. The criticism fails to bite in several respects. First, the Treuhand did not inherit a salable portfolio but had to create privatizable units by recombining resources within the existing industrial behemoths.

Second, social and private valuations of enterprises are likely to differ substantially. In particular, East German firms capable of buying and closing a potential Eastern competitor would have valued the Eastern firm in relation to

the market power rent. By insisting on investment and employment guarantees and hence on a restructuring strategy of the purchaser, the Treuhand reduced the scope for privately optimal but socially damaging asset transfers.

Restructuring and Liquidation

Much of the easily privatizable capital stock has by now changed hands. The Treuhand portfolio is thus becoming increasingly lemon-heavy: in an extensive survey of 1,500 Treuhand enterprises, the DIW concluded that 50–70 percent of the remaining enterprises cannot be privatized in their present state ("DIW Pladoyer für degressive Subvention" 1991),[11] requiring either liquidation or extensive restructuring.

The Treuhand's emphasis on restructuring has attracted widespread criticism. The critics argue that the Treuhand has neither the responsibility nor the ability to restructure: if an enterprise is viable after restructuring, then, surely, a private investor will be willing to undertake the job. The Treuhand, however, enjoys several advantages not available to private investors, in particular, the ability to internalize externalities relating to infrastructure, politics, and industrial structure and the ability to recombine existing assets to create a—roughly restructured—salable enterprise. Restructuring in this broad sense remains desirable.

The real danger over the next few years is the continued support of those enterprises without realistic hope for survival. By pursuing the policy of postponing the bankruptcy of a significant fraction of East Germany's industrial sector, the THA is allocating scarce resources to the stabilization of obsolete economic structures in preference to providing assistance to salvageable sectors. While the cushioning of the adjustment process is desirable, the social safety net must be directed toward mitigating the consequences of the necessary structural adjustment, not toward preventing the adjustment itself. Protecting people, not jobs, is the appropriate outlook. Rapid action on the liquidation front carries an additional political economy advantage: by imposing a front-end liquidation of the nonsalvageable enterprises, the unemployment rate jumps initially rather than increasing over an extended period. Front-loading of the adjustment cost focuses attention on increasing training and employment for displaced workers rather than on halting the rise of unemployment.

5.4 Migration

From the summer of 1989 to unification, some 540,000 East Germans moved to West Germany, followed by approximately 200,000 movers since. In

11. Enterprise managers are substantially more optimistic: while only 10 percent see their enterprises as currently competitive, some 30 percent believe that a competitive state will be reached within a year and a further 44 percent that successful restructuring will be concluded after two years (DIW survey).

addition, approximately 500,000 East German residents commute to work in the West, bringing the total labor force shift to more than 1 million.

The desire to halt migration from East to West Germany provided a major impetus to the course of economic unification. But is such migration really undesirable on purely economic grounds? Given time constraints in the construction of new plants, the alternative "employment in the East versus employment in the West" has not been relevant in the last two years and will remain irrelevant for a large fraction of the East German labor force for years to come. In the end, aggregate welfare arguments do not add up to a convincing case against migration. The concern with migration derives primarily from the distributional implications for wages and a fear that East Germany might be irreversibly hollowed out. Three questions arise. First, were the initial mass migration scenarios realistic? Second, has the policy of wage equalization backfired, inducing unemployment migration where wage migration might not have been a threat? Finally, does commuting obviate the migration threat?

The initial scenarios of mass migration lacked plausibility. Extrapolations based on the migration flows in the first few months following the collapse of the Wall confused stock adjustments with steady-state flows. After the initial wave, migration has amounted to barely 1 percent of the population per annum. Automatic stabilizers, in particular, rising rents and falling employment chances, further reduced migration pressures.

While the initial scenarios exaggerated the migration potential, the possibility of continued westward migration of the young, restless, and skilled, and thereby the transformation of East Germany into a permanently underindustrialized northern *mezzogiorno,* appeared real and was used to justify union claims for rapid wage equalization. Rightly so?

The gain from working in the West cannot be disputed: both the commuter and the migration households experienced real income gains far in excess of the gains achieved by households remaining in East Germany (see table 5.14). In line with initial expectations, the typical commuter/migrant tends to work in industry (26.4 percent), trade (15.9 percent), construction (14.6 percent), or

Table 5.14 **Income Effects of Commuting and Migration**

	All Households	Households with Commuters	Households Moving West
Disposable income:			
May 1990 (DM)	614	636	875
March 1991 (DM)	745	967	1,618
Average real increase (%)	12.1	41.1	79.5
Population fraction experiencing real increase (%)	60.3	81.7	...
Population (thousands)	15,751.9	1,073.9	...

Source: Krause, Headey, and Habich (1992).

Table 5.15 Migration Plans (%)

	Short Run	Medium Run
Total	4.6	47.9
Unsatisfied with household income	6.1	50.2
Expectation of own unemployment	14.0	54.2
Expectation of spouse's unemployment	10.1	43.3
University degree	3.0	51.6
Workers	4.5	47.5
Employee	4.8	60.0
Highly qualified employee	4.5	50.8
House owners	2.9	32.1
Dissatisfied with environment	8.3	52.9
East Berlin	6.0	51.8
South	6.0	48.2

Source: Based on a socioeconomic survey. Calculations reported in *DIW Wochenbericht,* nos. 5–6 (1992).

Note: Willingness of employed males aged younger than 49 years to migrate to West Germany.

services (14.0 percent), is fairly young (65 percent younger than thirty-six years; average age thirty-one), has concluded an apprenticeship (69 percent), and is presently employed as a skilled worker (43 percent).

Yet survey evidence on the migration behavior of economically active young males—the dominant migration group—suggests that the income gap was not the only or even the dominant incentive to migrate. As table 5.15, summarizing the responses of employed East Germans, suggests, the short-run mobility was furthermore quite small. Among the reasons given, unemployment dominates, followed by concerns about the environment, with income differentials ranking only third.

The responses also indicate a surprising homogeneity of answers with respect to educational background and current employment. In conjunction, migration responses may be more highly varied across regions than across qualifications. In particular, the industrial south, suffering from high unemployment and some of the worst environmental damage, appears to be headed for the largest population loss. In accordance with most empirical findings on migration patterns, house ownership significantly lowers willingness to migrate.

Table 5.16 extends the survey to all males in the age group. Again, unemployment significantly increases the willingness to migrate.

Surprisingly, individuals on short time, and hence realistically headed for unemployment, are least mobile in the short as well as in the medium run, possibly reflecting a perceived inability to find employment in West Germany. The survey rejects the hypothesis of an imminent mass migration in the spring of 1990. Job security rather than wage differentials appears to have been the main driving force behind migration. Indeed, rapid monetary union—with the entailed real appreciation—and rapid wage equalization may have on balance

Table 5.16 Willingness to Go West (%)

	Short Term	Medium Term
Total	4.9	50.2
Fully employed	4.6	47.9
Short time work	2.2	46.1
Unemployed	7.4	59.2
Commuters	9.3	61.9

Source: See table 5.15.

Note: Willingness of working-age males younger than 49 years.

increased rather than reduced the mobility of East German workers. The possibility becomes more plausible if the skill composition of the labor force is taken into account: (almost) wage equalization across the board may have driven older and unskilled workers with low probability of finding work in the West into long-term unemployment while failing to close the wage gap sufficiently for the most mobile highly skilled labor force groups.[12]

Outlook

The East German capital-to-labor ratio at present lies substantially below the West German ratio. With free factor mobility, equalization will occur over the medium run. Two possibilities arise: an eastward movement of capital (the miracle outcome) or a westward movement of labor (the *mezzogiorno* outcome). Some westward labor migration is unavoidable and even desirable. How far the economy shifts toward the *mezzogiorno* outcome depends on the wage and investment policies adopted. Low initial unit labor costs attract investment and favor the miracle outcome. The choice for rapid wage equalization contributed to the rapid rise in unemployment and on balance has likely increased rather than decreased migration, thus supporting the *mezzogiorno* solution.

In the remainder of this paper, we sketch three questions that no doubt will continue to be debated as developments in the East unfold over the next decade.

5.5 Unemployment or Status Quo Subsidies?

Unification has taken place, and it is too late to set the clock back on such key decisions as the conversion rate, the integrated labor market, and the open internal trade regime. A key question remaining for the coming years concerns

12. While 78.8 percent of individuals older than fifty-five years categorically ruled out westward migration, only 29.6 percent of the seventeen- to thirty-four-year-olds expressed the same sentiment (Scheremet and Schupp 1992).

the subsidy strategy. At present, the Treuhand runs an open-ended account for most firms in its portfolio,[13] subsidizing substantial losses. With the Treuhand holding the bag and unions pushing, there is no effective mechanism of wage restraint—parity in the express lane is virtually inevitable. But, even if parity is reached, should the policy be to maintain existing firms and employment, or should policy try to achieve a maximum of restructuring?

To some extent, the privatization process brings with it a restructuring, often agreed on in an explicit fashion, although one will have to see how these arguments fare if firms get into trouble. But the hard part of privatization has as yet not taken place—firm closing has been minimal even though a third of firms were thought to be unviable and another third of questionable staying power. In the meantime, employment is de facto subsidized and with it the status quo.

Wage increases have to date not been passed on to producer prices (see table 5.17), a reflection largely of the slim margin of price competitiveness enjoyed by East German products.

Relative wages in East Germany have increased significantly since unification, approaching 60–70 percent of the West German levels in the spring of 1992 (see table 5.18). While relative labor costs reflecting lower nonwage labor costs remain significantly lower at around 50 percent of the West German level, the still lower productivity ratio implies that unit labor costs in East Germany remain above the West German level. In consequence, wage bills for a large fraction of the East German enterprises exceed net value added at factor costs. The net losses are covered by Treuhand liquidity loans.

Two radically different policy options are open. One is the proposal by Akerlof et al. (1991) explicitly to subsidize wages so as to enhance profitability, competitiveness, and hence viability of employment in the East. The proposal has been formulated as well as one could hope to make the case, showing that, without a wage subsidy, East Germany is simply outpriced and hence largely unemployed. But there is something deeply unsatisfying in this approach: it basically takes as given that the existing firms and products are substantially viable and that it is only a question of bringing costs in line with prices at which output can be sold.

The proposal in no way obstructs the formation of new firms; on the contrary, it subsidizes employment and hence encourages the formation of new firms. But the weight of the proposal is to subsidize the currently existing employment patterns—simply to make it possible to keep doing what has been done in the past. But there is no reason to believe—and maybe danger in believing—that most or even half of the remaining firms are viable in anything resembling their current structure. A recent survey shows that Treuhand firms are systematically more optimistic about their economic prospects than private firms even though the reality, in market terms, is the other way round. The

13. Liquidity credits for the lowest two classifications of enterprises have been discontinued—at least for the time being.

Table 5.17 **Prices (1989 = 100)**

	Producer Prices	Cost of Living
Jul. 1990	64.2	98.0
Sep. 1991	63.2	115.4
Nov. 1991	63.2	127.6

Source: Deutsche Bundesbank, *Monthly Report* (various 1991 issues).

Table 5.18 **Profitability of East German Firms**

	Gross Wages (% of value added)	E. German Wage (% of W. German wage)
Textiles	213.7	67
Chemicals	210.9	33
Electrical	120.6	40
Machinery	102.4	40
Printing	74.5	59
Energy	30.0	40
Industry	138.3	50

Source: DIW Wochenbericht, no. 5 (1992).

alternative proposal, then, is to emphasize change and to subsidize that change aggressively. That means putting a firm end to the financing that will flow to all Treuhand firms—say after eight months—and forcing them at that point to borrow from commercial banks or to face automatic bankruptcy.

The accelerated termination of the current open-ended credits should have a counterpart in extended unemployment benefits, generous early separation payments, and a far better mechanism to finance small- and medium-sized firms. In the financing area, commercial banks do not do well in promoting the growth of small- and medium-sized businesses because collateral tends to be poor. As a result, retained earnings or family assets tend to finance the start-up, and these sources will be, of course, lacking in East Germany for years to come. Therefore, public participation funds (whether local, state, or federal) for any kind of small- and medium-sized businesses should be set up with extremely simple methods of securing and monitoring capital participations. These funds could play an initiating role in sponsoring new firms without even applying much of a subsidy, if any; their role is to act as intermediary in the capital market segment, where business formation is slowest and self-finance is the rule.

Because of the absence of self-finance, a strong case can be made for a public role. Of course, all this runs counter to the belief that markets do all the necessary work. But there cannot be any illusion: at present, East Germany is on welfare, and the current course of operations is to write blank checks. Deliberately creating a new business structure by closing down firms, con-

fronting workers crassly with the need to put themselves in a new job, and facilitating the formation of a service and small enterprise sector promise better results than a massive status quo subsidy. Specifically, if workers were to go into training programs rather than continuing on short hours or absentee status in firms ultimately bound to go into liquidation, the restructuring of employment could be advanced by years.

5.6 Is East Germany Now Better Off?

Our next question is an almost surprisingly disingenuous one. Is East Germany now *economically* better off? The presumption surely was that the transition to a market economy would make the economy much better off—goods readily available, efficient production translating into low prices and high wages, a maximum of opportunity. If there were losers, it would surely be possible to compensate them. But there remains a doubt: mass unemployment and relative prices sharply different from what they were two years ago leave some room for a question mark. Is it possible, to stretch the point, that Czechoslovakia might be doing better even without a rich brother?

At first sight, East Germany is in fact better off. Real disposable income is up, and consumption has increased 17 percent, not even counting the welfare improvements that stem from increased variety and the far more convenient availability of goods.

But is that gain widely distributed, or does it fall mostly on those groups that directly participate in the West German economy or hold high-wage jobs? Do old people, for example, share in the benefits of transition? The question is appropriate because of the massive changes in relative prices. The abolition of consumer price subsidies resulted in significant increases in the consumer price index, concentrated in rent and transportation price hikes (see table 5.19).

A report of the DIW shows that 60 percent of households surveyed showed a gain in real disposable income, leaving 40 percent without such a gain and possibly with losses. No doubt, the losses would be even larger without the substantial leveling effects of taxes and transfers. In fact, so far taxes and transfers have kept the distribution substantially unchanged (see table 5.20).

Greater wage differentiation and a less complete system of transfers will likely worsen income distribution in the future. The question then is whether growth and migration are sufficient to enable everybody to get ahead. That is questionable; less questionable is where the East German economy would have

Table 5.19 **Prices in November 1991 (1989 = 100)**

Total	127.6	Food	126.4
Clothing	72.4	Rents, energy	375.8
Household items	85.0		

Source: Deutsche Bundesbank, *Monthly Report* (various 1991 issues).

Table 5.20 **Household Income Distribution by Quintile (% of income)**

	1990		1991	
	Bottom	Top	Bottom	Top
Gross income	6.7	35.8	3.9	39.8
Disposable income	14.1	29.9	14.7	31.2

Source: Krause, Headey, and Habich (1992).

headed with another ten years of mismanagement. Against that counterfactual there is bound to be an improvement.

But how about the comparison with Czechoslovakia? Clearly, the massive transfer payments and the large investment flows are rapidly transforming East Germany into an economy where the average standard of living will be 40 or 50 percent above that in Czechoslovakia. The current high unemployment is inevitable as an adjustment phenomenon and because of transfer payments does not fairly represent the level of consumption or welfare in East Germany.

5.7 *Wirtschaftswunder* or Welfare Albatross?

Our final question is what East Germany will look like in a decade. The answer is likely this: some regions will have a dramatic improvement in prosperity—border regions that are not environmentally damaged—and other regions, notably along the Polish border, will fall sharply behind. Regions that are environmentally hazardous will become deindustrialized and depopulated. In West Germany, there are today substantial regional variations in per capita income, and the same will be true in the East, with the high-income region of the East toward the bottom of the West German distribution. Migration will do a large part of the work, and massive investment, private and public, will have to do the rest.

After a lull in 1990, investment has increased substantially to a third of GNP and is expected to increase further in coming years (see table 5.21). Investment is further boosted by ambitious plans to modernize East Germany's telecommunications system, with a total price tag of DM 60 billion until 1997, as well as an overhaul of the transportation system, estimated at DM 700 billion over the next two decades.

Parallel to the high rate of investment, there is clear evidence of major revamping inside the firms. Table 5.22 shows the range of activities with which Treuhand firms try to make themselves attractive and profitable.

The relatively small size of East Germany has made it possible to move managers and administrators over on a scale that actually can create the required market culture in the East. The very short distances make commuting a real possibility—less than an hour for many, less than two in extreme cases. The small size also means that capital investment in infrastructure and business

Table 5.21 Investment in East Germany (billion DM)

	Equipment		Buildings			
	Private	Public	Private	Public	Residential Housing	Total
1989	17.0	2.7	14.4	5.5	10.5	50.1
1990	17.4	2.6	14.6	6.6	7.1	48.3
1991	33.4	3.5	14.9	9.4	6.8	68.0
1992	44.1	4.0	19.5	13.6	7.1	88.3

Source: DIW Wochenbericht, no. 41 (1991).

Table 5.22 Reform Measures of Treuhand Enterprises

	Firm Size: Employees		
	< 200	201–999	> 999
Outsourcing	15	21	44
Improvement of distribution:	64	77	85
In the East	54	57	57
In the West	31	47	62
New/improved products:	55	66	58
Own	33	50	50
Licensed	25	25	23
Rationalization	34	70	92
New machinery	43	42	40

Source: DIW and IfW (1991a, 1991b).

Note: Figures are given in terms of percentage of respondents having taken the action.

capital over the next decade can move the region substantially in the direction of West Germany.

What will East Germany do? It is unlikely that it will do exactly what the West is doing. More likely, activities will be somewhat less green, somewhat less customized, and substantially more focused on emerging markets in the East. But, of course, in manufacturing there will be competition with the low-wage transition economies. Just as the United States competes with Mexico in the production of entry-level cars, East Germany must now compete with Czechoslovakia. The sooner the new production structure is put in place, the better the chances to start competing.

There is no presumption whatsoever that income equalization will take place on a regional basis in a decade—that does not exist even in countries with many decades of regional policies.[14] In fact, within West Germany's states (excepting the city-*Lander*), the spread top to bottom of per capita income is 28

14. Near 80 percent equalization will put East Germany ahead of the United States in terms of labor costs.

percent. Once we look at partial equalization—say, 75 percent—and recognize the great scope for commuting, productivity improvements, and the externalities deriving from public capital, the investment effort may be radically smaller than the DM 1,000–DM 2,000 billion that have been produced by various models.

Barro (1991) has argued that East Germany will take generations—specifically, seventy years—not a decade to fifteen years as we argue, to move close to West German standards.[15] His view is based on research about catch-up and convergence among regions and countries over long periods of time. In these cross-sectional studies, catch-up is found to be slow and equal to only 2 percent of the gap each year.

What is different in the case of East Germany?[16] First, a set of essential prerequisites in the form of legal, economic, and administrative institutions were imported outright. It may take a moment for these to take hold and become second nature, but they are basically in place. Second, knowledge about markets, technology, and business is being imported on a massive scale far in excess of the rate that a peripheral country could handle under its own steam. Third, commuting and more generally minimal distances generate the maximum benefit in terms of exposure and interaction. Fourth, the supply of capital is ample and strictly without a regional risk premium. On the contrary, public finance strongly supports regional development. The wage strategy, whether the government intended this result or not, forces East Germany into the direction of a high capital-labor ratio. Politics support that move, and a safety net makes sure that it all adds up.

East Germany will not seem like a miracle. For that too much money is being spent. However, the turnaround in output and employment is now starting, and growth will pick up. But, for years to come, just as in the early 1950s, high unemployment rates will draw more attention than business formation or employment growth. A decade from now, it will suddenly be clear that differences have shrunk except in those places where extreme environmental damage makes it impossible to work and impossible to live. There may not be a *Wirtschaftswunder* because transfers and investment will be responsible for the rehabilitation. If there were to be a *Wunder* at all, it would most likely take the form of a dramatic increase in East German total factor productivity, which offers a powerful alternative to aid and capital investment.

15. The German government appears much more optimistic, arguing for a five-year convergence period ("Bonn Rejects Doubts" 1992).

16. For a further discussion of this point, see Dornbusch and Wolf (1992).

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Comment

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The authors are to be commended for their excellent survey of the progress of East German economic reconstruction since currency union in July 1990. I fully agree with their analysis of the relevant economic history and with their diagnosis of the current economic situation. In commenting on their paper, therefore, I will offer some additional reflections on two important issues raised in the paper: the likely length of the transition to Western productivity and employment levels and the Treuhand's privatization strategy.

The Length of the Transition

The authors ask of the East German economy the same question that the erstwhile mayor of New York, Ed Koch, continually asked of himself: "How am I doing?" Should the answer be accompanied by Koch's indomitable grin? The authors fail to answer this question, instead leaving the reader with two polar possibilities: East Germany may be another German *Wirtschaftswunder,* or it may be another Italian *mezzogiorno.*

Data in the paper allow calculation of how well East Germany is doing. The necessity in East Germany is to create a stock of new jobs, primarily in the tradable goods sector. At the current time, roughly 50 percent of the labor force is in underemployment, disguised unemployment, or full unemployment. These include the unemployed, those on short time, workers in ABMs (East Germany's public works program), workers in retraining programs, and many of the remaining workers in Treuhandanstalt firms, whose jobs will need to be phased out. The rest of the nonagricultural work force, which is in state and municipal governments, trade and transport, construction, self-employment, and a small nucleus in new private enterprises, are in jobs that are, in a long-run sense, viable. Thus, I will assume that new jobs are needed for roughly 50 percent of the work force.

New jobs require new capital stock. How long will it take to create enough capital to provide new jobs for 50 percent of the work force? One key number in this calculation is the rate at which new investment is occurring in East

This comment is based on joint research with George Akerlof and Helga Hessenius.

Germany. According to Deutsches Institut für Wirtschaftsforschung (DIW) estimates presented in the authors' table 5.21, gross private nonresidential investment in 1992 will total DM 63.6 billion. Assuming a civilian labor force of 7.7 million, this amounts to DM 8,260 per worker.[1] In West Germany, capital per worker, excluding residential housing, at the start of 1991 was DM 131,943.[2] Does the East German rate of capital formation entail a long or a short transition?

A variety of assumptions are necessary to see how long it will take before unemployment and disguised unemployment in the East German economy will disappear. The first assumption concerns the *average* capital-labor ratio of East German jobs. Since wages in East and West Germany are rapidly headed toward equality, it makes sense to assume, as a first approximation, that the average capital intensity of jobs in the East will be similar to that of those in the West. Three other assumptions are necessary in order to project the path of East German employment over time: (1) the *relative* capital intensities of the "old" sector (the sector of the economy now providing viable jobs) and the "new" sector; (2) the rates of depreciation of capital in the old and new sectors; and (3) the rate of migration.

Under the most optimistic assumptions, East Germany could experience a *Wirtschaftswunder*—a 6.9 year transition to full employment (defined as a 6 percent natural rate of unemployment)—if current gross investment levels are maintained. The optimistic assumptions are that the capital intensities of the old and new sectors are identical, that there is no depreciation of capital in either the old or the new sectors or the economy so that all investment is allocated to capital formation in the new sector, and that migration begins at 2.5 percent per year and falls linearly to zero as the economy reaches full employment.

But the transition could take much longer. The optimistic scenario ignores depreciation. With more realistic assumptions concerning depreciation of capital, the transition lengthens substantially. For example, with a 10 percent depreciation rate in the "old" sector and depreciation in the new sector of the one-horse shay type with a long lifetime so that replacement is not necessary in the period of calculation, the transition lengthens to twenty-five years.

The "optimistic" scenario further assumes that jobs in the old and new sectors of the East German economy are equally capital intensive. But, realistically, the "old" sector of the East German economy, now providing viable jobs, is heavily weighted with self-employment, state and local government, trade,

1. In contrast, estimated gross and net investment per worker in 1992 are DM 13,969 and DM 4,749, respectively, in West Germany.

2. This estimate is consistent with the predictions of the Solow model under the assumption that West Germany is in steady-state growth. Along a steady-state growth path, $k^* = i/(n + \lambda)$. Assuming population growth (n) of 1 percent and technological change (λ) of 2.5 percent, the implied steady-state capital intensity, k^*, corresponding to the 1992 estimated net investment per worker (i) of DM 4,749 is DM 135,685.

and services, all of which are relatively labor-intensive activities. We therefore ran an alternative simulation, otherwise identical to our "optimistic" case, in which the existing jobs in East Germany are assumed to be in relatively labor-intensive sectors while new jobs must be created in sectors that are relatively capital intensive. Specifically, we assumed that jobs in the old sector require (and currently possess) capital per worker that is 50 percent below the West German economy-wide average while jobs in the new sector require capital per worker that is 50 percent above the West German economy-wide average. With half the Eastern labor force in the old and new sectors, the average capital-labor ratios for the East and West German economies are identical. In this case, the transition lengthens from 6.9 to 10 years. For a reasonable range of parameter values concerning depreciation and relative capital intensities in the old and new sectors, the length of the transition is between seven and twenty-five years.

A final assumption underlying these computations is that the East German and West German capital-labor ratios are, *on average,* similar. If the average capital intensity of East German jobs turns out to be higher than that of those in the West, the transition may take substantially longer. This could occur if newly created jobs turn out to be highly capital intensive. For example, if the capital required to create a new job in East Germany is 50 percent higher than that assumed in the simulations described above, analogous computations yield full employment only after ten to thirty-three years of per capita capital accumulation of DM 8,260 instead of seven to twenty-five years. Unfortunately, there are two reasons to suspect that Eastern investment may be highly capital intensive.

First, the nature of German subsidies encourages capital intensive investments in the East. In order to stimulate investment, the federal government has set up a number of capital subsidy programs, which together cover about 50 percent of a firm's investment cost. In West Germany, the capital-labor ratio in industry is roughly DM 100,000 per worker. In contrast, the recent investments of Volkswagen and Opel involve capital-labor ratios of roughly DM 120,000–DM 135,000. And Siemens is reportedly building a plant in Brandenburg with 50 percent government subsidies and capital of DM 500,000 per employee—five times the industrial average in West Germany. We are not aware of any statistics that accurately portray the capital intensity of new investment in the East, but, since the length of time to full employment is roughly inversely proportional to the capital-labor ratio, it is important to discover whether the incentives for high capital intensity have resulted in significant bias. If there is such a bias, there is less room for optimism, and the German government should reevaluate its policies for investment subsidies.

A second reason for concern about the capital intensity of Eastern investment is that roughly half the DM 63.6 billion of "private" investment in East Germany that is forecast for 1992 (see table 5.21) consists of investment in

telecommunications, transportation, and energy.[3] (Investment by West German firms in East Germany is expected to amount to about DM 35 billion according to an Ifo poll.) These sectors are enormously capital intensive: in West Germany, capital per worker in transport and telecommunications and in utilities is, respectively, twice and eight times the West German economy-wide average. Thus, our baseline calculations tend to overstate the amount of job creation associated with current investment levels.

The optimistic scenario described above also assumes that the rate of gross investment per worker will remain constant over time. Arguably, this is too pessimistic an assumption: perhaps, once more infrastructure investment has been completed, the pace of private investment may increase. However, investment could also decline if there is a recession in West Germany, as now seems likely. One of the motives for West German firms to invest in the East is that, following unification, they found themselves with extra demand and little spare capacity. A recession in the West would obviate the need for Western firms to expand capacity. In addition, higher interest rates due to tight Bundesbank policy would likewise discourage investment.

Finally, the optimistic scenario that I have described also assumes that public investment will continue and even expand. There is also the risk that such spending will need to be curtailed. This could occur for a number of reasons. First, a recession in the West will depress tax revenues and swell an already large budget deficit, reducing the ability of the German government to finance an ambitious infrastructure plan for the East. Second, the costs of unity to the German government will inexorably mount as the wage increases that have already been negotiated take effect over the next several years. If we assume that the German government will be unwilling to expand its budget deficit further, then the extra government spending necessitated by wage increases will translate dollar for dollar into reduced spending on public capital formation in the East and other government-supported activities. Consider the arithmetic. Of the roughly 7.7 million workers in the Eastern labor force, a large majority (perhaps as much as two-thirds) are directly or indirectly paid by the government. This includes state and local government workers, workers in transport, post, and telecommunications, workers in Treuhand firms, and workers on public construction projects. Any wage increases for these workers will be financed with government funds. In addition, the payments received by those who are unemployed, on short time, and in public works or retraining programs are indexed to the wages received by the Eastern work force. Retirement benefits also tend to rise with wage levels. Higher wages in the East will thus raise the expense of supporting the unemployed and underemployed as well. High wage settlements in the East are detrimental to Eastern recovery

3. "Private investment" includes the investment of government enterprises, which importantly include post and telecommunications, railways, and government-owned utilities.

through this spending channel as well as via their direct negative effects on the viability of existing jobs and the profitability of new investment.

Treuhand Policy

The authors have provided a very good overview of the policies being pursued by the Treuhandanstalt, the agency responsible for privatizing East German industry. The key questions are, Has the Treuhand pursued a wise privatization strategy? and, How should it deal with the money-losing firms that remain in its portfolio?

The authors outline two extreme options: unemployment or status quo subsidies. The Treuhand could liquidate any money-losing firms that it cannot quickly sell, throwing workers into the job market, an option that is not unthinkable given the generous level of unemployment compensation and the wide range of "public works" programs that are available. Or the Treuhand could continue subsidizing its money-losing properties to preserve jobs.

There is also a middle course. The middle course is what I perceive the Treuhand to be pursuing, and it is the course that I personally favor. The middle course is to agree to invest money—within limits—to save or preserve jobs in the course of privatizing firms and to close firms that cannot be privatized with a reasonable injection of government funds. If the Treuhand is permitted to pursue this strategy, most of the privatization work will be completed over the next several years, and the privatized firms that remain will be operating under hard budget constraints.

Why should the Treuhand spend money to save jobs? The logic is simple: it is both in the overall social interest and in the financial interest of the government. There is a major distortion in the East German economy: the current wage is far in excess of the market clearing level. With about one-third of the labor force unemployed or underemployed, the social cost of labor is low—far below the wage. As a result, there is too little employment. Arguably, high levels of unemployment speed economic restructuring by creating high motivation for workers to retrain and a pool of labor for new firms to hire. But unemployment is already above any level that could be deemed optimal for this purpose. The social gain from job creation exceeds the gain to potential employers. This justifies the Treuhand's policy from a social welfare standpoint. From a budgetary standpoint, the logic is equally simple: the budgetary gain from job creation is large and positive. A typical individual who leaves the unemployment rolls and finds work saves the German government 79.1 percent of his previous total compensation through lower unemployment benefits and higher income tax and social insurance receipts. This means that the German government saves money if it can create a job by spending less than 79 percent of worker compensation to do so. This provides a strong budgetary rationale for spending a significant amount of money to create new jobs or to save existing ones even if it requires selling firms at negative prices.

And this is precisely what the Treuhand has done, albeit haphazardly and without the transparency that the process should ideally have in the absence of political considerations. In selling the firms in its portfolio, the Treuhand has strongly favored investors who guarantee higher employment and future investment levels, not those offering the largest up-front bids. It has frequently "sold" firms for a token DM 1.00. The Treuhand has also accepted negative sales prices: this occurs when the Treuhand invests to "restructure" a firm prior to sale or when, as in the Zeiss Jena case described by the authors, the Treuhand provides "start-up funds" or "loss compensation." In other words, it is spending money to create jobs.

The economic logic that I have just outlined suggests that the Treuhand should establish an appropriate "shadow price" of employment to use in its evaluations of outside bids. Investors would receive a job creation "credit" based on the number of jobs saved and the number of future jobs guaranteed through promised investment. This credit would be added to the investor's (possibly negative) monetary bid in scoring proposals. In actuality, the Treuhand is pursuing a policy that may approximate the rule that I have outlined. Because the methodology employed is ad hoc, however, the Treuhand is probably spending too much money to save jobs in some instances and too little in others. In the case of Zeiss Jena, for example, the $212,500 per job that the Treuhand paid seems excessive since this amount probably exceeds the present discounted value of the budgetary savings even under the assumption that the workers would otherwise remain permanently unemployed. The second problem with the Treuhand's approach is that it is not transparent: potential investors are aware that the Treuhand cares about jobs but have no way of computing "how much" the Treuhand cares in preparing their bids.

Even with its heavy emphasis on employment, and even given its willingness to sell firms for a negative price, the Treuhand is appropriately following a middle course, making tough decisions to cut employment as privatization occurs. Consider the evidence. There were initially 3 million industrial jobs in Treuhand firms. Thus far, roughly 1 million jobs have been saved by the Treuhand, but about half are in service-sector establishments. A rough estimate is that a maximum of 500,000 jobs in industry have thus far been saved. Since, at present, there are about 1.9 million industrial jobs in Treuhand firms, at least 600,000 industrial jobs have been eliminated by the Treuhand in the course of privatization. A typical privatization involves employment reductions ranging up to 80 percent. Since many of the remaining Treuhand properties will be difficult to privatize and are likely to involve even smaller job savings, a reasonable forecast is that only 20–30 percent of the original industrial jobs will remain when privatization is complete. The German government has also shown backbone by ending special East German short-time arrangements on 1 January of this year, forcing many of the workers on these schemes into open employment or other social programs. The Treuhand is not just preserving the

status quo. The Treuhand is appropriately spending money to save jobs, and, arguably, it is spending too little rather than too much. All in all, the Treuhand's policies seem reasonable.

There is further reason why the German government should be willing to pay limited amounts to subsidize privatization of Treuhand firms. The Treuhand's privatization strategy has succeeded in saving a large number of activities that may serve as the nuclei for successful further growth of jobs. In particular, the Treuhand has saved many of the core businesses of the former state-owned enterprises. The value of preserving an activity may be disproportionate to the number of jobs that are saved if the activity has the potential for future growth or if its survival makes other investments viable. As the authors note, investment decisions are highly interdependent, and multiplier effects are at work in East Germany.

Let me offer an example. In Eisenhüttenstadt, near the Polish border, there is a large steel factory—Eko Stahl—whose survival was problematic. In January 1992, the Treuhand finally announced that it would sell this company to the West German steelmaker Krupp. The sale involves substantial Treuhand subsidies. Had the plant been closed, Eisenhüttenstadt would have become a ghost town. Even under the privatization plan, employment at the firm will fall dramatically, from 11,300 prior to unification to about 2,800. However, since the plant will survive, so will numerous local independent metal-working enterprises and privatized firms that provide repair services to the steel plant. Major investments currently planned for the revived town include two shopping centers and a plant manufacturing advanced hydrofoils located next to the steel mill.

The authors argue that Treuhand firms should face hard budget constraints soon—within eight months' time—either by being forced to use commercial borrowing or, if unsuccessful, to face bankruptcy. I agree that hard budget constraints must be imposed. In fact, many people in Germany believe that a hard budget constraint has been imposed because Treuhandanstalt liquidity loans have been capped this year at a total of DM 30 billion. This constraint, however, has been quietly subverted by allowing Treuhand firms to engage in asset stripping by selling or mortgaging their considerable land holdings. As the authors' table 5.18 shows, in many sectors wage payments exceed value added. With a cap on its liquidity credits, the Treuhand is underwriting these losses by, in effect, selling off its remaining valuable assets. The Treuhand told us that firms were permitted to do this only if they were expected ultimately to survive.

Morals

Let me conclude by pointing to just one of the morals of the East German story for other times and other places. This concerns the importance of wages. The East German depression is so deep, indeed much deeper than that of its less fortunate Eastern neighbors, because real wages have risen so dramatically.

The warning to Eastern countries concerns the importance of keeping wages in line. Excess wages will make employment and investment unprofitable. In addition, they will throw government budgets out of balance. The consequences of high wages for East German recovery have been largely offset by massive transfers. But the German government has yet to face the consequences of future rises in East German wages, which, at a minimum, will affect the costs of state and local government, the cost of infrastructural investment, government make-work programs, unemployment insurance, and short time. The rising interest costs of the German debt may threaten the government with a loss of flexibility in expenditure, creating a dilemma similar to that now facing President Bush. I started by remembering Mayor Koch. In the end, it is appropriate to remember another New York mayor, John Lindsay, who granted large wage increases to city unions, subsequently leading to the bankruptcy of New York. The East German case yet again underscores the dangers of excessive wage increases in the absence of vigilant public watchfulness over the public purse.

Discussion Summary

Kalman Mizsei asked the authors how well the Treuhand was functioning from a bureaucratic perspective. He wondered whether corruption and inefficiency were problems. All of the other East European countries have chosen to create privatization institutions that are much smaller and less autonomous than the Treuhand. In response, *Rudiger Dornbusch* said that the institutional environment at the Treuhand "is a dream," with no reported scandals. He ascribed this success to the fact that the Treuhand is highly visible and is constantly under intense political scrutiny.

Larry Summers criticized the ad hoc industrial policy that he believes is being implemented by the Treuhand. He suggested that the Yellen plan (i.e., an explicit wage subsidy coupled with clean market-based privatization) looked much better than the current Treuhand policy. *Janet Yellen* appreciated Summers's support, but she noted that the Yellen plan had little chance of being implemented since it has previously been rejected by German policymakers.

Dani Rodrik noted that it is important to analyze the strategic behavior of unions when considering the effect of a wage subsidy. For example, if a government commits to full employment and uses a wage subsidy as its only instrument, then the unions can extract infinite rents. He believes that wage/employment subsidies will be successful only if the government gets trade unions "in on the process."

Barry Bosworth questioned Yellen's claim that "a typical individual who leaves the unemployment rolls and finds work saves the German government 79.1 percent of his previous total compensation." The calculation behind this

number assumes that demand for the produced good is perfectly elastic. Bosworth believes that it is more reasonable to assume that some jobs that are created by the government crowd out private employment. Yellen responded by emphasizing that most of the Treuhand firms that produce industrial output are in the tradables sector, where demand is highly elastic.

Dornbusch said that the Treuhand has been too cautious, and he felt that some participants were making the same mistake. Initially, the Treuhand had predicted that it would sell one-third of its firms, restructure another third, and close the remaining third. The Treuhand has done a good job in selling the viable firms, but it has not successfully dealt with the remaining two-thirds of firms that must be closed or restructured. He argued that Germany should not subsidize the status quo since this prevents the necessary structural changes from taking place.

Dornbusch concluded by emphasizing the important role that commuting will play for the economic prospects of East Germany. For example, mass commuting will drastically reduce the capital needs of East Germany. He said that all the capital requirement calculations have to be radically scaled down.

Holger Wolf emphasized that it is inappropriate to assume, as some of the participants had done, that East German and West German wages will quickly equilibrate. It may take as long as fifteen years for this convergence to occur. Wolf also noted that there are advantages to the fact that the Treuhand does not operate with an explicit shadow price for job creation. Having flexibility is helpful in designing idiosyncratic sales packages. Moreover, estimates of these prices can be imputed by looking at past deals.